

Admin report of the
Dept. of Industries

1933



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ADMINISTRATION REPORT OF THE DEPARTMENT OF
INDUSTRIES FOR THE YEAR ENDED 31st MARCH
1933.

Direction.—I was in charge of the department throughout the year under review. Mr. L. B. Green, M.B.E., continued to hold the appointment of Deputy Director until 7th June 1932 when he handed over charge to Mr. W. Fyfe and proceeded on leave. Mr. Fyfe acted as Deputy Director until Mr. Green returned from leave and resumed charge of his office on 16th January 1933.

2. *Tours.*—I was on tour for 142 days during the year including a stay of 37 days on the hills. My tours covered most of the industrial centres in the Presidency.

3. *Exhibitions.*—It is recognized as part of the policy of the department that industrial and agricultural exhibitions at district headquarters or other suitable places should be encouraged and assisted as far as possible. The department participated during the year in exhibitions conducted at Arni, Bezwada, Madras, Nellore, Pallikonda, Rajahmundry, Srirangam, Trichur and Vadamalaipuram. The display of a representative range of soaps manufactured at the Kerala Soap Institute was a feature of almost all the exhibitions and wherever possible, the working of pumping and boring machinery and of improved textile appliances and of silkworm (both the mulberry and eri varieties) rearing and reeling appliances was demonstrated for the benefit of the agriculturists, handloom weavers and other visitors to the exhibitions. A successful departmental display was staged in connexion with the annual Madras Park Fair held in December 1932, the exhibition including a handboring set, kite motion deep well borehole pump, crude oil pumping set for irrigation purposes, high speed pumping set for well sinking, model of an artesian borehole, boring tools and rice hackling machine, a demonstration of improved methods of sizing, weaving, knitting, aërograph printing, ericulture and sericulture and reeling of mulberry silk and a display of ceramic raw materials, glazed and unglazed ceramic articles, besides soaps from the Kerala Soap Institute.

Exhibitions and Fairs held in foreign countries such as the British Industries Fair were brought to the notice of important firms and individuals and Chambers of Commerce in the Presidency, and their attention invited to the advantages of participating in them. The question whether Indian goods could with advantage, be sent in greater quantity and variety to international exhibitions and fairs in overseas countries is one which seems worthy of consideration.

4. *Committees.*—The Director of Industries continued to serve on the following committees:—

- Local Advisory Committee of the South Indian Railway.
- Local Advisory Committee of the Madras and Southern Mahratta Railway.
- Provincial Cotton Committee.
- Council of the Victoria Technical Institute.

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

- | | |
|---|---|
| (1) Director of Industries. | } Ex-officio. |
| (2) The Secretary to Government, Finance Department. | |
| (3) G. L. Orchard, Esq., elected by the Madras Chamber of Commerce. | |
| (4) M.R.Ry. Chandulal M. Kothari, B.A., LL.B., elected by the Southern India Chamber of Commerce. | } Elected by the Madras Legislative Council. |
| (5) D. Q. Davidson, Esq., elected by the Madras Trades Association. | |
| (6) Yakub Hasan Sahib Bahadur, M.L.C. | |
| (7) M.R.Ry. Sri Raja Venkatramayya Appa Rao Bahadur Garu, M.L.C., Zamindar of Mirzapuram. | } Nominated by Government under section 3 (2) of the Act. |
| (8) The Hon'ble M.R.Ry. 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, Ph.D. | |
| (12) The Registrar of Co-operative Societies, Madras. | |

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

The only change during the year in the personnel of the Board was the appointment in March 1933 of M.R.Ry. A. Ranganatha Mudaliyar Avargal, M.L.C., in place of M.R.Ry. Rao Bahadur M. K. Venkata Achariyar Avargal, who vacated his seat on the Board in September last by efflux of time.

6. The loan of Rs. 8,000 to Metal Industries, Limited, Shoranur, referred to in last year's report was disbursed during the year, as was also a loan of Rs. 500 to a toy manufacturer in Kondapalli.

7. Only one meeting of the Board of Industries was held during the year under review, namely, on the 27th March 1933 at which the following applications were considered:—

(i) Application from Mr. F. L. Silva, Proprietor, Bangalore Silk Filature, Mudigundam, Coimbatore district, for a loan of Rs. 25,000 for purposes of working capital for his silk filature at Mudigundam.

(ii) Application from Messrs. Syed Haffiz Meah & Sons, Toy manufacturers and cycle dealers, Cuddapah, for a loan of Rs. 500 for developing their toy industry.

(iii) Application from M.R.Ry. A. C. Krishnaswami Pillai, Muthupet, Tanjore district, for a loan of Rs. 500 for the purpose of starting a coir factory on a small scale.

(iv) Application from M.R.Ry. N. Sripati, Govindavadi, for a loan or subsidy for starting the manufacture of malt flour from paddy.

(v) Application from M.R.Ry. P. B. Mohan Nayudu, Messrs. P. B. Mohan Bros., Soap Manufacturers, Saidapet, for a loan of Rs. 5,000 for developing their soap industry.

A Bill to amend the State Aid to Industries Act with a view to making provision for the supply of machinery on the hire-purchase system was also considered at this meeting but after some discussion it was resolved unanimously to adjourn the further consideration of the proposals and the draft amending Bill until the next meeting of the Board.

Of the five applications mentioned above, Nos. (ii) and (v) were rejected unanimously by the Board, whilst the consideration of No. (iv) was adjourned until the next meeting pending further inquiries in regard to the marketing of the malted flour. Nos. (i) and (iii) were recommended by the Board and are now under the consideration of Government.

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

(i) *The Kallakurichi Co-operative Agricultural and Industrial Society, Limited.*—The Society incurred a net loss of Rupees 1,015 during the year ended 30th June 1932. The Society has paid the instalment of loan due for the year 1932-33.

(ii) *The Andal Mills, Gudiyattam.*—The recovery proceedings instituted by the Collector in order to realize the entire balance due from M.R.Ry. D. Rangaswami Nayudu were ordered to be stopped by Government and it was only shortly before the end of the year that Government passed final orders directing that steps should be taken for the recovery of the amount.

(iii) *Bellary Match Factory.*—The Insurance Company who had withheld a portion of the amount ordered by the High Court to be paid as and for damages caused by the fire, has since paid this amount too. The question of recovering from Muthyala Ramanna any balance that may be still due was under consideration at the close of the year.

(iv) *The Parvatipur Industries.*—The concern sustained a net loss of Rs. 1,073-5-11 on its working during the year ended 31st December 1931. The instalment of the loan was paid on the due date.

(v) *The Salem Dye Works Syndicate.*—The attempts of the department to induce capitalists to finance the concern, referred to in last year's report, were not successful. The instalment of the loan due in the year 1932-33 has been paid.

(vi) *The Tanjore Tile Works*.—The concern sustained a net loss of Rs. 2,562-6-4 on its working during the year ended 31st March 1932. The instalment of the loan due in the year has been paid.

(vii) *Silk reeling concern, Bastipuram*.—Recovery proceedings have been instituted by the Collector for realization of the entire amount due from the borrower who is reported to be absconding.

(viii) *The Ram Ram Safety Match Works, Tholampalaiyam*.—The first instalment which fell due on 14th May 1932 was paid on the due date.

(ix) *Messrs. Boddu Pydenna Sons, Vizianagram*.—The proceeds of the loan do not appear to have been utilized in the directions contemplated and the conditions of the grant of the loan seem to have been freely departed from. The matter is under correspondence with the borrowers. The proprietors have earned a net profit of Rs. 758-10-5 for the year ending 31st March 1932 and the assets and liabilities of the firm as on 31st March 1932 were Rs. 98,522-4-9 and Rs. 1,04,843-14-10, respectively. The auditor states in his report that in the liabilities above mentioned is included a sum of Rs. 39,120-10-2, said by the proprietors to be capital invested by the other members of the joint Hindu family, and if this is accepted, the deficit is converted into a surplus of Rs. 32,799-0-1.

9. Owing probably to the prevalent economic depression two of the concerns that have received aid have expressed their desire to pay off the entire balance outstanding as soon as possible. One of these has sustained rather severe losses in working and the proprietor has asked for permission to repay the balance due, by selling the whole or a portion of the properties mortgaged to Government. The results of the working of the Act continued to be disappointing and, as will be evident from the foregoing, the position of the great majority of the concerns to which financial assistance has been rendered affords little ground for satisfaction.

10. *General Assistance to Trade and Industry*.—The Department of Industries is the special organ of Government charged with the oversight of trade and industry, and the work of providing information on industrial and commercial subjects is carried on in the Bureau of Industrial and Commercial Information, the scope and objects of which are now too well known to need repetition. The number of enquiries received during the year continued to increase and fully to tax the resources of the staff. The Bureau works in close touch with the Director-General of Commercial Intelligence and Statistics, Calcutta, and 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 Consuls at Bombay, Calcutta and Madras with whom information is freely exchanged. The Director-General of Commercial Intelligence was as usual supplied 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. The Director-General of Commercial Intelligence continued to be supplied with a short weekly review of trade and market conditions in respect of the main classes of produce.

11. The following examples of measures taken to assist firms or individuals may 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:—

(i) The Director-General of Commercial Intelligence and Statistics, Calcutta, was supplied with a list of reliable rug manufacturers in and around Ellore and suppliers of spices and eucalyptus oil in Ootacamund.

(ii) A firm in Calcutta was supplied with information in regard to the possibilities of sugar manufacture, including the area under cane in the Presidency and the results of analyses of the several varieties of cane grown.

(iii) A list of coconut oil factories and oil merchants was supplied to the Director of Industries, Assam, for communication to an inquirer in that province.

(iv) A list of the more important petroleum companies in the United States of America and the name of the organization authorized to carry on foreign trade operations in oil and oil products in the U.S.S.R. was furnished to an inquirer in Salem district.

(v) Information in regard to processes of manufacture of phenyle and crayons was supplied to an inquirer in Madras.

(vi) An inquirer in Madura was supplied with a list of manufacturers of cellulose lacquers in the United Kingdom and the names of their agents in India.

(vii) Information in regard to the prospects of cement manufacture in this Presidency was communicated to an inquirer in Kurnool district.

(viii) A note on wattle bark drying was sent to an inquirer at Ootacamund.

(ix) A firm of ink manufacturers in Madras was supplied with recipes for the manufacture of copying ink, liquid paste and marking inks.

(x) Information in regard to the manufacture of charcoal and quotations for a suitable kiln were communicated to two firms, one in Madras and the other in South Kanara.

(xi) The Collector of Kurnool was supplied with the results of analysis of a sample of iron ore sent by him and advised as to possible buyers of the ore.

(xii) Details of the process of manufacture of Monopole soap and of soaps for boiling out silk yarns and for brightening dyed cotton yarns were given to a firm in Dharnampet, Gudiyattam.

(xiii) An estimate for starting a small cottage hosiery factory was supplied to an inquirer in Malabar district.

(xiv) The Secretary to the Agent of the Government of India in South Africa was supplied for communication to an inquirer in that country, with information in regard to the possibilities of establishing a diamond cutting factory in this Presidency.

(xv) The names and addresses of importers of mercury in this Presidency were communicated to a mica mine owner in the Nilgiris.

(xvi) A firm in Masulipatam was furnished with a list of saltpetre manufacturers in India.

(xvii) Information in regard to bee-keeping was communicated to the Director, Military Prisons and Detention Barracks in India.

(xviii) Notes on the manufacture of thymol and menthol were furnished to an inquirer in Salem.

(xix) A match factory in Sivakasi was supplied with the names of manufacturers of hide glue in Sweden and the United Kingdom.

(xx) A firm in Madras was supplied with information in regard to the roasting and shelling of cashewnuts, and the uses of cashew shell oil.

(xxi) A firm in Madras was supplied with the names and addresses of German firms dealing in gum pasted labels for advertising purposes.

(xxii) A party in Vizagapatam was supplied with information in regard to the output of the mango pulp canning factories in the Bombay Presidency, together with a list of persons in Rajapur taluk engaged in the salting of mango slices.

(xxiii) A list of importers of carpets in Germany was sent to a firm of carpet manufacturers in Ellore.

(xxiv) Information as to the possibility of utilizing the oil of Kaat-Amunak (*Jatropha curas*) in soap-making and as a substitute for linseed oil, i.e., as a drying oil in the manufacture of oil paints was given to a firm in Madras.

(xxv) A note on the process of deodorization of different oils was supplied to an inquirer.

12. *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. As the statistics relating to planting products, namely, rubber, tea and coffee are in the main a return of area under cultivation and are thus more of an agricultural than an industrial character, the work of compiling and distributing these statistics was, in November 1932, transferred to the Statistical Officer of the Board of Revenue. The usual summaries on the subjects of manufactures, and mines and quarries were also prepared for inclusion in the Administration Report of the Presidency. The annual return relating to large industrial establishments in the 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.

13. *Appointment of an agent in London for sale of the products of Madras cottage industries.*—In last year's report a reference was made to the willingness of the Victoria Technical Institute to work an agency in London on condition that Government assured them of an annual grant of Rs. 3,000 for three years. Subsequently the council of the Institute entered into a temporary arrangement with Mr. E. C. Ryland, who is already holding an agency in respect of Bihar and Orissa products and arranged to supply him with samples. Before, however, coming to a definite arrangement with the Victoria Technical Institute, Government desired to know whether the authorities of the Institute had made or could make satisfactory arrangements for a regular supply of articles up to sample and whether the Institute could handle orders for large quantities. Government also considered that the question whether the activities of the agent in London would merely displace existing dealers in the line without adding to the volume of the sales required to be investigated and that there seemed to be no object in trying to push the sale of products already handled by well-known firms. These questions were under investigation at the end of the year, and meanwhile the authorities of the Institute have been informed by Government that the question of making the necessary provision to enable Government to give the Institute a grant of Rs. 3,000 for a period of three years will be taken up in connexion with the budget of next year, the grant being subject to the vote of the Legislative Council.

14. *Manufacture of Egg Products.*—The question of the manufacture of egg products, e.g., dried egg yolk, albumen, etc., from fresh eggs received the attention of the department during the year. Dried egg products imported into the United Kingdom are subject to a 10 per cent ad valorem duty when derived from a foreign country, while the produce of Empire countries is admitted free. It seemed worth while therefore to ascertain whether advantage could not be taken of the present opportunity to undertake the manufacture of egg products in this Presidency. Mr. Green who was on leave was therefore asked to obtain the necessary instructions from the machinery manufacturers in the United Kingdom and discuss with them as to whether they could supply plants suitable for small scale manufacture in this country, as also to investigate the question of marketing the dried egg products in the United Kingdom. As, however, orders were received by

Mr. Green only three days before he embarked for India, he was unable to carry out the enquiries and Mr. Fyfe who proceeded on leave shortly afterwards has been asked to undertake them.

15. *Cement industry.*—The question of a possible cement industry in this Presidency has come under review periodically during the last 15 years and constant efforts have been made by the department to induce capitalists to set up a factory. It is gratifying to be able to record therefore that during the period under review, definite steps were taken to establish the industry, and as a result, the Madras Presidency should, within a few years, be largely independent of outside supplies of this essential material, the demand for which, owing to the advent of reinforced concrete construction and cement concrete road surfaces, is likely to expand. The Coimbatore Cement Co., Ltd., was floated during the year with an authorized capital of Rs. 35 lakhs divided into 35,000 ordinary shares of Rs. 100 each, to establish a factory at Madukarai in the Coimbatore district where cheap electric power will be available from the Pykara project. The necessary land has been acquired and orders for the machinery placed. It is understood that eight of the principal cement companies in India comprising the Cement Marketing Co. of India, Ltd., which is the distributing organization for them, will be represented on the Board of the Coimbatore Cement Co., Ltd., and wasteful competition will thus be avoided. The factory will be capable of an initial output of 60,000 tons a year and as it is moderately capitalized, its successful development should be assured.

16. *Pamphlet on Mettur and its industrial potentialities.*—The object of Mr. Green's pamphlet, which was published during the year and was favourably reviewed by the press, is to invite the attention of manufacturers in India and abroad to the facilities which will be afforded by Mettur, on the completion of the project in 1934, as a suitable location for the establishment of manufacturing industries and the setting up of mills and factories of various kinds. The pamphlet describes the industries, scope for the setting up of which the Mettur area is considered to offer facilities, and they include cottage industries of various kinds, cotton-spinning and weaving, dyeing, silk-throwing, oil-seed crushing and the manufacture of vegetable fats, and pulp and paper manufacture, etc. The generation of electric power on a considerable scale at Mettur and the consequent availability of a cheap supply opens up the question of the exploitation of the Salem iron ores with power derived from the Mettur project and this question is fully discussed in the pamphlet in which reference is also made to the question of producing dead-burnt magnesite and electrically fused magnesite with the aid of the cheap electric power available from Mettur. Copies of the pamphlet were distributed to the more important newspapers and journals in India, to the Chambers of Commerce, foreign Consuls, Directors of Industries in other provinces and members of the

Madras Legislative Council, whilst a number of copies were also sent to the High Commissioner for India in London for distribution in England and on the Continent.

17. *Census report.*—Mr. Green contributed an appendix to the Census report, published during the year, which deals exhaustively with the province's industrial position during the decade ending 1931. A further note by the same contributor on 'Methods and Processes of Disappearing Industries' appears in the same volume. Unfortunately the proofs of these notes had not been received by the time Mr. Green proceeded on leave in June and owing to an oversight in the office, the proofs were not scrutinized or corrected with the result that several typographical errors have crept in.

GENERAL CONDITION OF THE IMPORTANT INDUSTRIES IN THE PRESIDENCY.

18. When the last annual report was written, the world was only just beginning to recover from the shock caused by Britain's departure from the Gold Standard. There was an all round lack of confidence, money was scarce or appeared to be so, Government securities were at a low ebb and the rates of interest were high. The position, however, changed materially as the year advanced and confidence gradually returned. Money became plentiful, Government security prices improved to a marked extent and the rates of interest fell to an abnormally low level. The continuance of gold exports on a large scale and the plethora of cheap money were in fact the outstanding financial features of the period under review. The general economic situation, however, underwent no improvement, the most outstanding factor which continued to influence trade conditions during the year being the fall in the price of primary products from which the Madras Presidency, in common with other agricultural countries, suffered severely. Although the average of Madras commodity prices may have been slightly higher owing to the brief spells of buoyancy and firmness that characterized markets at the times of the several International conferences held during the year, prices of representative Madras products, as will be seen from the table below, were appreciably lower on the 31st March 1933 than at the corresponding period of the previous year and were, in fact, standing at a level which gave little or no profit to the grower.

[Prices of some important Madras commodities as on 1st April 1932 and 1st April 1933.]

		1932.			1933.		
		RS.	A.	P.	RS.	A.	P.
Cotton—							
Cambodia	.. .. .	154	8	0	115	0	0
					125	0	0
					per candy of 520 lb.		

	1932.			1933.		
	RS.	A.	P.	RS.	A.	P.
Cotton—cont.						
Karunganni	144	0	0	105	0	0
	150	0	0	123	9	0
				per candy of		
				520 lb.		
Ceded Districts	111	12	0	83	15	0
	132	0	0	122	3	0
				per candy of		
				520 lb.		
Groundnuts	40	8	0	22	10	0
				25	0	0
				per candy of		
				531 lb.		
Paddy and Rice—						
Paddy	4	7	6	3	1	2
	5	0	0	3	11	4
				per bag of		
				170 lb.		
Rice	7	2	0	5	6	9
				per bag of		
				170 lb.		
Pepper	36	8	0	20	8	0
	40	15	0	23	8	0
				per cwt.		
Copra and Coconut-oil—						
Coconut-oil	111	8	0	76	2	0
				per candy of		
				655 lb.		
Copra	73	8	0	50	0	0
				per candy of		
				655 lb.		
Coir yarn	31	4	0	26	6	0
	65	0	0	75	0	0
				per candy of		
				672 lb.		
				according to		
				variety.		

That there was no general recovery in world trade during the year will be evident from a study of the review of world trade in 1932 published recently by the League of Nations which shows that the value of world trade in 1932 was 61 per cent lower than in 1929 and 33 per cent lower than in 1931. The average fall in the prices of goods entering into trade was somewhat less than 50 per cent between 1929 and 1932 and it is estimated that a reduction in the quantum of 26 to 27 per cent occurred during that period. The fall both in the quantum of trade and in prices was greater between 1931 and 1932 than what occurred either between 1929 and 1930 or between 1930 and 1931 though the fall in prices slowed down in the course of the year under review.

The Conference held at Ottawa in July and August at which the whole of the British Empire was represented, passed a resolution emphasizing the desirability of taking steps to effect a rise in the general level of wholesale prices throughout the world and there can be no doubt that what is required for a revival of world

natural rise in the price of raw materials and food-stuffs whereby the primary producer can earn satisfactory profits. It was hoped that action designed to bring production and consumption of primary products into line would be one of the main planks of the World Economic Conference, and the necessity of preventing over-production of primary products in order that prices for these products may be raised to a remunerative level does in fact appear to be recognized, though whether any practical measures will be agreed to remains to be seen. At the close of the period under review high hopes were being set upon the results of the World Economic Conference and it was thought that if as a result of the deliberations of the Conference, tariff walls were lowered, currencies re-established, exchange controls and quotas removed, and some agreement reached whereby commodity prices could be raised and maintained, the stage would be set for a trade revival. At the time of writing, however, the indications do not seem to flatter the expectation of any great revival of world trade or of any very useful results accruing from the Conference. As a result of the Ottawa Conference certain tariff readjustments affecting the trade relations between India and other members of the Commonwealth including the United Kingdom were effected, but the results of these reciprocal adjustments of the tariff on the trade returns of India are yet to be seen.

Before the War, India could, taking the average of the ten prewar years' figures, rely on a favourable balance of exports over imports of merchandise. In the ten post-war years to the end of March 1930, the average favourable balance showed a considerable increase, but by 1931-32 the balance had been reduced by more than half and the position has since undergone a further retrogression, the balance of trade in merchandise falling to 3.38 crores for 1932-33, the lowest favourable trade balance recorded since 1922-23. The necessity therefore of doing everything possible to improve the balance of trade in merchandise will be evident. India as a debtor country needs, it is hardly necessary to point out, to maintain a large balance of trade in merchandise. The country is now faced with a heavy reduction in the favourable balance of trade which may continue for an indefinite period and at present it is only possible for India to meet her external commitments by exporting gold on a large scale. This process cannot continue indefinitely, hence the desirability of stimulating exports in every possible way. It is suggested by way of example that the possibility of securing the entry of Indian sugar into international commerce and of developing an export trade in Indian sugar with the United Kingdom should be explored.

19. *New industrial undertakings.*—The year under review witnessed the highest number of new registrations recorded since 1913 when the Indian Company's Act came into force, namely, 152 as against 94 in the previous year. The authorized capital of the new companies amounted to over 235 lakhs and the paid-up capital to over 19 lakhs as against 150 and 14 lakhs, respectively

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in the previous year. The disparity between the authorized and paid-up capital is again very marked. Of the new registrations, 71 companies or nearly 50 per cent were banking, loan and insurance concerns and 48 or 33 per cent were trading and manufacturing enterprises. The number of cotton spinning and weaving mills registered during the year was five, all with their registered offices at Coimbatore. These mills have an authorized and paid-up capital of Rs. 44 lakhs and Rs. 1,76,200, respectively. The registration of these cotton mills and of two ginning factories in the Coimbatore district has in all probability been encouraged by the availability of electric supply from the Pykara project. The increase in the number of registrations of insurance companies is not probably ground for satisfaction. Among the new registrations may be mentioned the Pankaja Mills, Limited, with an authorized capital of Rs. 12 lakhs, Sri Ramalinga Choodambigai Mills, Limited, and the Standard Cashew Company, Limited, each with an authorized capital of Rs. 10 lakhs, Dhana Lakshmi Mills, Limited, with an authorized capital of Rs. 9 lakhs, Sri Venkatesa Mills, Limited, and the Raja Lakshmi Mills, Limited, with an authorized capital of Rs. 7 and Rs. 6 lakhs, respectively, and the Vibro Piling Company (India), Limited, with a capital of Rs. 5 lakhs.

20. *Mining operations.*—The following prospecting licences and mining leases were granted during the calendar year 1932:—

	ACRES.
Twenty-eight prospecting licences for prospecting for barytes over an area of	1,204.62
Four prospecting licences for prospecting for mica over an area of	109.12
Two prospecting licences for prospecting for galena or lead ore over an area of	48.53
Two prospecting licences for prospecting for asbestos over an area of	347.47
One prospecting licence for prospecting for barytes and yellow ochre over an area of	325.67
One prospecting licence for prospecting for barytes, iron ore and manganese over an area of	80.20
One prospecting licence for prospecting for lead, zinc and barytes over an area of	16.00
One prospecting licence for prospecting for kaolin and yellow ochre over an area of	6.00
One prospecting licence for prospecting for china clay over an area of	2.00
One prospecting licence for prospecting for steatite over an area of	27.50
One prospecting licence for prospecting for calcite over an area of	23.68
Three mining leases for mining mica over an area of	9.57
Two mining leases for mining white clay over an area of	7.89
One mining lease for mining lime stone over an area of	452.60
One mining lease for mining steatite over an area of	64.81

	ACRES.
One mining lease for mining barytes over an area of	49.95
One mining lease for mining garnet sand over an area of	2.43
One mining lease for mining yellow ochre over an area of	8.00
One mining lease for mining metal and gravel over an area of	6.95

Mining was carried on during the period under review in the districts of Cuddapah, Kurnool, Nellore, the Nilgiris, Salem, Trichinopoly and Vizagapatam.

21. *Manganese.*—The mining of manganese was carried on in the district of Vizagapatam only. In the Bellary district, no mining was carried on during the year, the gradual decline in the output of manganese from that district from 10,535 tons in 1929 to 3,460 and 44 tons in 1930 and 1931 respectively having foreshadowed such an eventuality. The output of the mineral in the Vizagapatam district rose from 5,389 tons to 8,049 tons in the year, an increase of nearly 50 per cent, although it was still far short of the quantity mined in the previous decade. The falling off in the production of manganese in this Presidency is attributable to the world-wide depression in the iron and steel industry and the competition of the cheaper Russian product. Exports of the mineral during the year amounted to 14,450 tons valued at Rupees 2,17,450.

22. *Magnesite.*—The output of magnesite during the year increased from 4,978 tons to 13,492 tons and the value of the mineral raised from Rs. 21,540 to Rs. 64,482. Exports showed a slight improvement during the period under review owing partly to the preferential treatment accorded to Indian magnesite entering the United Kingdom, exports to this market showing an increase in value from Rs. 78,590 to Rs. 1,33,029. Exports to the United States of America also increased from Rs. 41,295 to Rs. 96,507 and those to Germany from Rs. 19,000 to Rs. 33,650, but exports to the Netherlands declined in value from Rs. 1,32,775 to Rs. 57,625, and to Belgium from Rs. 52,350 to Rs. 21,375. Sales of various grades of the material within India improved slightly, especially in the grade of magnesite used in the manufacture of epsom salts, but are stated to be handicapped by high railway freights.

23. *Mica.*—The demand for mica continued to be restricted and this was reflected in the closure of several mines and the determination or relinquishment of leases. The output of the mineral during the year advanced by about 65 tons to 490 tons. Exports during the year amounted to 6,112 cwt. valued at Rs. 5,48,936 as against an average export of about 11,600 cwt. valued at about 14 lakhs of rupees during the years 1926-27 to 1930-31. The United Kingdom is the principal importer.

24. *Barytes.*—The output of barytes in the Kurnool district declined from 600 to 350 tons, while that in Cuddapah rose by 35½ tons to 1,235 tons valued at Rs. 17,295 as against Rs. 12,000 in the previous year.

25. *Asbestos*.—No work was done in the asbestos mines of the Mysore Asbestos Mines, Ltd., Bombay, nor in the asbestos mines of Lingala. Consequently there was no output of the mineral during the year.

26. *Phosphatic-nodules and Gypsum*.—The output of the former advanced by nearly 14 tons to nearly 121 tons while that of the latter increased from about 4 tons to about 76 tons. The demand for gypsum is likely to increase considerably when the new cement factory now under construction in the Coimbatore district commences manufacturing operations.

27. *Cotton*.—The area sown with cotton between April 1932 and March (25) 1933 is estimated at 1,976,100 acres representing a decrease of 11 per cent from the finally recorded area of 2,228,340 acres of the previous year. The yield (estimated) was 411,600 bales as against 428,100 bales of 400 lb. lint. The quantity and value of the exports of cotton are shown below:—

Year.	Quantity.	Value.
	TONS.	RS.
1930-31	21,167	163.96
1931-32	12,264	72.90
1932-33	10,514	69.80

There has been a gradual decrease in the value of shipments of raw cotton though in the year under review the fall was only 4 per cent as against 55 per cent in the previous year.

The price of cotton fluctuated but at the end of the period under review was standing at a low level.

28. *Cotton mills*.—There were 27 spinning and weaving mills at work with, as far as can be ascertained, 794,564 spindles and 5,554 looms. Four new cotton mills were under erection during the period under review. The mill production of yarn during the year rose by 16.84 million pounds or 19.5 per cent, i.e., from 86.12 million pounds to 102.96 million pounds, whilst the production of cloth advanced by 1.73 million yards or 2.5 per cent, i.e., from 68.82 million yards to 70.55 million yards. The period under review was a difficult one for cotton spinners. Japanese competition was severe, especially in the higher counts and dealers at times when placing orders were almost certain of making a loss. Cotton prices throughout the period were high in relation to yarn prices and at no time did the latter touch the level of the previous year. During the latter part of the year the spinning and weaving mills, without exception appeared to be suffering acutely from the prevailing trade depression which was intensified by heavy importations at uneconomic prices of cotton cloth and yarn from Japan resulting in heavy accumulation of stocks in all the main markets of India, and it was becoming apparent that unless an improvement set in, most of the mills would have either to restrict production or reduce wages.

29. *Hosiery mills*.—There were eleven large factories working during the period as against twelve in the preceding year; the production in 1932-33 was 923,743 lb. or 248,791 dozens as against 670,013 lb. or 171,966 dozens in 1931-32. The industry is said to have become unprofitable owing to the keen competition both internally and from Japan. If, however, an increased measure of protection could be afforded to local manufacturers, it should be possible for the industry to be developed on profitable lines.

30. *Madras handkerchiefs*.—Exports of Madras handkerchiefs increased to Rs. 36.30 lakhs during the year under review which was a fairly satisfactory one from a supplier's point of view inasmuch as the weaving districts were well employed for the greater part of the period and remunerative rates were secured by them for their products. Unfortunately these conditions induced overproduction and as produce prices on the West Coast of Africa declined considerably towards the end of the year, prices sagged and stocks began to accumulate with the result that at the end of the year there was a lack of demand and weaving districts were very quiet. It is estimated by one of the exporting houses that an oversupply of about 40 per cent was produced during the last six months of the year and as there are heavy stocks both at Manchester and on the West Coast of Africa, it may take some time for these to be worked off, although in view of the present tendency for commodity prices to rise, it is hoped that before long, there will be a revival in demand for Madras handkerchiefs.

31. *Jute mills*.—There were three jute mills at work in the Presidency during the year, i.e., at Nellimarla, Chittivalsa and Guntur, the mill at Ellore being closed throughout the period under review. The number of looms and spindles in the mills at work was 830 and 18,428 respectively as against 941 and 20,760 in the preceding year. The jute industry continued to be in a state of depression, and this was reflected in a decline in the average daily number of persons employed in it during the year.

32. *Tanning industry—General*.—The tanning industry continued to suffer severely during the period under review from the world-wide depression in trade and prices remained at a low level. At the end of the year, there were heavy stocks awaiting disposal in London. The exports declined further by 911 tons to 13,649 tons or 6.3 per cent in weight and by 45.52 lakhs or 9.6 per cent in value to Rs. 430.76 lakhs. Prices of raw hides and skins, particularly hides, were extremely low and tanners contend that as railway freight charges have not been reduced, they are out of all proportion to the value of the goods. As an outcome of the Ottawa Conference, Great Britain imposed import duties on the production of Continental tanners and as a result, Indian tanners and leather finishers have now a much brighter prospect of marketing finished leather in England than has been the case hitherto.

33. *Tanned hides*.—During the first three months of the year under review, prices for prime Bangalore hides receded rapidly from about 14 *d.* to 11 *d.* This latter price was reached about the middle of June, and the outlook was so uncertain that it was felt that drastic measures should be taken to prevent an utter collapse in prices. This view was also held by a number of prominent importers in London and, consequently, a meeting of all those interested in the leather trade, including tanners, merchants and shippers was held in Madras when minimum selling prices were fixed and a strong recommendation to tanners to curtail their production was made. As a consequence of this meeting, a certain amount of confidence was established and, coupled with the usual improvement in the seasonal demand and possibly with the effects of the duty imposed on finished leathers of foreign origin imported into the United Kingdom, prices rose by about 1½ *d.* per lb. reaching the maximum in October. After this date, there was a reaction and since shipments continued on a fairly large scale, it appeared likely in January that the minimum prices fixed in the meeting held in June could not be obtained. A further meeting was then held and a committee formed with the object of impressing upon tanners the absolute necessity of curtailing their output. This meeting created some confidence in the minds of buyers in London and from that date, until the end of the year, prices have ruled fairly steady and, in the case of light-weight hides, slightly increased prices have been obtained. Owing to the general depression and the lower purchasing power, there has been a heavy demand for hides of low selection and prices for these have remained firm, notwithstanding the fall in prices of the better grade hides. During the last six months of the year under review prices for tanned hides fluctuated within narrow limits and consequently those tanners who were careful in their purchases and economical in the working of their tanneries should, at any rate, have suffered no loss.

34. *Tanned sheep skins*.—Owing to the restricted demand prices fell rapidly until the beginning of August, when owing to the smaller quantities coming forward and the seasonal demand, prices advanced and improved still further in the months of September and October. This advance, however, was not maintained in the public sales which took place in December and there was a slight reaction. Encouraged by the comparatively favourable prices realized in the October auctions, tanners put large quantities of sheep into work, and, as a consequence of this, offerings in the January auctions were considerably increased and, as is usual, in the January sales, prices fell very rapidly, some of the prime tannages depreciating by as much as 9 *d.* per lb. This fall in prices continued until the close of the period under review.

35. *Tanned goat skins*.—Here again prices fell during the first three months of the year, but since there was very little buying by raw goat skins shippers, prices of raw goats also fell rapidly, and since it appeared to be profitable to tan goats rather than sheep, shipments of tanned goats were increased. In spite of the increased

number offering, however, prices advanced in August and October, and although there was a slight fall in prices of tanned goats in the January auctions, this did not amount to more than 3 *d.* to 4 *d.* and this fall was checked in the March auctions.

36. *Tanned cow calf*.—There was a very poor demand for these throughout the year, although during the months of February and March, a slightly better demand was experienced. Prices ruled very low indeed, so much so, that quantities fell off, and arrivals of dry calf skins in the Cawnpore and Northern India markets became very small indeed, since it barely paid to collect the raw skins from the outlying districts.

37. *Tanned buffalo calf*.—There was a small and steady demand throughout the year for these and they remained relatively high in price as compared with cow calf. Supplies were on a smaller scale.

38. *Finished leather manufacturing*.—Owing to the trade depression and the decreased purchasing power of the public, trade has been very restricted and the demand has been almost entirely for the very cheapest types and selections of leather. The competition caused by the importation of cheap Japanese shoes has been seriously felt. On account of the Ottawa preferences, there has been more enquiry for upper leathers, such as box-sides and glace kid from the United Kingdom and it appears likely that this business may develop in future.

39. *Reptile skins*.—Shipments of reptile skins, particularly lizards, were very much smaller in the period under review than in the previous year. This is due, in the first place, to the very heavy losses suffered by reptile skin tanners on shipments of rattlesnake skins which left them so financially crippled that they were unable to invest their money in lizard skins. In addition to this, owing to the good demand, particularly from the Continent, raw skin prices increased far more rapidly than tanned skin prices leaving the tanner no margin of profit.

40. *Oil seeds—Groundnuts*.—The area and yield of groundnuts have been estimated at 3,494,100 acres and 1,631,200 tons as against 2,707,500 acres and 1,234,250 tons respectively in the preceding year. The increase of about 30 per cent in the area and yield is attributable to the better tone which prevailed in the market at the time of the sowing season. Exports of groundnuts to foreign countries fell from 495,911 tons valued at Rs. 714.75 lakhs in the year 1931–32 to 349,962 tons valued at 559.88 lakhs during the period under review, representing a decline of 29 per cent in quantity and 22 per cent in value. Shipments of groundnuts formed 91 per cent of the total trade in seeds as against 93 per cent in the previous year. The falling off in the demand for groundnuts and the decline in the price during the year under review is attributable not only to the trade depression, but to the world over-production of oil seeds, and the increased number of sources of oil of a similar type such as palm oil, soya-bean oil, as also whale oil, the supply

of which has been increasing rapidly in recent years. Even at the low prices that prevailed during the year under review, the competition of soya-bean and whale oil on the Continent was very severe, and Germany, amongst other countries, increased largely the import of these products at the expense of groundnut kernels. With a view to assisting the dairy farmers in Germany, the German Government decreed during the year that a certain quantity of locally produced butter should be used in the manufacture of margarine and this resulted in an increase in the price of margarine and a corresponding fall in its consumption.

41. *Castor*.—The area under castor is estimated at 333,600 acres as against 324,300 acres, and the yield at 34,700 tons as against 33,000 tons in the preceding year. The exports of castor seed by sea fell from 33,407 to 33,107 tons in quantity, but increased from 47.57 lakhs to 49.01 lakhs in value, the seed realizing somewhat higher prices during the period under review.

42. *Gingelly*.—The area sown with gingelly is estimated at 306,400 acres as against 757,200 acres in the preceding year. The yield has been estimated at 106,500 tons as against 96,510 tons in the previous year. Exports of the seed by sea increased from 10 tons valued at Rs. 1,845 to 56 tons valued at Rs. 9,003.

43. *Oil milling*.—There was a reduction in the output of coconut oil on the West Coast, owing to the scarcity of copra resulting from the damage done to the coconut trees by the cyclone in May. There was a large influx of coconut oil from Ceylon which owing to its cheapness has almost displaced Malabar coconut oil in the various markets. Imports of coconut oil into the Madras Presidency were small prior to the year 1931-32 but they increased to a marked extent during the year under review, whilst the All-India imports of Ceylon coconut oil are rapidly expanding. It is probable that the rapid increase in the imports of coconut oil during the last few years, despite the general depression in trade, can only be accounted for on the assumption that it is replacing for edible purposes other vegetable oils such as groundnut. There seems to be sufficient ground therefore for curtailing the imports of Ceylon coconut oil by the enhancement of the duty and assisting in this way (i) to develop the Indian oil-crushing industry and (ii) to create an increased internal demand for the vegetable oils of the country and as a corollary to maintain their price. The price of coconut oil declined during the year. Castor and gingelly oil also declined in price, though on the other hand, the price of groundnut oil was maintained at a slightly higher level than in the preceding year.

44. *Essential oils*.—The exports of essential oils amounted to 43,144 gallons valued at Rs. 4.22 lakhs. The Kangundi Industrial Works, Kuppam, for whom the Mysore Government are the sales agents, continued to distill sandalwood oil. They are also preparing patchouli oil as well as a few other essential oils. Mr. J. Prioris has stopped the distillation of geranium oil at Yercaud,

but it is understood that he proposes to commence operations in the Nilgiris. The distillation of lemon grass oil and of eucalyptus oil continued to be carried on but the prices obtained for the latter were very poor. A gentleman in Malabar raised a large crop of vetiver root on one of his estates and samples have been sent to a French firm whose report had not been received by the end of the year.

45. *Cashewnut industry*.—The market for kernels was unfavourable during the year, owing to the falling off in the demand from America and the lower prices ruling, as a consequence of which roasting operations were somewhat restricted. As stated in the last year's report, the deficiency in the quantity of raw nuts locally available has to be made good by the importation of African nuts which come into the market from December to April when the Indian crop is exhausted. As a result of a representation received from the cashewnut manufacturers which was strongly supported by the department and recommended by the Local Government, the Government of India in August issued a notification exempting raw cashewnuts from the whole of the customs duty leviable thereon. The concession will be of great benefit to the industry which has considerable potentialities of further development when conditions become more normal. The export of cashew shell oil from Mangalore continued during the year and, as stated elsewhere in this report, experiments on the roasting of cashew kernels with a view to the extraction of oil in a purer form were carried on at the Kerala Soap Institute, Calicut.

46. *Sugar industry*.—The area under sugarcane is estimated at 125,220 acres as against 116,105 acres in the preceding year. The imports of sugar declined from 79,120 tons valued at Rs. 124.05 lakhs to 55,313 tons valued at Rs. 62.09 lakhs. There was thus a fall in value by nearly 50 per cent. Imports of Java sugar decreased by 57 per cent, though on the other hand imports of sugar from the United Kingdom rose from 4.44 lakhs to 10.82 lakhs, an increase of 144 per cent. The considerable decrease in the imports of sugar may be attributed to the increasing outturn of Indian sugar mills and to the reduced purchasing power of the public.

As a result of the recommendations made by the Indian Tariff Board, the Sugar Industry (Protection) Act of 1932 was passed in April of the year under review whereby the industry was accorded protection for a period of fifteen years ending 31st March 1946. The rate of import duty on sugar of all classes has been fixed at Rs. 7-4-0 per cwt. for the first seven years and the extent of protection for the remaining eight years is to be determined after another enquiry to be held before 1938. In addition to the import duty of Rs. 7-4-0 per cwt. there is at present a surcharge of 25 per cent. The sugar industry in India thus at present enjoys protection to the unprecedented extent of approximately 200 per cent. Consequent on the high degree of protection afforded the industry, a

great deal of public interest was concentrated during the year on the setting up of factories for the manufacture of sugar in the Madras Presidency. The Presidency is one of the most suitable parts of India for sugarcane cultivation and as the area under sugarcane gradually expands, Madras should become increasingly self-supporting in the matter of its supplies of sugar. The sugar requirements of the Madras Presidency could, it is estimated, be met by bringing in an additional extent of 35,000 acres under sugarcane cultivation and this would postulate the setting up of 20-400 ton sugar factories or a larger or smaller number of factories according to their capacity. Attention was concentrated during the year on stimulating the establishment of a few factories in suitable areas and already it is possible to record some progress in the development of the sugar industry in the Madras Presidency as a result of the efforts of the department. A company has been formed to set up a sugar factory at Hospet in the Bellary district with an initial crushing capacity of 400 tons of sugarcane per day with provision for increasing, if found necessary later, the initial capacity by 50 per cent. A factory with a capacity of 50 tons per day is being set up at Ettikopaka in the Vizagapatam district by Rao Bahadur C. V. S. Narasimha Raju, an ex-President of the Madras Legislative Council. A 50-ton plant on co-operative lines is also being started at Thummapala in the Vizagapatam district, whilst the machinery for a 150-ton factory in the East Godavari district has been ordered. The question of setting up factories in certain other areas of the Presidency, e.g., at Kallakurchi, South Arcot district, and Udumalpet in the Coimbatore district was also under investigation at the end of the year. Various methods of financing the further development of the industry are under consideration. In the case of the smaller growers of cane they are being encouraged to join together and form themselves into co-operative sugar manufacturing societies. There appears to be considerable scope for the development of the sugar industry in this province on co-operative lines, loans for sugar factories being raised from the Central Banks on the security of the land on which sugarcane is raised and the plant and buildings. It has been recognized by the department that in view of the development of the industry which is in progress or in contemplation, arrangements should be made for the training of the sugar technologists, chemists and engineers that will be required by the considerable number of factories which are likely to be set up in the Madras Presidency during the course of the next few years, and since the close of the year, arrangements have been made by the authorities of the Indian Institute of Science, Bangalore, to institute a course in Chemical Engineering with special reference to sugar technology. Arrangements were also under consideration for the institution of a course in sugar technology at the Andhra University.

47. *Soap industry.*—Imports of all classes of soap into the Madras Presidency increased from 2,088 tons valued at Rs. 15.52 lakhs to 2,263 tons valued at Rs. 16.43 lakhs. The industry made

a further advance during the year and several factories were started by ex-students of the Kerala Soap Institute, e.g., in Madras, Kuppam, Madura, Trichinopoly, Hospet, Bellary, Rajahmundry as also in several places in Malabar. The soaps turned out by the ex-students are of a satisfactory quality but owing to their limited financial resources, the development of some of these small concerns has been restricted. The Tata Oil Mills Company, Limited, Ernakulam, considerably increased their output of washing soaps and have recently placed on the market several brands of toilet soaps. The soap industry in India has been less affected by the economic depression than most industries, and the further expansion of the industry may confidently be predicted with the gradual increase in population and rise in the standard of living.

48. *Coir.*—There was a falling off during the year in the exports of Calicut coir yarn and also, but to a less extent of Cochin yarn, of which there is a much larger production. Prices of the cheaper yarns have again marked lower levels and the low price is affecting the volume of production. An attempt might well be made in Malabar to produce the thinner and more evenly twisted yarns for which better prices and a more uniform demand are forthcoming. There has been a good demand for manufactured coir although prices have been depressed by the very strong competition between the shippers. The quality of the manufactured coir goods, particularly matting, improves year by year and has now reached a high standard.

49. *Saw mills and timber.*—Kallai is the chief centre of the timber trade of Malabar and South India and four saw mills are located there. From time immemorial, Arabs have been among the chief buyers of Malabar timber, especially teak. They come to Calicut in their dhows bringing dates and other products and return laden with timber and the agricultural produce of Malabar. The timber industry on the West Coast during the year under review continued to suffer seriously from the universal economic depression. The Public Works Department and local bodies, as well as private business houses, curtailed their expenditure on buildings to the minimum, with the result that the demand for building timber was very restricted, whilst less timber than usual was sold to Arab traders. The demand for those commodities which are packed in country-made boxes was also at a low ebb with the result that fewer packing cases were ordered than is usually the case. The Bombay and Karachi markets suffered severely from the competition of Burma teak and Saigon teak which were put on the market in these centres at a very low price. There were one or two consignments of rosewood logs sent to Europe, but this section of the timber business appears to be more or less extinct, rosewood having apparently gone out of fashion.

50. *Tiles.*—The tile industry is one of the most important on the West Coast and looms large in the economy of the area. The quality of the tiles made in Malabar or South Kanara is on the

whole excellent and they are largely exported to Burma, Ceylon and other places. The industry experienced a difficult year owing to the restricted demand and low level of prices and there seems little prospect of any appreciable improvement in the industry until there is a general trade revival with renewed activity in building operations. The industry has also been affected to some extent by the advent of reinforced concrete construction. The demand for export revived to some extent during the year but the Indian demand generally was unsatisfactory. Prices fell still further and competition was keener than in the preceding year. The allied industry of glazed pipe manufacture experienced a setback during the year owing to the introduction into the Madras Presidency of pipes from the United Provinces and Bengal. At the instance of the department, the South Indian Railway authorities agreed to charge, with effect from 1st November 1932, a special rate of As. 6-9 per maund in the case of pipes, n.o.c. or mixed consignments of pipes, n.o.c. and tiles common (roofing or flooring), at owner's risk from Feroke to Madras (via Jalarpet).

51. *Manure industry*.—The progressive diminution in the demand for locally manufactured fertilizers that was noticeable during the previous year continued during the period under review and the output of the factories was curtailed. Rubber was out of the market and tea also to a very great extent, as tea estates purchased manures only in special instances with a view to supporting specially weak areas. Coffee maintained its buying power for manures on its usual scale and as far as the planting industries are concerned, it may be said that coffee alone represented an output for manures during the period under review. On the other hand the import trade in manures was active despite the low prices of agricultural produce which ruled throughout the year and sales of fertilizers—chiefly sulphate of ammonia—have never been so good in South India, not even excepting the year 1929 which hitherto had been the best experienced. What makes the increased use of chemical fertilizers by ryots even more remarkable is that the majority of them have been purchased for paddy cultivation.

52. *Chemical industries*.—The local chemical manufacturing industry continued to suffer during the year from the effects of the world trade depression and as a result output was curtailed. Imports under the head 'Chemicals and Chemical Preparations,' however rose by Rs. 3.59 lakhs to Rs. 37.75 lakhs. There was a good demand for imported chemicals for use in the manufacture of soap and matches.

53. *Match industry*.—The indigenous industry now supplies the full requirements of matches in South India, imports having ceased. The general economic depression has, however, curtailed consumption though at the same time it has encouraged the production of cheaper qualities of matches. At one time white splints, whiter than anything that could be produced from trees grown in India, were insisted upon by the consumer, but during the year, the attraction of a cheaper price has overcome the prejudice to a

certain extent. This, of course, creates a better demand for locally grown timber of which there are abundant supplies in certain localities and these forests are being utilized by all factories, large and small. A feature of the industry is the steady growth in the number and output of what are generally described as cottage factories. A number of special factories on a more or less industrialized scale producing splints and veneers only for match-making have come into production, and a greater number of so-called dipping factories have come into existence. The result of this has been very much keener competition, partly amongst the products of the cottage industry inter se, but also to quite a considerable extent, between the products of the cottage industries and those of the large industrial concerns such as the Western India Match Company, Limited, and the Malabar Match Manufacturing Company, Limited. The result of this active competition from cottage industries employing cheap labour has been a continued reduction in selling prices which in many instances have reached the level of bare cost.

54. *Cigar industry*.—The Indian cigar industry suffered severely during the year owing to the general depression which resulted in a demand for cheaper grades of cigar than in the past. This has resulted in a distinct falling off in the use of imported tobaccos for blending purposes and in the use to a larger extent of Indian tobacco in cigar-making. Prices for raw tobacco continued to rule on the low side and it is believed that the production of tobacco suitable for cigars has been considerably reduced as a result of the low prices which are obtainable for leaf used in cigar-making. Indian cigars are sold to a limited extent in the United Kingdom, but if an increased preference could be given on cigars made in India, there would be distinct possibilities of developing an extended business in this market.

55. *Aluminium utensil industry*.—The demand for aluminium ware fell off considerably during the year as a result no doubt of the very low price of brass and copper compared with the cost of the light metal. In 1913, with the London price of copper at £70 per ton, aluminium sheets cost 12 annas per pound to import into India duty paid, whereas in 1932-33 copper was about £35 per ton and aluminium cost As. 14-6 per pound. It will be apparent therefore that a recovery in the aluminium utensil industry cannot be hoped for unless the price of copper is doubled or the price of aluminium reduced by about 60 per cent. The small demand for aluminium utensils has greatly increased the cost of manufacture and the keen competition for the little business offering has led to the fixing of unremunerative prices. Attempts have been made to obtain co-operation between manufacturers in India in order to curtail production and to raise prices so as to increase the margin between the cost of the metal and the selling price of the finished products, but efforts in this direction have failed and as prices realized remain below the cost of production, the immediate outlook for the trade is not a hopeful one.

56. *Pepper.*—The pepper crop is harvested approximately from the month of November to April inclusive. There was a bumper crop. In November the price for pepper of export standard was Rs. 32 per cwt. f.o.b. and it gradually fell to Rs. 21-4-0 in March, though it has since risen to Rs. 25. Prices have been definitely much below those of last year and it is necessary to go back as far as 1922 to find a price as low as Rs. 24. The export trade was affected owing to the disorganization of foreign exchanges, and also to the fact that other pepper varieties such as Lampung grown in the Far East were marketed at much cheaper prices than the Malabar produce.

57. *Tea industry.*—There was an increased export of tea during the year owing to the large demand from the United Kingdom, which imported 50 million lb. valued at Rs. 428-5 lakhs as against 43 million lb. valued at Rs. 368 lakhs in the previous year. Prices, however, ruled very low and with the exception of a few fortunately situated estates, most estates in South India probably failed to cover costs during the year under review. The negotiations in connexion with the regulation of tea exports by the three chief tea-producing countries had the effect of improving prices slightly towards the end of the season. There is a general feeling in the industry that the enforcement of the export regulation scheme by the Governments of the countries concerned will improve the prices obtained for export teas. Prices for teas sold in India are considered likely to fall owing to the increased amount of tea thrown on the local market.

58. *Coffee.*—The official year ending 31st March covers two crop periods. Coffee is harvested approximately from December to April inclusive in all producing districts except the Nilgiris where the period is approximately November to June inclusive. The crops were below the average in quantity but the quality was generally good. East India coffee has been fortunate for the greater part of the period in securing prices which have been favourable in comparison with similar mild coffees from Central America and Kenya. The general level, however, has shown a distinct decline in comparison with the previous season owing to poor export demand. A considerable proportion of the South Indian coffee crops have had to be forwarded for consignment sales in London. Good quality coffee has sold well in London. The index of the East Indian market is the Mangalore price. At the beginning of the season, plantation coffee assortment was sold at Mangalore at about Rs. 55 cured ex-bags. The market gradually fell away until in April the price touched Rs. 40. Subsequently, there was a recovery to about Rs. 50. The consumption of the Indian crop in India has increased considerably as a result of the prohibition of the importation of raw coffee from other countries into India owing to the necessity of preventing the introduction of the *Stephanoderes* pest which, once introduced, would gradually destroy the indigenous crop.

59. *Rubber industry.*—With the exception of a few estates turning out crepe rubber suitable for soleing purposes, practically all estates remained closed down and ceased tapping, and no work was done beyond the necessary protection against fires and care of buildings and stores. If this state of affairs continues for any considerable time longer, the expert Indian tanner who has been so much in demand in the past in Malaya, Ceylon and India will cease to exist in this country. With suitable protection for the Indian boot and shoe industry and with a moderate tariff on imported rubber soles, there seems no reason why India itself could not absorb a considerable proportion of its own rubber production and thereby save a valuable industry which would afford employment for a considerable body of labour.

60. *Ottawa Trade Agreement.*—Under the United Kingdom Import Duties Act, 1932, a general duty of 10 per cent *ad valorem* was imposed on all goods that entered into the United Kingdom with certain exceptions, the British Government having also been empowered to impose, if necessary, additional duties on the recommendation of an Advisory Committee. Goods produced or manufactured in the Dominions or India were not, however, to be subject to this duty or any additional duty up to the 15th November 1932, after which date the British Government would have been free to impose such duties on these goods or products also, unless the Dominions or India had within that period entered into a trade agreement with Great Britain. The Imperial Economic Conference held at Ottawa in July was attended by a delegation representing India and at the Conference, the question of whether, having regard to the new tariff policy of His Majesty's Government in the United Kingdom, Great Britain and India should enter into a tariff agreement embodying a reciprocal preferential regime so designed as to benefit the trade of both countries, was considered and discussed. Subsequently a trade agreement was reached between the United Kingdom and the Government of India and this agreement was ratified with slight modifications by the legislatures of both countries. As far as Madras was concerned, the proposal that Great Britain and India should enter into a tariff agreement embodying reciprocal advantages commended itself on manifest grounds of expediency, since Madras has a favourable balance in her trade with Great Britain and the latter country is by far the best customer which the Madras Presidency possesses, taking 32 per cent of her total export trade. Moreover it is probable that the favourable balance of Madras in her trade with Great Britain will tend to increase rather than decrease in the future as India gradually becomes more self-supporting in manufactures. The Madras products which, in the absence of a trade agreement, would have been admitted free of duty into the United Kingdom, are few in number and small in value, whereas the volume and value of the trade that would, in such circumstances, have been exposed to discrimination, are very large indeed. As a result of the trade agreement reached at Ottawa, Madras is given free entry in respect of an overwhelming

proportion of her exports to Great Britain whilst the duty on similar non-Empire goods is 10 per cent or even higher, the principal commodities affected being cotton manufactures, coir manufactures, carpets and rugs, jute manufactures, tanned hides, tanned skins, non-essential vegetable oils, sandalwood oil, oilseed cake and meal, rice, groundnut, coffee, tobacco, tea, spices, castor seed, bran, rice meal, teak and other hard woods, magnesite, granite and magnesium chloride. There are further a number of items in India's export trade with Great Britain, such as raw jute, myrabolams, broken rice, mica, Indian hemp, etc., where any important competition from outside the Empire takes the form of indirect competition from substitutes and in regard to these, free entry into the United Kingdom is continued under the agreement. It is too early to judge of the effects of these preferences but, under normal conditions, the benefits accruing to the Madras Presidency should be by no means inconsiderable. For instance, the preference of 10 per cent which India has secured on the imports of Indian groundnuts into the United Kingdom should result, if full advantage is taken of it, in increased exports to the United Kingdom and the preference may prove to be especially valuable at the present time when Continental purchases of Indian groundnuts are restricted. Then again, the question of whether an export trade in unrefined groundnut oil could not be developed with Great Britain with the aid of the preferential tariff is one that is worthy of close investigation and shortly after the close of the year the matter was taken up with the Indian Trade Commissioner in London. The coir industry should also benefit considerably as coir manufactures of other than Empire origin are subject to a duty of 10 per cent *ad valorem* and coir mats and matting to a duty of 20 per cent *ad valorem*. Woollen carpets and rugs should also benefit as they are admitted free, whereas similar goods from foreign countries have to pay a specific duty of 4s. 6d. per square yard in the case of hand made carpets and rugs, etc. Foreign magnesite entering the United Kingdom is subject to an *ad valorem* duty of 10 per cent and as imports from India are under the agreement admitted free of duty, a gradual increase in the demand for Indian magnesite in the United Kingdom may be hoped for. It is very desirable that the preferences granted should be taken full advantage of, by developing the manufacture in this country of goods enjoying the preference, for which facilities exist in this country. As a case in point, the United Kingdom imports large quantities of fruit and fruit products whilst facilities exist in this Presidency for developing the manufacture of certain fruit products. At the instance of this department, the Indian Institute of Science has initiated experiments in regard to the manufacture of fruit products from citrus fruits and on the dehydration of fruits.

CERAMIC INDUSTRY.

611 During the year under review, the survey of the ceramic possibilities of the districts of Guntur, Ramnad and Tinnevely

was carried out but it was not found possible for the Ceramic Assistant to survey the districts of Chittoor and the Nilgiris within the year. The major portion of the period under review was spent by the Ceramic Assistant in the examination and testing of the raw materials collected from the districts surveyed. The services of the Ceramic Assistant were terminated with effect from 1st April 1933 as a measure of retrenchment. A large number of borings were put down in the course of the year in selected localities all over the Presidency, in order to ascertain the extent of the more promising clay deposits below ground level. The results of these borings have been tabulated and added to the report of the Ceramic Assistant—as an appendix. With a view to ascertaining their commercial value, the specimens of raw materials collected in the course of the survey were subjected to chemical analysis and the results have been included in the report. The Ceramic Assistant also determined the physical properties of the samples collected, i.e., their plasticity, fusibility, colour after firing, percentage of contraction from wet to dry and after firing, percentage of clay substance and impurities in them, etc. Different types of ceramic bodies were also blended with the raw materials collected and a few articles were glazed and exhibited in the Park Fair Exhibitions of the last two years where they attracted considerable attention. The position and potentialities of the tile industry of the West Coast and the problems with which it is confronted were investigated by the Ceramic Assistant and discussed in his final report. The following investigations amongst others were also carried out by the Ceramic Assistant during the period of his employment in the department:—

(a) Over a dozen different samples of clays sent by the Jeypore Samasthanam were examined and glazed articles made out of the clays were sent to the Raja Sahib. As a result of the investigation, a tile factory is now under construction in Jeypore, Vizagapatam district.

(b) A few samples of clays collected from the Pedapavani Estate near Kavali in Nellore district were examined and glazed articles manufactured therefrom. The Raja Sahib visited the experimental station and now contemplates opening a ceramic factory on his estate.

(c) Experiments were carried out for M.R.Ry. Rao Sahib A. K. Ranganatham Avargal, who carries on the manufacture of bricks near Madras, with the clays collected from his brick fields. The results were successful and arrangements are now in progress for the manufacture of Mangalore tiles in his brick works.

(d) The Ceramic Assistant examined some clays from the Banganapalle State and made some experimental articles out of them.

(e) A fire brick-kiln was built by the Ceramic Assistant for the East India China Clay Co., at Nellikuppam, South Arcot district.

(f) The Ceramic Assistant selected a suitable fireclay deposit near Madras for use by the Jamal Glass Works, Madras, in their furnace construction work.

(g) The Patel Biscuit Co., Madras, had to suspend work on account of leakage in their biscuit oven and a special cement mixture was supplied to stop the leakage.

(h) The Andhra Pottery Co., Nellore, sent a sample of white clay which was examined and found to be eminently suitable for the manufacture of high grade porcelain.

(i) A special short course in elementary ceramics was arranged at the request of Miss M. F. Prager, Inspectress of Girls Schools, for about a dozen school teachers, at the Experimental Station, Madras. The course included both practical potting, viz., modelling, mould making, casting, shaping of clay ware in the potters' wheel and lectures in ceramic technology, including a lantern lecture describing how porcelain is made in England. The Inspectress and the teachers who received training in the subject propose to introduce pottery in schools, and eight potters' wheels have been supplied for the purpose.

62. The following raw materials for the ceramic industry were identified by the Ceramic Assistant and considered by him to be eminently suitable for use in the building up of the ceramic industry in this country:—

(i) China clay, plastic clay, fireclay, and a number of other types of clay which should find a wide use in the industry.

(ii) Rocks rich in felspar, white pegmatite, green pegmatite, granite rocks of different varieties.

(iii) Flint and sand.

(iv) Gypsum.

China clay is found in large quantities in many parts of the Presidency, e.g., in the districts of Vizagapatam, Guntur, Nellore, Chingleput, South Arcot, Tanjore, South Kanara, Malabar and the Ceded districts and as it is the principal raw material in several of the ceramic industries, the location of deposits of the material in the Presidency and the determination of the commercial value of samples derived from several of these deposits should provide valuable data on which to work upon. India has imported on an average during each of the last four years about 10 lakhs of rupees worth of China clay, and even if ceramic industries are not started for sometime to come, it should be possible, to displace the imported raw material, at least to some extent, by working up suitable deposits and supplying China clay in proper form. Quantities of felspar, which is one of the raw materials of the porcelain industry, are available in the districts of Kurnool, Bellary, Nellore, Chingleput, South Arcot, Salem, Trichinopoly, Madura, South Kanara and Coimbatore. At present this material is used as road metal in some parts of the Presidency and is thrown away as waste in mica mines. Clays which could be

classified as pipe clays occur in East and West Godavari, Kistna, Chingleput, South Arcot and North Arcot, while gypsum occurs in the districts of Trichinopoly and Chingleput.

63. The raw materials collected have given promising results and are believed to be sufficient to supply the needs of a good number of ceramic factories. The Presidency is also rich in the raw materials used to form the true porcelain, the value of imports of which ware (electrical and other kinds) into India have averaged during the last six years, something like 27 lakhs of rupees. In view of the availability of the requisite raw materials in the country and the large quantities of ceramic goods imported—imports of earthenware and porcelain (including pipes of earthenware) into India for the eleven months up to end of February 1933 having amounted to Rs. 45,53,311—there appears to be great scope for the development of the ceramic industry in its various forms.

COTTAGE INDUSTRIES.

64. *Slate industry.*—Since the publication of Mr. Fyfe's bulletins on the manufacture of school slates and the marble industry, enquiries have been received from persons interested in these subjects, but as mere advice without the requisite practical demonstration of the processes of manufacture would not have been of much use, it has been decided to conduct a series of demonstrations at the Government Industrial School, Bellary, in methods of manufacturing and framing school slates and sawing and polishing Cuddapah slabs and granite. To this end, a disc polisher has been constructed locally. Along with this, a miniature rubbing bed has been constructed. A carborandum saw for the purpose of demonstrating the cutting of Cuddapah slabs and similar material and a trimming machine for trimming and sizing the school slates have also been constructed and the necessary demonstrations will be conducted shortly.

65. *Rattan industry.*—A supply of rattan seeds was obtained from the Federated Malay States for purposes of propagation in the districts of South Arcot and Nellore. The seeds did not however germinate in any of the localities tried. As it was thought that the seeds might not have been sown under specially prepared conditions, a further supply of seeds was obtained from the States and distributed to the Agricultural and Forest departments for propagation in South Arcot and Nellore districts respectively with no better results. It was suggested that live clumps, if obtained, might yield better results and the question of obtaining a supply of these was under consideration at the close of the year. The rattan industry is carried on in Madras on a fairly large scale on a cottage industry basis but the methods of stripping the cane adopted by the workers are crude. It has therefore been decided to purchase a machine for the preparation of cane for the

manufacture of furniture on modern lines and to demonstrate its use in the School of Arts and Crafts, Madras, for the benefit of rattan workers, who will be invited to bring their bundles of Singapore or local cane to be split or rounded by modern methods on the machine.

66. *Cottage Industries in certain Foreign countries.*—Miss B. M. Tweddle of the Ikkadu Industrial School who was proceeding to England offered to visit en route certain countries, e.g., Mesopotamia, Persia, Italy and also later on Burma, Assam, Kalimpong, Singapore and other places in order to inspect the indigenous industries carried on there and to purchase samples of the goods produced with a view to their adaptation in the Presidency. Miss Tweddle was given a grant of Rs. 750 for the purpose. After visiting Beirut, Abadan, Bushire, Damascus, Basrah, certain weaving schools in Northern Italy and England, Penang, Singapore, Rangoon, Patna, Manipur, Kalimpong, etc., Miss Tweddle submitted a report and the samples collected by her. These samples which number 85, have been displayed at the Textile Institute and correspondents of aided textile schools in the Presidency have been informed of the fact so that they may examine the samples when they visit Madras and arrange to reproduce the designs in their schools if they consider it advisable to do so.

67. *Experiments in the evolution of hand-operated rice husking, cotton ginning and groundnut decorticating machines.*—As a basis for the provision of subsidiary industries for the agricultural population, every possible avenue in the direction of evolving suitable hand machinery for their use should be explored and Government sanctioned during the year an expenditure of Rs. 450 on experiments in connexion with the evolution of these three semi-domestic appliances, which, if they can be produced cheaply, should lighten ordinary agricultural labour considerably, and add to the earning power of the ryot. These experiments, which are being carried on at the School of Technology, were in progress at the end of the year.

68. *Domestic paddy husk burning furnaces.*—Most of the paddy husk produced in the Presidency is not utilized as fuel, only a small fraction of the available supply being used for raising steam in rice mills. Mr. Adyanthaya was successful in evolving a suitable domestic paddy husk burning furnace which was approved by the Director of Public Health. The economic value of the appliance, which can be adapted with slight modifications for treating other waste products such as groundnut husk, is considerable. Shortly before the end of the year, Government approved my proposal, that fifty steel hearths and fifty wooden models thereof should be manufactured and distributed to the officers of the District Engineering branch and District Health Officers for demonstrating the burning of paddy husk and other similar waste products for domestic use and for instructing village blacksmiths in the manufacture of such hearths for local use.

MANAGEMENT OF MANUFACTURING CONCERNS OWNED BY GOVERNMENT.

69. *Kerala Soap Institute, Calicut—Staff.*—M.R.Ry. A. K. Menon Avargal, B.A., continued as Superintendent of the Institute throughout the year. Mr. Menon continued to be a member of the Indian Oil Crushing Committee of the Imperial Council of Agricultural Research and attended the third meeting of the Committee at Delhi.

70. *Production and Accounts.*—Trade conditions during the year continued to be unsatisfactory, the competition of foreign as well as of indigenous soaps being very keen. The Institute has nevertheless been able to hold its own, for although the total output declined from 278 tons in the year 1931–32 to 251 tons in the year under review due largely to the restriction of output of Washwell soap, the total sales increased in value from Rs. 2,41,698 in the previous year to Rs. 2,44,993 in the year under review. The result of the year's working was a net profit of Rs. 54,150 after allowing for interest charges of Rs. 17,607 on the capital invested by Government in the concern at the rate of 5.48 per cent. The favourable price of raw materials, the increased sales of toilet soaps, the reduction of overhead charges, and the fact that there were no sales of washing soaps to the Military authorities at unremunerative prices all contributed to the satisfactory result of the year's working. It is gratifying to record that in spite of the keen competition experienced from the well known imported brands, as well as from indigenous soaps, there was a substantial increase in the sale of toilet soaps from 44 tons valued at Rs. 1,20,336 in the previous year to 62 tons valued at Rs. 1,46,655 in the year under review. A gross profit was made on the sale of Washwell soaps as against a loss in this variety in the previous year. The sales of Washwell and Vegetol, however, continued to be affected by the putting on the market of an increasing number and quantity of country made soaps at very cheap prices and to the fact that the ordinary consumer of these varieties of soap appears to be attracted more by cheapness than by quality. The sale of Coal Tar soap has steadily increased in spite of the marketing of colourable imitations of the institute products. In response to a demand from the public a new toilet soap styled 'Vep' soap containing the essence of margosa oil prepared in a fine form from the crude oil available in the bazaar was placed on the market during the year and was well received. The sales of the institute's insecticidal and soft soaps have shown a steady increase and should respond quickly to a general improvement in trade. Government departments continued to place orders for Washwell and Coal Tar as well as for some other varieties of soaps. Their Excellencies the Earl and Countess of Willingdon continued to patronize the institute's soaps during the year, whilst

through the efforts of the Agent, the Governor of the United Provinces has been pleased to order a special soap for supply to Government House.

71. *Sales organization.*—Mr. R. C. Dalal continued to act as agent for Malabar, South Kanara, Coimbatore, the Nilgiris and the Mysore State including Bangalore. The business effected by him in the West Coast area was satisfactory, but the sales from other areas in his jurisdiction, especially Mysore and Bangalore, continued to be disappointing. The business done by Mr. Adam Hajee Muhammad Sait, the agent for Madras, Chingleput, South and North Arcot and Chittoor, whom I would like to take this opportunity of congratulating on his appointment to the high office of Sheriff of Madras, was satisfactory if regard be had to the prevailing trade depression and the intensive competition in the Madras market. M.R.Ry. G. Palaniappa Mudaliyar, the agent for Madura, Trichinopoly and Tinnevely, transacted a considerably increased volume of business during the year and showed commendable enterprise in canvassing orders in his jurisdiction. M.R.Ry. K. Raghavendra Rao, Kumbakonam, continued as agent for the Tanjore district and introduced a satisfactory volume of business. Messrs. Rao Sahib P. V. Rangiah and Sons, agents for Ganjam, West Godavari, Kistna, Guntur and Nellore districts, placed an increased amount of business with the institute during the year. Messrs. Devar & Co., Colombo, continued as agents in Ceylon, but owing to the severely depressed state of trade in that island, the volume of business done by this firm showed a slight reduction. The orders placed by Messrs. P. Muncherji & Co., Bombay, showed a substantial increase owing to the active measures taken by them to develop business despite the adverse trade conditions prevailing in Bombay. Messrs. Fakir Walji & Sons, Karachi, continued to represent the institute in Karachi and Northern India and they were able to make some headway during the year. The sales effected by the Rangoon agent, however, proved disappointing and unsatisfactory and it should be possible considerably to increase the volume of business transacted with this important market. The institute was represented in the Central Provinces by the Popular Stores, Nagpur, who introduced a reasonably satisfactory volume of business during the year. The stockists at Kodaikanal, Rajahmundry, Vizagapatam, Kurnool, Bellary, Anantapur, Secunderabad, Cuddapah and Hindupur have in the aggregate placed a reasonable volume of orders with the institute. With a view to expanding the business of the institute in unrepresented areas in India, Rao Bahadur Ati Narayana Pantulu Garu and Messrs. Jorasako Stores, Calcutta, were appointed agents for the Central and United Provinces and Bengal, Bihar and Orissa, and Assam respectively. If, however, the potentialities of these large consuming markets are to be fully exploited, it will be necessary to launch on a large publicity campaign in order to make the soaps known to the public.

72. *Visits to important markets.*—During the year the Superintendent visited Madras, Bangalore, Ootacamund, Hindupur,

Adoni, Bellary, Cuddapah, Mangalore, Udipi, Kallianpur, Malpe, Erode, Karur, Trichinopoly, Udamalpet, Raichur and Bombay, with a view to developing sales of the products of the institute. There can be no doubt that in order to obtain the best results from the agents and stockists, it is necessary to visit them periodically in order to discuss local market conditions and to encourage them to develop sales. The visits of the Superintendent to the chief consuming centres enables him to ascertain at first hand the special requirements of the various markets and the personal contact thus established with the agents cannot fail to be productive of good results. The Superintendent also visited and inspected a number of local soap factories and advised the owners how to improve their methods and products, whilst several of the ex-students of the institute who sought advice on various matters were given the necessary assistance.

73. *Training of apprentices.*—Seventeen students were under training in the Institute during the year. Of these 13 underwent the ordinary one year's course and four the short-term course. Seven of the students were from outside the Presidency. The fact that there is a good demand for admission to the course of training in the Institute although no scholarships or stipends are awarded and fees are levied may be taken as an indication of the desire on the part of the public to avail themselves of the instructional facilities afforded by the Institute. It is believed that the Institute is the only one in India where practical training in soap manufacture is imparted in a factory equipped with modern plant and under the supervision of an expert. A number of the students have, on the completion of their training, either secured employment in other soap works or started factories of their own. In fact the number of small factories which have sprung into existence in the Presidency as a result of the education and training imparted in the Kerala Soap Institute must be considerable.

74. *Laboratory.*—In order to maintain the uniformly high standard of the Institute's products a careful examination of the various raw materials received and of the finished products in the various stages of manufacture has to be made and during the year under review, 600 analyses were carried out in the laboratory, of which 405 were of raw materials and soaps in different stages of manufacture. The remaining 195 analyses were of soaps, oils, perfumery, toilet articles, dentifrices, etc., received from agents and stockists, ex-students and members of the public or collected by the Superintendent in the course of his tours. The laboratory provides training in the practical testing of oils and soaps for the students undergoing a course of training in the Institute.

75. *Research.*—The following is a summary of the research and other items of work carried out in the Institute during the year:—

(a) *Oil refining experiments.*—Experiments with a view to the evolution of simple methods of refining oils were completed during the year, and the results published in Bulletin No. 36 of the department.

(b) *The preparation of cashew shell oil and its bye-products.*—The roasting experiments initiated during the previous year with a view to improving the yield and quantity of kernels and oil were continued, and as a result of a number of trials, a roaster was designed which it is hoped will be suitable for the purpose. Yellow and brown paints were produced in small quantities with shell oil as the basis. Moulding powders were also prepared from the oil for pressing into plastic articles such as Bakelite. These experiments were in progress at the end of the year.

(c) Estimation of the oil contents in *Psoralea Corylifolia* (Carboga Arisi) and utilizing the oil in the manufacture of special medicated soaps.

(d) Feasibility of using vegetable oils as lubricants.

(e) *Bleaching and curing ginger without the use of sulphur fumes.*—Samples of the treated ginger have been pronounced 'excellent' by the Government Agricultural Chemist, Coimbatore, and a sample parcel has been despatched to the Indian Trade Commissioner, London, with a view to ascertaining the opinion of the trade as to the suitability of the ginger for the English market.

(f) Conduct of preliminary experiments with a view to the ascertainment of the economic value of the common vegetable oils for use as lamp oils compared with kerosene oil.

(g) *Publication of a bulletin entitled 'Groundnut and its Uses.'*—This is intended to give the ryots and those dealing in groundnuts information in regard to the different kinds of machinery used for pressing the seed and the various uses of the kernel and the oil.

Owing to the delay in the erection of the plant, it was not possible during the year under review to commence the experiments on the refining and deodorization of vegetable oils, but the erection of the machinery and plant was approaching completion at the end of the year.

76. *General.*—The Institute participated in a number of exhibitions and several medals and certificates of merit were awarded. The Institute participated also in the Health and Baby Week celebrations in 24 centres. The Institute was, as usual, visited during the year by a considerable number of visitors, including several parties of teachers and students from educational institutions. A considerable number of inquiries in connexion with the manufacture of soaps, equipment of soap factories, methods of refining oils, extraction of essential oils and essences from flowers, fruits, etc., were received and dealt with during the year, and the Institute is rendering considerable assistance to small and large scale industrialists in such matters.

77. *Government Industrial Institute, Madras.*—In the administration report of last year, it was stated that the Retrenchment Committee had 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. In the early part of the period under review, Government issued orders accepting the recommendation of the Retrenchment Committee, but permitting the temporary continuance of the Institute and the staff employed in it for a period of three months from the 1st April 1933 or as soon as the manufacture of printers' ink could be handed over to a private agency whichever was earlier. Government also directed that the Director of Industries should utilize to the fullest extent possible the Indian Institute of Science, Bangalore, for conducting the investigation of chemical problems arising in the Presidency. It was subsequently decided that the sale of the printers' ink machinery and lamp black apparatus should be advertised in the press and tenders for their purchase invited and a press communiqué on the subject was published in the *Fort St. George Gazette* and the more important English and vernacular dailies. Though enquiries were received from about a dozen firms for the purchase of the assets of the Institute, only three actually submitted offers and none of these was satisfactory as the offers were either unduly low or imposed certain impossible conditions binding Government to take over the finished product. Meanwhile the staff of the Institute had been disbanded with effect from the 30th June. Subsequently an offer for the entire assets of the Institute was received from Mr. B. K. S. Choudhury, L.T.C., a former Government Scholarship holder in Chemistry at the Victoria Jubilee Technical Institute, Bombay, who is desirous of continuing the experiments on the manufacture of printing inks initiated by the department. The consideration offered by Mr. Choudhury was a sum of Rs. 5,000. As by transferring the assets to Mr. Choudhury, the fostering of the printers' ink industry in this Presidency would be assisted, the offer was recommended to Government for acceptance and since the close of the year Government have issued orders accepting the terms offered by Mr. Choudhury and permitting the transfer to him of the assets of the defunct Industrial Institute.

RESEARCH ENGINEER.

78. M.R.Ry. Rao Sahib C. S. Ramachandra Ayyar Avargal continued as Research Engineer until the 31st July 1932 when the post was abolished as a measure of retrenchment, and he was reverted to his permanent post of Assistant Industrial Engineer. The Research Engineer continued to devote his attention to the devising of a simple method for manufacturing lamp black from waste oil from garages and crude oil, and evolving an improved hot air sizing machine. In regard to the lamp black plant, experiments were carried out with a view to improving the percentage of yield per gallon of oil, to enhance the quality of the product collected from the chambers, and to work out a specification and design of a safe and economic furnace for the elimination of the main oil impurities, and these were still in progress when the work had to be closed down as a result of the abolition of the post of Research Engineer. The Research Engineer carried out a number of modifications to the hot air sizing machine in the light of the experience gained of its working. The problem of winding the sized warp on to the weavers' beam, and the question of incorporating certain additional features in the machine with a view to improving its efficiency and effecting an economy in the preliminary processes of weaving were under investigation in the early part of the year but had not been completed by the time the Research Engineer vacated the post. The sizing machine has been placed in the Textile Institute.

TEXTILE SECTION.

79. *Staff.*—Mr. D. M. Amalsad, Assoc. M.C.T. (Manchester) continued as Assistant Director of Industries (Textiles) and Principal of the Government Textile Institute, Madras.

80. *Textile Institute.*—The Institute continued to provide the usual courses of instruction—the Supervisor Course and the Artisan Course. In the newly opened Sericultural and Ericultural sections the entire processes of silk worm rearing and silk reeling were demonstrated to the students. On 31st March 1933, there were 80 students undergoing training in the Institute—27 in the first year Supervisor Course, 16 in the second year Supervisor Course and 33 in the Artisan Course. Four students underwent a special course of training in Jacquard weaving. The students who sought admission to the Institute hailed from 19 districts of the Presidency and from two adjacent states. Hitherto, the power sizing plant, wool spinning plant, silk twisting plant and silk reeling machines were housed in a separate building away from the main building of the Institute and this rendered difficult the exercise of close supervision over the work of the students. Hence, a portion of the new extension to the Industrial Engineering Workshop adjoining the Textile Institute building was set apart for the housing of this machinery. The equipment of the Institute was also enlarged with a view to providing a more comprehensive training in Textiles. A 400 Double Lift and Double Cylinder Jacquard machine for weaving silk sarees and a 200 Hooks Jacquard machine for weaving two colour all-over effects were added to the equipment of the

Institute. One of the important features of the work of the Institute during the year under report was the conduct of investigations into the cost of production of different varieties of cloths produced on the hand-loom installed in the Institute.

81. *District work.*—In last year's report, it was stated that as almost all the important weaving and dyeing centres in the Presidency had been visited by the weaving and dyeing parties and the demonstration of improved manipulative processes and appliances had proceeded so far that no further propaganda work in that direction seemed necessary, proposals had been submitted to Government for the abolition of all the district parties as a measure of retrenchment. Accordingly in their orders Ms. No. 486, Development, dated 6th April 1932, and Ms. No. 1012, Development, dated 27th July 1932, Government abolished all the district parties. In order, however, to enable practical assistance to be rendered to capitalists in the districts, Government sanctioned a special staff of three "Textile Demonstrators"—one for weaving, another for dyeing and the third for the erection of power-driven machinery. A system of hiring out comparatively costly improved textile appliances to weavers and passed students of the Institute was introduced during the year, and advantage of the new system was taken by persons in Parlakimedi and Conjeeveram to install a hand-driven sizing machine and a Jacquard respectively. The appliances that can be lent out in addition to these two machines include pick and pick slap, two-box slay, three-box slay, aerograph printing machine, banian knitting machine, and sock knitting machine.

82. *Aided Textile Schools.*—During the year, the Aided schools dealing with Textiles continued to be under the supervision of the Assistant Director of Industries (Textiles). Owing to financial stringency, only the most important schools in the Presidency were visited during the year under review, but the schools generally appear to have benefited by the expert advice and practical assistance rendered by the officers of the Textile branch. A sum of Rs. 36,475 was sanctioned as maintenance grants to the Textile schools and a sum of Rs. 180 was sanctioned as capitation grant. Owing to financial stringency, no equipment grants were awarded to the Aided Textile schools during the year.

83. *Research.*—In 1930, Government sanctioned the appointment of a Research Engineer for introducing improvements in existing appliances and for devising new appliances for use in cottage industries and specially in the textile industry, but as a measure of retrenchment the post of Research Engineer was abolished and the work of evolution of improved textile appliances thereupon devolved upon the officers of the Textile branch, the following improved machines and appliances being evolved during the year.

Mulberry silk reeling machine.—Improvements were effected in the crude silk reeling machines employed by the cottage workers in Kollegal. Revolving thread guides and cutters, a scientifically built furnace and other improvements helped to produce a quality

of silk superior to that reeled on the country charkas. Attempts were made to demonstrate the working of the improved reeling machine to the reelers in Kollegal.

Eri spinning wheel.—As the crude type of Eri spinning wheel used in other parts of India was found to be defective, an improved type of Eri silk spinning wheel was constructed and found to give very satisfactory results. A few of these improved charkas were sold to the public.

Cottage sizing machine.—With a view to providing the weaver with an arrangement for sizing the yarn required for his own use, a cheap type of cottage sizing machine fitted with hot air chamber, where the air is heated by means of a blue flame kerosene oil stove, was constructed during the year. Experimental trials with a view to ascertaining the cost of sizing as compared with that of street sizing were under progress at the close of the year.

84. *Jails—Textile manufacturing sections.*—As in previous years, visits to the Textile manufacturing sections of jails and technical advice in regard to their working formed part of the work of the Textile branch. During the year under report, the Assistant Director of Industries (Textiles) visited the Bellary, Coimbatore and Cannanore Jails. As the spinning mill in the Central Jail, Coimbatore, is capable of spinning only medium counts of yarns and as the demand for coarse counts for the manufacture of cloths in the various jails has increased, proposals for the installation of a waste spinning plant at the Central Jail, Coimbatore, were drawn up during the year under review. This scheme will facilitate the use of waste cotton produced in the mill and enable lower counts to be produced at economic prices.

85. *Tariff Board Enquiry.*—What the hand-loom weaver wants is continuous employment, credit for the purchase of the means of production, and facilities for marketing his products. The Royal Commission on Agriculture and the Indian Central Banking Enquiry Committee have recommended the organization of co-operative societies for providing the necessary facilities to the hand-loom weaver. Non-credit societies without the assistance of paid secretaries well versed in the principles of co-operative business and marketing have not, however, been a success in the past. As these societies cannot afford to meet the cost of the necessary staff without detriment to their power to compete with the products of the power-loom, it is essential that the State should come to their aid. In view of the present financial stringency neither the Central Government nor the Provincial Governments are in a position to finance such organizations. Accordingly in the memorandum embodying my answers to the questionnaire of the Indian Tariff Board on the subject of the grant of protection to the Indian Cotton Textile Industry, I suggested *inter alia* that the duty on yarn of counts above 40s. should be abolished and the loss in revenue made good by the levy of a small duty of three pies per pound on cotton cloth imported from other than British sources. I further proposed that a cess of three pies should be levied on every pound of yarn consumed by mills. The gist of my proposals was

embodied with slight modification in a Press Communiqué issued by Government, dated 5th October 1932, and as a result the proposal for the imposition of a cess was favourably commented on by almost all the local newspapers. As a result of an interchange of views with the Chambers of Commerce and of the discussions I had with the various interests, as also of further consideration of the subject, my proposals in regard to the cess contained in my memorandum to the Tariff Board underwent some modification. My final proposals provide that the existing duty on yarn of counts above 40s. should be reduced to one pie per pound on yarn imported from Great Britain and three pies per pound on yarn imported from other sources, the loss in revenue to be made good by the levy of an extra or countervailing duty of one pie per pound on cloth and yarn below 40s. imported from Great Britain and of three pies per pound on cotton cloth and yarn imported from other than British sources. My proposals, further, provide for the levy of cess of one pie on every pound of yarn manufactured by the mills, an equivalent rebate being allowed on yarn exported from this country. The cess proposed would yield on the basis of the mill production for the year 1931-32 about Rs. 43 lakhs after allowing for collection charges and the proceeds would be distributed among the various provinces in proportion to their population. The Madras Presidency would, on this basis, receive about Rs. 7½ lakhs. The administration of the Fund would be vested in a Statutory Board consisting of representatives of the primary societies, of co-operative banks, of business and of Government. The Board would have power to organize and supervise primary societies, purchase the raw materials necessary, to regulate production and distribution and to undertake research in the field of handloom weaving appliances. A co-operative society would be organized for every thousand handloom weavers and a marketing officer would be provided for every 20 societies whose duty it would be to supervise the working of the societies within his jurisdiction, to adjust production and to arrange for the marketing of the surplus production under the orders of the Central Board. The Board would enter into running contracts for the purchase of the yarn required for all the societies within its jurisdiction. It remains to be seen whether it will be found feasible to give effect to these proposals for the resuscitation of the handloom weaving industry.

86. *Retrenchment.*—The total budget provision under "Pay of Establishment—Voted" for the Textile section for the year under report was Rs. 31,300. Owing to financial stringency, the following staff were retrenched during the year under review, effecting a total annual saving of Rs. 9,700:—

4 District Weaving Superintendents.	1 Warp Preparation Foreman.
1 Dyeing Superintendent.	1 Superintendent of Weaving Instruction.
8 Weaving Demonstrators.	1 Senior clerk (65—85).
2 Dyeing Demonstrators.	5 Peons.

The total cost of the Textile section during the year under review was subject to final adjustments, Rs. 48,314 against Rs. 68,342 in 1931-32 and Rs. 71,925 in 1930-31.

SERICULTURE.

87. *Staff*.—Mr. K. T. Achayya held the appointment of Sericultural Expert throughout the year. The Sericultural Expert toured for 107 days and visited all the silk rearing centres in the Presidency.

88. *Peripatetic rearing party*.—The activities of the Peripatetic Rearing Party during the year consisted mainly of carrying out microscopic tests of seed cocoons supplied from the Government silk farms at Hosur and Palmaner as well as from private farms at Hosur, Vadakangulam and Kuppam, and effecting sales of seed cocoons by converting them into disease free seeds. Private rearers of Kollegal freely availed themselves of the facilities afforded by the party for the testing free of charge of their seed. As usual the testing work by the party was undertaken at the headquarters of the Silk Superintendent at Mudigundam where the six members of the party conducted the testing operations under the direct supervision of the Silk Superintendent. The party also supervised the work of the rearers who purchased disease free layings with a view to avoiding overcrowding of worms which is a general fault with all Kollegal rearers, the steam filature at Mudigundam and the silk throwing plant at Kollegal. They had also arranged for the supply of mulberry cuttings and disease free seeds to the various district centres at all seasons of the year. The party tested during the year 200,410 layings as against 199,769 tested in the previous year. The supply of seed cocoons from Government farms was considerably less than in the previous year owing to the fact that the farms had to undertake hybridization work for about six months thus restricting the production of seed cocoons during that period. Three large consignments of seed cocoons and one consignment of reeling cocoons were sent from the Hosur farm and these were sold for Rs. 328-2-2, whilst seed cocoons, produced by private rearers at Hosur, were also received for disposal as disease free layings out of which seeds to the value of Rs. 164 were produced and distributed. The Palmaner farm supplied five consignments of seed cocoons and tested layings of a total value of Rs. 157 and two consignments of seed cocoons produced by rearer Byrappa Chetti valued at Rs. 32 were received and distributed. Five consignments of seed cocoons and disease free layings valued at Rs. 92 were received from the private rearers of Kuppam and distributed. Thirty-four thousand one hundred and fifty-five disease free seeds received from Vadakangulam were sold for a total sum of Rs. 171-5-0. Up to December seed was as usual sold on credit but owing to the difficulty experienced in recovering the outstandings and as the price of cocoons and raw silk had fallen considerably the system of credit sale was discontinued and cash sales were introduced, the price of disease free layings being reduced from annas twelve to five annas four pies per hundred layings.

89. *Aided grainages*.—Neither of the two aided grainages did any useful work and the recognition granted to them has been withdrawn during the year.

81. *District work*.—In last year's report, it was stated that as gundam worked of and on during the year. It could not be worked regularly on account of the fluctuations in and the low price of China silks which compete very largely with filature and country silks. An improved and cheap type of silk reeling cutter has been evolved by the department and can be seen at the Government Textile Institute, Madras. Experiments are now being made and if the new cutter is found to work satisfactorily steps will be taken to introduce it in Kollegal and other district centres.

91. *Silk Throwing Factory*.—The factory which was erected by the department at Kollegal for Mr. C. K. Nagayya continued to work satisfactorily during the year. This factory in addition to the twisting of Kollegal country silks has undertaken the twisting of China silks also.

92. *Silk Farm, Coonoor*.—Hybridization work was continued in this farm during the year and one crop of univoltine worms and one crop of hybrid worms were successfully reared. One pure Mysore worm rearing was also conducted at the farm. The first generation of the hybrid layings were supplied to Kollegal, Palmaner and Hosur Silk Farms, for character fixing since owing to the persistence of the fungus disease on the mulberry leaves in Coonoor Farm, in spite of nicotine spraying, it has not been found possible to fix the characters of hybrid worms in Coonoor. During the year one eri worm rearing was also conducted with satisfactory results. Two students who were under training in the farm completed their course during the year. The Farm Manager, Coonoor, was deputed to the Silk Farm, Hosur, for about six months in order to conduct further rearings of hybrid worms from the layings supplied from the Coonoor Farm and four generations of hybrid worm were reared. The moth tester and a number of private rearers of Hosur were trained in hybrid worm rearing.

93. *Silk Farm, Hosur*.—This farm is still being conducted in a rented building and a $2\frac{1}{2}$ acres of land leased for mulberry cultivation; but it has been doing very useful work. Eight rearings were conducted during the year, and a total quantity of 817 lb. of cocoons including hybrids counting 426,500 were produced in the farm. The farm has been successful in creating an interest in sericulture in the neighbouring villages and about 50 acres of land was brought under mulberry cultivation during the year. In view of the fact that the farm has been working satisfactorily for the last four years and that the seed cocoons produced have been giving satisfactory results, it should, I consider, be placed on a permanent basis by giving up the leased land and acquiring the necessary area of land from the Hosur Cattle Farm, thus enabling the farm to be developed on an extended scale.

94. *Silk Farm, Palmaner*.—Nine successful rearings were conducted during the year and 93,948 cocoons were produced out of which 83,383 seed cocoons were sent to Kollegal for conversion into disease free layings. This farm has also created an interest in sericulture in the neighbouring villages, but the development in mulberry cultivation in the area has been retarded to a certain extent by the failure of the monsoon in the latter part of the year. This farm is only about an acre in extent and needs extension.

95. *District Sericultural work*.—The five Assistant Demonstrators of Sericulture were stationed in the following centres to supervise the operations: (1) Kuppam, (2) Penukonda, (3) Ellore, (4) Jaggayyapet, and (5) Vadakangulam. The sericultural work in progress in the areas where these demonstrators were stationed was extended during the year to a total of 100 acres. The demonstrators in addition to supervising the plantations and rearings of silk worms of private parties who have taken to sericulture and ericulture in their respective areas have participated in a number of exhibitions and conferences where demonstrations of silk and eri worm rearings have been conducted for the benefit of the agriculturists. The moth tester at Hosur and the farm foreman at Palmaner have continued to give advice and guidance to a large number of private rearers in their respective areas. Mulberry plantations were started at four new centres, namely, Jayanthipuram, Nuzvid, Munagala and Sulagiri during the year. At Vadakangulam, the sericultural work has been progressing satisfactorily. There are now about 10 acres of mulberry and about 29,500 disease free layings were produced by the aided grainage at Vadakangulam and supplied to Kollegal. The work in the Kuppam area is also progressing satisfactorily. The reduction in the price of cocoons and raw silk consequent on the dumping of China silks in the Indian market has discouraged a good many people in the various centres from taking up mulberry plantation and silk worm rearing, but when prices improve, as they no doubt will, if a measure of protection is afforded, a considerable development of sericulture in this Presidency is likely to be seen.

96. *Indian Tariff Board*.—In December 1932, the Government of India directed the Tariff Board to enquire into the grave menace caused to the indigenous sericultural industry by the increasing imports of raw silk, the trade returns having shown that from March 1932 onwards raw silk had been imported in quantities greatly in excess of those of previous months. The Board was requested to examine whether, having regard to the nature and extent of the competition of raw silk from foreign countries, the claim of the sericultural industry to protection was established and if the claim was found to be established, in what form the protection should be given and to what extent. Written and oral evidence was submitted to and tendered by the department to the Tariff Board in which the case for the grant of protection was thoroughly examined and discussed. It was urged *inter alia* that the present method of levying a revenue duty on raw silk seriously affects the silk industry for

the reason that it does not take into account the cost of production of the local silk as compared with that of the imported product. In view of the wide fluctuation both in the price of the imported silk and the Chinese Exchange, it was suggested that a specific protective duty instead of an *ad valorem* duty should be levied and that the Governor-General in Council should be empowered to vary the duty if necessary as in the case of sugar. The levy of a specific protective duty of Rs. 3-12-0 per pound on all imported raw silk and thrown silk was recommended. A similar specific duty of Rs. 3-12-0 per pound in the case of imported spun silk was also advocated. It was suggested that 16½ per cent of the proceeds of the revenue derived from the imposition of the enhanced duty should be granted as a subsidy to the sericultural provinces in proportion to their population for the development of the sericultural industry. At present the duty levied on silk cloth is 50 per cent of the tariff value and this affords a certain measure of protection to the handloom weavers. It was pointed out that if the departmental proposal to levy a specific duty of Rs. 3-12-0 a pound on raw silk is accepted, it is very necessary that a corresponding additional duty on silk cloths should be imposed as otherwise the weaver of silk cloth in this country will be subjected to severe competition from imported silk cloth and his competitive power will be impaired. It was suggested therefore that in the case of silk cloths there should be a corresponding increase in duty by Rs. 2-11-0 per pound over and above the 50 per cent duty already imposed. At present a duty of 18½ per cent is levied on artificial silk yarn. As cloths woven with artificial silk also compete with silk cloth, it was suggested that a duty of 200 per cent might suitably be levied on imported art silk yarn. If the several proposals put forward by the department are accepted, there should be a bright future for the sericulture and silk industries of this country.

ERICULTURE.

97. *Ericulture* has been successfully demonstrated in a number of areas in the Presidency and in the absence of definite markets for cocoons at remunerative prices, the cocoons are being converted into spun silk for weaving purposes, an improved spinning wheel having been designed by the department for this purpose. A number of persons have been trained in ericulture in the Government Textile Institute, Washermanpet. A special training class was also held at Samalkot by the Sericultural Expert and five agricultural demonstrators and one sericultural demonstrator were trained in the work. The Agricultural Department is actively co-operating in the efforts of the department to introduce ericulture in the Presidency. At Kuppam where eri worms can be reared all the year round and the breed can be kept going, 90 oz. of seed were prepared and supplied to all the district centres, as also to the Government Silk Institute, Bhagalpore, Bihar and Orissa.

ENGINEERING SECTION.

98. *General*.—The work of the Engineering section 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 of industrial machinery, the investigation of applications for loans under the Land Improvement 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 demonstration of these.

99. *Staff*.—Mr. L. S. Pinto held the appointment of Industrial Engineer throughout the year. The Industrial Engineer was assisted by four Assistant Industrial Engineers, one in charge of the Industrial Engineering Workshop, Madras, and one each in charge of Bezwada, Tanjore and Coimbatore divisions, the Industrial Engineer holding direct charge of the Madras subdivision comprising the Madras and Chingleput districts.

100. *Boring*.—The department maintained 20 power drills, one air-compressor drill and 106 hand-boring sets. The following table exhibits the territorial distribution of the applications received for boring, the number of feet bored in each of the divisions and other relevant particulars:—

Division.	Applications pending on 1st April 1932.	Applications received during 1932-33.	Applications disposed of during the year.	Applications pending on 1st April 1933.	Total number of feet bored.	Number of borings put down.	Number of successful borings.
Bezwada	59	231	226	64	22,355 ' 4 "	278	201
Coimbatore	15	127	121	21	9,996 ' 7 "	266	186
Tanjore	14	114	118	10	15,389 ' 2 "	250	205
Madras	8	56	56	8	5,273 ' 0 "	105	60
Total	96	528	521	103	53,014 ' 1 "	899	652

The total number of borings put down and the depth bored during the year were 899 and 53,014 feet respectively as against 659 and 37,168 feet respectively in the previous year. The number of feet bored during the year was a record, the increase being due to the special efforts made to speed up boring work and to increase the outturn of the drills. I hope that as a result of the measures taken, I shall be able to record a further improvement in this respect in next year's report. The economic aspect of the departmental boring operations has been subjected to careful study during the year.

101. *Artesian borings*.—At the close of last year, the department had to its credit 47 artesian boreholes. During the year under review, thirteen artesian springs were tapped. Of these, seven were in the Bezwada division, discharging fresh water at rates varying from 10 to 250 gallons per minute at ground level, the height of discharge ranging from 4 to 20 feet above ground level, and six in the Tanjore division discharging from $\frac{1}{2}$ to 2,500 gallons per minute, the height of discharge ranging from 1 to $9\frac{1}{2}$ feet above ground level. Special mention may be made of the artesian springs tapped by hand drills at Uyyakondravi, 6 miles from Vadalur railway station, Vriddhachalam taluk, South Arcot district, and at Devangudi, 9 miles from Vriddhachalam railway station, the former yielding a supply of 2,500 gallons of fresh water per minute at $9\frac{1}{2}$ feet above ground level—the largest spring ever tapped by the department—and the latter 1,250 gallons per minute at $7\frac{3}{4}$ feet above ground level. As a result of the tapping of these springs, the value of the lands benefited thereby has considerably increased.

102. *Sub-artesian borings—Rural water-supply schemes—Mahamkam borewells*.—At the instance of the officers of the Public Health department, a scheme for the borewell-supply of drinking water for the inhabitants of the villages in and around the Kumbakonam town was taken up. Six hand-boring sets were sent to Kumbakonam and its suburbs and within a period of one month 36 borewells were completed and hand pumps fitted in them. These pumps were of much use to the pilgrims who attended the recent Mahamkam festival and the Director of Public Health, Madras, expressed his appreciation of the work done by the department.

103. *Ceramic survey borings*.—Borings were put down in the several districts of the Presidency in order to ascertain the existence of white clay in the places selected by the Ceramic Assistant.

104. *Torpedoing operations*.—There were at the beginning of the year four applications pending, six were received and seven applications were disposed of during the year.

105. *Experimental boring operations at Elur, Salem district*.—The ground boring put down at Elur by the agency of a power drill for the Rural Reconstruction centre yielded a water-supply of five gallons per minute at 167 feet below ground level. As the yield of the borehole was satisfactory for purposes of irrigation, the work of connecting the borehole with the well nearby was taken up during the year, while arrangements were also made to deepen the well and excavate the portion of ground separating the borehole from the well. As the stratum beneath the top soil was rocky, blasting work with the aid of the departmental air-compressor drill was first undertaken and 292 holes were drilled and blasted with dynamite and detonators. The blasting work was completed in February 1933 and as a result of connecting the borehole with the well, the supply in the well has been considerably enhanced.

purchase of three more mills. A sugarcane crushing mill and an engine were lent to the Raja of Bobbili for manufacturing sugar with a centrifugal. Another mill and engine were hired out to M.R.Ry. B. Hulagappa of Hospet for crushing canes at Amara-vathi, four miles from Hospet, and for running the departmental sugar centrifugal demonstrated at the place.

111. *Sugar manufacture.*—In co-operation with the District Agricultural Association, Coimbatore, the experimental manufacture of sugar with a centrifugal supplied by Messrs. Bery Brothers, Calcutta, was conducted successfully at Singanallur, near Coimbatore. Besides the officers of this department, the Director of Agriculture, Madras, and his assistants at Trichinopoly and Coimbatore and the Director of Agriculture of the Baroda State and his Agricultural Inspector visited the experiments. The process of manufacturing white sugar was explained to many leading ryots of the Presidency and to sugar and jaggery manufacturers from all the agricultural farms and from the Bobbili Samasthanam. The results of these experiments show that it is distinctly more advantageous for the ryot to manufacture white sugar by the open-pan system than to manufacturing jaggery by the country method, the gain on the basis of the prices of sugar and jaggery prevailing in the Coimbatore district amounting to as much as Rs. 4-7-2 per ton of cane. A report embodying the results of the experiments has been drawn up and widely distributed, the demand for copies being very great. In my view there is ample room for the development of both factory and small scale sugar production in this Presidency.

Subsequently the sanction of Government was received for the purchase of two centrifugals, with accessories, for the department, and these were demonstrated at Vellakkinar, Coimbatore district, and Kattuvarapalli, North Arcot district, at the request of M.R.Ry. V. C. Vellingiri Gounder Avargal and M.R.Ry. K. G. Ramachandra Reddiyar Avargal, respectively. The results of these demonstrations which aroused a great deal of interest, were very satisfactory and encouraging. A number of applications were received during the year for a departmental demonstration of the manufacture of white sugar by the open-pan system with centrifugals, and arrangements were in progress at the close of the year for conducting such demonstrations.

112. *Wind mill demonstration.*—A 50-feet tower wind-mill belonging to the department was erected on the well in the compound of the bungalow of M.R.Ry. A. Ranganatha Mudaliyar Avargal, M.L.C., at Hospet, Bellary district, for demonstration. The mill is reported to be working satisfactorily.

113. *Pinto chekku.*—Experiments on castor-crushing in the departmental chekku were successfully conducted at Cocanada in August and November 1932 and they aroused a good deal of interest locally. An oil extraction of 40 per cent was obtained.

114. *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 sugarcane mill with engine was lent to the Hospet Agricultural and Co-operative Society.

(b) The plants of the following societies in the Tanjore and Coimbatore divisions were under departmental supervision during the year:—

Co-operative Society, Kallakurichi.
Co-operative Society, Sankarapuram.
Co-operative Society, Rishibandan.
Co-operative Society, Nangavaram.
Co-operative Society, Kalyanpur.
Co-operative Society, Kondapuram.

(c) A sugarcane mill was hired to the Udipi Co-operative Agricultural and Industrial Society at Kalyanpur.

115. *Services rendered to departments of Government.*—During the year under review, the value of services rendered to the Agricultural, Revenue, Public Works, Jail, Forest, Educational, Medical, Fisheries and Labour departments in the various divisions amounted to Rs. 8,575-15-10 as detailed below as against Rupees 18,182-1-1 in 1931-32.

Division.	Value of services rendered.		
	RS.	A.	P.
Bezwada	3,985	6	1
Coimbatore	2,435	4	0
Tanjore	1,007	9	0
Madras	1,147	12	9
Total	8,575	15	10

116. *Loans for purchase of pumping plants.*—During the year under review, 51 applications were disposed of, of which 44 were either withdrawn or rejected and seven loans of an aggregate amount of Rs. 20,250 were sanctioned. The amount actually disbursed during the year was Rs. 21,074-9-0. All the loans sanctioned during the year were from Coimbatore division. In view of the fall in the water-table in the Coimbatore district it is doubtful whether it would be expedient to grant any further loans for pumping installations in this district.

117. *Industrial Engineering Workshops.*—In the departmental workshop at Washermanpet, the machinery employed by the pumping and 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 number of apprentices who attend classes in the Government School of Technology, Madras, in order to supplement their practical training by a theoretical course of study.

One thousand one hundred and seventy-seven work orders were opened during the year, of which 1,068 work orders were executed and billed for as against 770 during the previous year. The total number and value of work orders executed in the workshop for various departments and for private persons during the year under review are shown below:—

Serial number and details of work done under different heads.	Number of jobs executed.	Amount realized.
		RS.
1 Pumping and Boring ..	898	59,915
2 Inter-departmental ..	25	787
3 Other Government departments ..	3	228
4 Capital Works ..	..	..
5 Private parties ..	81	5,585
6 Workshop maintenance.	61	3,196
Total ..	1,068	69,711

Work orders under "private parties" include the manufacture of six Pinto Chekkus which are growing in popularity. Articles required for the conduct of the experiments in the manufacture of white sugar with the aid of centrifugals were supplied by the workshop to Hospet and Bobbili. The workshop also supplied the Kerala Soap Institute with the articles required for the erection of the oil refining plant at the Kerala Soap Institute, Calicut. The working of the concern during 1932-33 resulted in a net loss of Rs. 15,000 as against a loss of Rs. 22,714 in 1931-32. Government issued orders in December 1932 directing that for the period of one year from 1st April 1933 the centage charges shall be calculated at 100 per cent of the cost of materials and labour, this percentage representing approximately the actual cost of overhead charges, in respect of the departmental orders and to articles other than raw materials, pipes and couplings. Government also passed orders during the year approving proposals for the reduction of overhead charges in the Workshop with a view to minimising the loss on its working. A substantial saving in expenditure was effected by reducing the number of workmen and increasing the number of apprentices and by reducing the interest on the capital invested by giving up portions of the workshop buildings and disposing of old unserviceable machinery, as well as in various other directions.

INDUSTRIAL EDUCATION.

118. Mr. W. Fyfe continued as Inspector of Industrial Schools until 7th June 1932 from which date up to 15th January 1933 he acted as Deputy Director of Industries. Mr. Fyfe resumed his duties as Inspector of Industrial Schools on 15th January and continued as such until 21st February 1933 when he proceeded on leave for eight months. M.R.Ry. N. M. Ayyanthayya, B.Sc. (Edin.), Principal, Government School of Technology, Madras, acted as Inspector of Industrial Schools during the two periods, i.e., from 7th June 1932 to 15th January 1933 and from 21st February to the end of the year under review. The Inspector of Industrial Schools 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.

119. *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:—

Name.	Subject of study.
1 M. S. Viswanathan ..	Hydro-Electric Engineering.
2 Md. Ubaidulla Khan Durani.	Do.
3 D. D. Dawson ..	General Oceanography with special reference to Pisciculture.

These three scholars have each been given an extension of one year thus extending the total period of their training for four years. The periods of their training will expire on 19th October, 28th September and 4th October 1933, respectively. As a measure of economy no fresh scholarship was awarded during the year.

120. *Scholarships tenable at the Victoria Jubilee Technical Institute, Bombay.*—Owing to the financial stringency, the award of fresh scholarships during the year continued to be kept in abeyance. The number of scholars under training in the institute at the beginning of the year was seven. Three scholars completed their courses of study during the year, one in Sanitary Engineering, one in Technical and Applied Chemistry and the third in Textile Manufacture. The number of scholars under training in the institute at the end of the year was five as shown below:—

Sanitary Engineering and Plumbing	...	2
Textile Manufacture	...	1
Technical and Applied Chemistry	...	2

121. *Scholarships tenable at the Harcourt Butler Technological Institute, Cawnpore.*—In view of the development of the sugar industry in the Presidency and the necessity of providing for the training of the sugar technologists that will be required by the new

factory and in contemplation two scholarships of the value Rs. 60 each per mensem were awarded to students undergoing training in Sugar Technology at this institute. A subsidy of Rs. 100 per annum on behalf of each student has been paid to the Government of the United Provinces. The expenditure on account of the scholarships and subsidy has been met from the provision made for the award of scholarships at the Victoria Jubilee Technical Institute, Bombay, where three scholarships fell vacant during the year.

122. *Scholarships tenable at the Benares Hindu University.*—No scholarship was awarded during the year as it has been decided that no more scholarships should be granted for the study of Electrical Engineering at Benares in view of the fact that an Electrical Engineering Section has been opened in the Madras Engineering College. There were six scholars under training at the beginning of the year, one completed his course during the year and five are still undergoing training.

123. *Post-Graduate scholarships.*—As a measure of retrenchment, Government ordered that the number of scholarships tenable at the Indian Institute of Science, Bangalore, should be limited to ten. No scholarships were awarded during the year as the number of scholars undergoing training at the beginning of the year was 15. The number of students undergoing training at the end of the year was nine as shown below:—

Electric Technology	..	..	..	..	..	3
Bio-Chemistry	..	..	..	..	..	3
General and Organic Chemistry	..	..	..	..	..	2
Organic Chemistry	..	..	..	..	..	1

124. *Scholarships tenable at the Indian School of Mines, Dhanbad.*—In view of the prevailing financial stringency it was decided that no fresh awards of scholarships should be made. There were four Madras students under training at the beginning of the year of whom one completed his training during the year leaving three under training in the school at the end of the year.

125. *Scholarships tenable at the Jamshedpur Technical Institute.*—As stated in paragraph 107 of last year's report it had been decided to discontinue the contribution of Rs. 6,000 to the Institute from 1930-31. Consequently no fresh students were selected for training during the years 1931-32 and 1932-33. Six students were undergoing training at the beginning of the year under review.

126. *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 1932 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 courses of study during the year.

127. *Government School of Technology, Madras.*—M.R.Ry. N. M. Adyanthayya continued as Principal of the School until 7th June 1932 when he took over the duties of acting Inspector of Industrial Schools, which post he filled from 7th June to the end of the year with the exception of the period from 15th January to 21st February 1933. M.R.Ry. M. V. Jagannatha Ayyangar, Senior Lecturer of the School acted as Principal during the periods of absence of M.R.Ry. N. M. Adyanthayya.

Admissions.—The number of new admissions during the year was 470 as against 422 in the previous year, of which 233 were admitted to the Electrical Engineering section, 85 to the Mechanical Engineering course, 45 to the Printing course and the rest to the various other courses such as plumbing, electric wiring and vernacular drawing classes. The strength of the school in July 1932 was 938. Additional classes in the first and second years Electrical Engineering and the second year Mechanical Engineering courses were opened so as to permit of more individual attention being given to the students. The average number of classes per week increased to 87. Revised rates of fees were introduced for fresh entrants and examination fees for the final qualifying examinations were also introduced.

Examinations.—The L.M.E. and L.E.E. diploma examinations were conducted by Messrs. C. V. Krishnaswami Chetti, Electrical Engineer, Madras Corporation, and A. C. Elder of Messrs. Marshall Sons & Co., Ltd., and eleven students qualified for each of the L.M.E and L.E.E. diplomas. Messrs. P. V. Chari, Electrical Engineer, Public Works Department and C. E. Cutting of the General Electric Company, Ltd., conducted the Electric Wiring Competency Examination; 38 students appeared for the examination and 22 qualified themselves for the competency certificate. Mr. W. E. Marsh, Superintendent, Madras and Southern Mahratta Railway Press, was the examiner for Printing, Mr. W. H. Horton of Messrs. Richardson Cruddas for Plumbing and Mr. B. R. Cooper Chief Draughtsman, Madras and Southern Mahratta Railway, for the Vernacular Drawing classes. Seventy-six candidates appeared for the Printing, Plumbing and Vernacular Drawing examinations and 44 qualified themselves for the certificates. The school continued to be the centre for the examinations of the City and Guilds of London Institute for which examinations 136 students from all over the Presidency appeared and 59 came out successful.

Scholarships.—In addition to the 12 Government scholarships, the Commissioner of Labour awarded labour scholarships to five students. The trustees of Sri Venkateswara Students Hostel continued to award scholarships to nine students. The Bezwada municipality also awarded a scholarship of the value of Rs. 25 per mensem to an Electrical Engineering student during the year. One student of the Mechanical Engineering class was the recipient of

a Coorg scholarship of the value of Rs. 25 and another was the holder of a Bombay scholarship of Rs. 8 per mensem. Several other students also received monthly scholarships from private trusts.

Career of ex-students.—Most of the students who passed out in April 1932 have secured suitable posts either in Government, Railway, or private firms. One of the passed students has gone to England to further his studies in Electrical Engineering whilst four ex-students of the Printing section and apprentices in the Government Press have been recently deputed by Government to undergo training in England in Printing and allied trades.

School association.—During the year the students association of the school progressed satisfactorily and several meetings were held and visits arranged to factories and workshops including the Madras Pencil Factory, Kilpauk Water-works and Madras Electric Supply Corporation Power House. In addition a tour was arranged and Bhadravati Iron Works, Kannambadi Dam, Sivasamudram Water Falls, etc., visited. During the year the school participated in the Inter-Collegiate Tournaments and in the Wilson Cup Tournament the school reached the finals. In Boxing and athletic the school secured a cup and two medals. The necessity for a sports ground, however, is keenly felt.

Experiments.—Several experiments were carried out in the school during the year of which the following may be mentioned:—

- (1) Design and manufacture of husk burning oven and of a coal and coke oven.
- (2) Design of a suitable machine for extraction of cashewnut oil.
- (3) Evolution of a groundnut Decorticator.
- (4) Improvements to the Ramachandra Water lift.
- (5) Erection and testing of bone disintegrator.
- (6) Manufacture of eri silk charkas and spinning wheels.
- (7) Manufacture of slate cutting and trimming machine.
- (8) Manufacture of stone-polishing machine.

128. Preparatory section.—The Preparatory School continued to function on a temporary basis, but Government have since sanctioned the permanent retention of the school. The number of new admissions was 45 as against 50 in the previous year and the total strength on the 31st March was 115. The strength of the school in July 1932 was 123. Fifteen students appeared for the annual examination and thirteen of them came out successful.

129. Perambur school.—This branch school attached to the Madras and Southern Mahratta Railway Company Workshops worked satisfactorily during the year. The number of new admissions to the various courses was 67 as against 69, but the total strength of the school was 199 as against 154 in the previous year. In the final examination which were held as usual by the Railway Officers, 18 students came out successful. During the year under

review the school had to be closed for three months owing to a strike. Consequently the school term was extended till 15th June 1933 with a short vacation of 20 days only.

130. Government Industrial School, Madura.—M.R.Ry. P. Govinda Menon continued as Superintendent throughout the year except for a period of three months and twenty-seven days from 13th June to 9th October 1932 during which period he was on leave and M.R.Ry. A. Patnaick acted as Superintendent. The school syllabus and prospectus were revised during the year.

Admissions and withdrawals.—During the year 34 candidates offered themselves for admission to the school out of which 19 were selected. There were 25 withdrawals during the year and the strength of the school at the end of the year was 81 as against 83 last year.

Examinations.—Owing to the change of the school year from January to December to July to June the promotion and final examinations were postponed to June 1933.

Hostel.—The hostel attached to the school functioned satisfactorily, its strength being 51. Three separate messes are run, the vegetarian mess being under the management of the warden and the others managed by the boys themselves.

Retrenchment.—It was stated in paragraph 110 of last year's report that the Retrenchment Committee considered the net cost of running the institute should be reduced to Rs. 17,500 per annum, and detailed proposals for the reorganization of the institute in consonance with the recommendations of the Committee had been submitted. These proposals which involved the retrenchment of the posts of Assistant Superintendent, Motor Foreman, Drawing Master, Manual Training Instructor, five clerks and five peons and a reduction in the pay of other posts—the pay of the Superintendent for instance being reduced from Rs. 300 plus Rs. 75 to Rs. 180—10—250 were estimated to bring down the net cost of the institute to about Rs. 16,000 a year and these were accepted generally by Government. As, however, the receipts earned by the school by the sale of manufactured articles during the year under review amounted to Rs. 27,038 and the expenditure to Rs. 39,314, the net cost during the year under review was only Rs. 12,276. Government ordered that in future stipends should be given only to those who are in real need of them and up to a maximum of 33 per cent of the total number of apprentices under training. The value of the stipends was also reduced though the existing apprentices were permitted to continue to draw stipends at the old rates. The commercial system of accounts was abolished.

131. New Government Industrial Schools.—These schools are still on a temporary basis. In paragraph 111 of last year's report reference was made to the recommendation of the Retrenchment Committee that the net recurring cost of these schools should be restricted to Rs. 45,000 per annum, and to the fact that proposals for retrenchment had been submitted to Government which would

have the effect of reducing the net recurring cost to Rs. 35,900. These proposals, which included a drastic retrenchment in the establishment, the abolition of motor-driving classes and the abolition of stipends, were accepted by Government and given effect to early in the year under review. In lieu of stipends Government sanctioned the grant of scholarships to be limited to cases where it is absolutely necessary subject to a maximum of 33 per cent of the students on the rolls in each school. The Calicut school was removed during the year to premises which formerly comprised a part of the Kerala Soap Institute. The machine shop and a shed for housing the blacksmithy section were erected at a cost of about Rs. 4,000 and the existing buildings were adapted to suit the requirements of the school. The housing of the school in a permanent building of its own has resulted in a saving to Government of Rs. 3,600 per annum in the shape of rent. The net recurring cost of the schools during the year under review amounted to Rs. 39,382. The strength of these schools on the 31st March 1933 was, Mangalore 64, Calicut 57 and Bellary 39.

A Board of Visitors has been constituted for each of the schools for a period of three years with the Director of Industries as Chairman and the Inspector of Industrial Schools as Secretary and from five to six influential local gentlemen as members. The functions of the members of the Board are (a) to visit the school occasionally and to report the results of their visit, (b) to advise the Director of Industries on the syllabus and lectures, etc., of the school and (c) to meet at least twice a year to discuss the affairs of the school.

132. *Aided Industrial Schools.*—The Assistant Director of Industries (Textiles) continued to supervise the textile schools while the Inspector of Industrial Schools continued to supervise the non-textile schools. No new institutions were recognized during the year. The recognition accorded to the St. Mary's Convent Industrial School, Kotagiri, was withdrawn during the year. On the 31st March 1933, in addition to the institutions managed by the department direct, the number of schools recognized by the department was 67. All these except five were in receipt of grants-in-aid. At the end of the year there were 5,975 pupils under training in these schools as against 6,015 in the previous year. Of these, 2,565 were Indian Christians, 1,505 non-Brahmans (Hindus), 700 Brahmans, 456 depressed classes, 318 Muhammadans, 174 Europeans and Anglo-Indians, 29 criminal tribes, 13 aborigines and hill tribes, 10 Parsis, 3 Buddhists and 202 others. A sum of Rs. 86,765 was distributed in the form of maintenance grant (including capitation grant) representing an average of Rs. 14-8-0 per pupil per annum for the Presidency as against Rs. 17-8-0 in the previous year. A further sum of Rs. 1,693 was distributed as equipment grant to the St. Joseph's Industrial School, Ootacamund, while a sum of Rs. 12,174-11-0 was distributed as building grant. 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, Tindivanam, the C.S.M. Girls' Industrial School, Madras, and the American Mission Girls' Industrial School, Palmaner, continued to function satisfactorily.

133. *Revision of grant-in-aid system.*—The Retrenchment Committee recommended that the system on which recurring grants are given to industrial schools should be examined. The present system is based on the net cost of running an institution and as such the greater the net cost the greater the amount of the departmental grant. As a result of an examination of the subject it was considered that any system devised should aim at increasing the number trained in an institution and minimizing extravagance, without at the same time lowering the efficiency of the instruction imparted. These objects cannot be realized by the capitation grant system or the net cost system, as the former though simple in itself tends to swell the number on the rolls without regard to efficiency of instruction, while the latter tends to extravagance in expenditure and complication in accounting. It was considered that the system devised should have (1) a definite relationship to efficiency of staff employed, and (2) a definite relationship to the number trained on which depends the contingent expenditure and wastage of materials. Accordingly proposals were submitted to Government during the year for a revision of the basis on which grants-in-aid are made by the department and these, if adopted, should result in a more equitable distribution of the grants and produce uniform results in the various schools. The proposals were still under the consideration of Government at the end of the year.

86,765
1,693
12,174

LEATHER TRADES INSTITUTE.

134. *Staff.*—M.R.Ry. P. K. Rajamanikkam Nayudu Garu continued as Superintendent of the Institute throughout the year except for a period of one month from 4th August to 3rd September 1932 when M.R.Ry. K. Seshachellam Choudary was in charge of the office of Superintendent in addition to his own duties. M.R.Ry. K. Seshachellam Choudary Garu, M.A., M.Sc., continued as Leather Research Chemist during the year except for the period from 10th June to 22nd July 1932 when he was on leave.

Visits to tanneries.—The Superintendent visited many of the tanneries in and around Madras in order to correct irregularities and to demonstrate to tanners on the spot the advantages of improved methods and to give advice where difficulties in actual process arose. The best and most economical methods of using the new synthetic tans in their processes were shown to tanners.

Experiments.—The small factory scale experiments on the use of *Anogeissus Latifolia* leaves (both red and pink) which had been suspended during the previous year owing to the non-availability of the leaves were resumed during the period under review on receipt of supplies from the District Forest Officers of Madura and Cuddapah districts. Experiments were carried out by tanning skins independently with the leaves and in combination with avaram bark in different proportions, but as these have not as yet yielded any very promising results, further experiments are in progress. Experiments on the soaking of dry hides were taken up and the effect on the resultant leather of the addition of different chemicals noted. These experiments were still in progress at the end of the year. Experiments on the effect of using synthetic tans such as F.C.S. with different proportions of avaram bark were carried out.

Past students.—As a result of the assistance rendered to two of the old students of the institute, Messrs. Manikkam and Rao—they have installed machinery in their tannery for the manufacture of chrome washers, roller skins, etc., required for cotton ginning mills. The concern run by them is now known as the Madras Industrial Leather Company, Madras. Another old student of the institute—S. Raja—who was formerly with Messrs. Gordon Woodroffe Leather Manufacturing Company, joined Mr. Modi Abdul Ghaffoor and has set up machinery for the manufacture of different kinds of leather at Bangalore.

135. *Leather Research Chemist.*—The activities of the Leather Research Chemist during the year are summarized below:

Analysis.—In addition to the conduct of research work, the Leather Research Chemist carried out a number of analyses of water from tanneries, tanning materials, tan liquors, and leathers, etc. The waters analysed consisted mainly of those sent by tanners in different tanning centres of the Presidency for analysis and report, and the result of these analyses have been systematically tabulated.

*Study of *Anogeissus Latifolia* as a tanning material.*—Fresh samples of *Anogeissus Latifolia* leaves from Cumbum, Madura

district were received and analysed according to the official method, and experiments were then started with a view to studying other properties of the leaves in comparison with other South Indian tanning materials.

Adulteration of Leather.—The tests hitherto used to determine the adulteration of leather with epsom salts have become more and more difficult of application owing to the growing use of synthetic tannins in Madras tannages. Experiments were therefore taken up with a view to determining the presence of epsom salts in leather tanned with syntans. The quantitative determination of the ash of leathers, determination of the hydric concentration and specific gravity of the leathers were independently tried with different samples of leather (adulterated and unadulterated) so as to ascertain if adulteration could be determined in the presence of syntans. This important experimental work was still in progress at the end of the year.

Use of syntans in Madras tannage.—The use of syntans in Madras tannages is, as already indicated, increasing and the need for a systematic study of the subject having been felt, the necessary experiments were initiated. Samples of syntans, used tan liquors containing syntans and spent wattle bark extracted with syntans were analysed. Fresh avaram bark, spent avaram bark and divi divi pods were leached with solutions of syntans and analysed to see if any more tannin could be extracted, but the results were not satisfactory. A complete and systematic study of the analyses of syntans and tanning materials is a work of some magnitude and some time will necessarily elapse before any definite conclusions can be arrived at. Experiments were also taken in hand with a view to ascertaining whether syntans can prevent fermentation of divi divi liquor. Preventol was found, however, to be more effective for this purpose than syntans.

Miscellaneous work.—A number of samples of clay sent by the Ceramic Assistant were analysed and analyses of shellac, red ochre, graphite, etc., were also carried out, whilst a number of chemical enquiries received by the Director of Industries were noted on. The Leather Research Chemist also prepared white sugar from date palm juice in the laboratory, in addition to studying in situ the experiments on the preparation of white sugar from cane carried out at Singanallur and drawing up a report on the results of the experiments. The Leather Research Chemist was also in charge of the chemistry work of the 1st year class in the Government Textile Institute and devoted two hours to lecture and four hours to practical work per week from July to the end of the year. The work included the correction of the practical chemistry record books of the students every fortnight.

136. *Investigation into stains on skins and hides.*—Major A. Guthrie, M.B.E., V.D., was on special duty in connexion with the investigation into the problem of stains throughout the year. In August of the year under review, Government sanctioned the continuance of the special staff employed on the investigation until

the end of the financial year; but stated that no further extension would be granted and that the investigation must be completed within the sanctioned period. Subsequently Major Guthrie was granted leave preparatory to compulsory retirement on average pay for two months and twenty-three days with effect from 1st April 1933 and on half average pay for two years, one month and eight days in continuation thereof. The Chemistry Assistant also proceeded on leave preparatory to retirement from that date.

Tours.—Apart from frequent visits to tanneries in and around Madras, the Special Officer made two tours during the year. The object of the first tour to Bellary was to study the cause of water stains on the skins produced in a tannery there, whilst the second tour to Dindigul and Trichinopoly was with a view to solving certain difficulties experienced in the course of tanning in the tanneries of M. Jamal Muhammad.

Stains.—Further experiments on salt stains, water stains, stains due to mould growth, grain defects and pitting which is a serious hot weather defect in many tanneries were continued during the year and several miscellaneous stains were also examined. The results of these several experiments were embodied in a final report of the work done by the Special Officer and his staff during the period of their special duty which was submitted by Major Guthrie shortly before the end of the year. Samples of raw skins with certain defects were obtained and supplied to the British Leather Manufacturer's Research Association who are investigating the defects on certain Malabar goat skins exported in the raw condition. Ever since he entered upon his special duty Major Guthrie had been endeavouring to interest tanners in the use of stainless steel instead of ordinary iron in those parts of the process where iron is liable to cause stains. As there is a considerable difference between the original cost of stainless steel and iron knives it was not easy to convince the tanners of the advantage of adopting the former, but latterly several tanners have taken to the use of stainless steel knives and it is hoped that the use of these knives at least for working leather out of myrabolam will become general as this will get rid of the knife stains which constitute a serious defect where the finished leather is used for delicate colour work especially in velvet finish.

Publications.—In the course of his special duty, Major Guthrie issued the following publications bearing on different aspects of his work:—

- (1) Stains on Madras Tanned Hides and Skins.
- (2) A preliminary report on stains developing on packed hides.
- (3) Removal of salt stains during the tanning process—English and Tamil.
- (4) The stains caused in the setting out process—English and Tamil.
- (5) Bulletin on South Indian Tannery water—English, Tamil and Telugu.
- (6) Bulletin on 'Chipped Grain'—English and Tamil.

(7) Article on South Indian Tanneries.

(8) The effect of various additions to marine salt for use as a cure to hides and skins.

137. *Handbook of the Madras Tanning Trade.*—Although a number of bulletins on various aspects of the tanning industry has been published from time to time by the department, no comprehensive account of the organization and technique of the industry has hitherto been available and the lack of any such publication was felt by the trade. When therefore the instructional side of the Leather Trades Institute was closed down in 1930 and Major Guthrie was placed on special duty to study in detail the problem of eradicating the stains on tanned hides and skins, it was arranged that in addition to the prosecution of this research, he should also undertake the preparation of a Handbook of the Tanning Trade of South India. This task he completed shortly before he left India in April. The Handbook which embodies Major Guthrie's 21 years' experience of the Madras Tanning Industry is divided into two parts, the first containing information and statistics of general interest to the trade which have been extracted and brought together from a number of different publications and official records, and the second part dealing with the technique of the industry and containing a good deal of unpublished information collected by Major Guthrie during his service at the Leather Trades Institute. It is hoped that tanners will derive benefit from the information in regard to the technique of the industry given in the book which will shortly be published.

SCHOOL OF ARTS AND CRAFTS, MADRAS.

138. *Staff.*—M.R.Ry. D. P. Roy Chowdhury was in charge of the school throughout the year.

Strength and attendance.—The number of students on the rolls on 31st March 1933 was 271 as against 279 in the previous year. The average attendance during the year was 220. The percentage of attendance during the year was 79 as against 85 in the previous year, the decrease being attributable to the prevalence of smallpox in the City and the consequent absence of some of the students.

Departments of the school.—Uniform and steady progress was shown in all the departments of the school during the year. In the woodwork department furniture is made to the designs of the Principal and staff and the quality of the work turned out appears to be appreciated by the public. A reference was made in last year's report to the initiation of experiments on enamelling on gold and silver and other metals. With a view to the further development of the work, M.R.Ry. V. R. Chitra, a teacher in the school, was deputed to study the methods of enamelling practised in the Lucknow School of Arts and Crafts for a period of one month, and he was also permitted to visit Benares, Moradabad and Calcutta in order to study the methods of enamelling and lacquering carried on in those places. Mr. Chitra made good use of his opportunities and after his return to Madras, further experimental work was

commenced without delay. A number of the specimens of enamelled jewellery and metal work turned out in the school were displayed in the School Exhibition and found a ready sale. A separate class has not yet been started in enamelling and the instruction is given in the metal working, engraving and goldsmithy classes. The students are evincing a keen interest in the art and it is hoped that as a result of the experiments initiated in the school a new line of work will be opened up for the craftsmen of this Presidency and that in course of time an artistic enamelling industry will be established. There appears to be practically no Madrasis engaged in the industry at present in the Presidency and the few individuals who practise the art on a small scale come from other parts of India.

The course of training in the design and general drawing section was reduced from three years to two years during the period under review as it was considered that a preliminary training of two years was sufficient to enable a student of average ability to proceed to the advanced drawing class which serves as a feeder to the Fine Arts Class.

The Fine Arts section of the school made excellent progress during the year, the students producing some very good specimens of work many of which were exhibited at the various exhibitions. In an open All-India competition organized by the authorities of Madras Fine Arts Exhibition, V. D. Govindaraj, a final year student of the school was awarded the first prize in water colours and Venkatanarayana Rao, the first prize for sculpture and Figure Drawing. A number of second prizes were also won by junior students.

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.
1930-31	88	44	50
1931-32	34	20	59
1932-33	81	21	73.5

The results may be considered satisfactory, if regard be had to the fact that no special facilities are now provided in the school for the students who appear for these examinations. M. Venkatanarayana Rao, a student of the Fine Arts Class, came out first in the Painting Examination, Higher Grade, and was awarded a gold medal by the Director of Public Instruction. The usual annual class examinations for the purpose of promoting students from one class to another were held during the year. The Government approved during the year my proposal that a diploma be issued to the students who complete their training and pass the examinations in the School of Arts and Crafts.

Financial statement.—The expenditure for the year amounted to Rs. 40,880-11-6 against Rs. 46,577-12-3 and Rs. 54,117-7-4 in the years 1931-32 and 1930-31, respectively. The net cost of the school was only Rs. 33,259-3-9 and was thus below the figure of

Rs. 34,000 suggested by the Retrenchment Committee. The annual audit of the school was as usual conducted by an auditor from the office of the Accountant-General, Madras, and the annual stock verification of the school was conducted by the Sericultural Expert.

Official visitors.—Of the four non-official visitors, three visited the school on one occasion each during the year.

Exhibition.—In order to encourage the students in their work and to maintain the interest in the school that the small exhibition held in the previous year had created, Government sanctioned an annual recurring expenditure not exceeding Rs. 250 for conducting an exhibition of the work of the school. An exhibition was held in January and was attended by His Excellency the Governor of Madras and Lady Stanley and by a number of other distinguished persons. The numerous visitors appeared to be well impressed with the exhibits and articles valued at Rs. 1,435 were sold. Extended references to the exhibition and to the work of the school generally were made in the local press and as a result of the exhibition there is no doubt that the work done, and facilities afforded, by the school have become more widely known.

Institution of prizes.—In February, Government gratefully accepted the offer of M.R.Ry. Rao Bahadur N. R. Balakrishna Mudaliar Avargal, Retired Superintendent of the School to institute two gold medals in his name to be awarded by rotation to the two best final year students in each of the departments of the school.

PROGRAMME OF WORK FOR 1933-34.

I. Engineering Section.

139. (a) Further development of the boring operations in the direction of increasing the depth bored during the year and reducing as far as possible the cost of boring. The economic aspect of the boring work conducted by the department will be carefully examined.

(b) Further demonstration and propaganda in connexion with the manufacture of sugar with centrifugal machinery and testing of different types and makes of centrifugals.

(c) Continuance of bone crushing operations and experiments.

II. Education Section.

—(a) Introduction of the revised system on which recurring grants are given to Industrial Schools.

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

(c) Reorganization of the printing classes in the Government School of Technology in accordance with the recommendations of the Royal Commission on Labour.

(d) Demonstration of the manufacture of school slates.

III. Textile Section.

(a) Evolution of suitable appliances for the twisting of silk for cottage workers.

(b) Evolution of a suitable automatic take up motion for attachment to fly shuttle slay, etc.

(c) Weaving of special varieties of silk fabrics such as Crepe-de-chine, Georgettes, Satins and Taffetas.

IV. Sericulture.

Kollegal.

(a) Increasing the provision of disease-free seed by distributing the members of the party in different centres of Kollegal.

(b) Experimenting with Phillipasara and sunn hemp (green manures) in mulberry gardens.

(c) Collecting economic statistics of the sericultural industry in Kollegal taluk.

(d) Introducing tree mulberry plantations.

(e) Introducing mulberry plantations in ridges of lands.

(f) Bringing mulberry plantations under well irrigation.

(g) Selection of a suitable place in Kollegal for the establishment of a farm.

(h) Improving the country silk reeling machines by the use of cutters.

Coonoor.

(a) Continuance of the hybridization work.

(b) Rearing of univoltine worm.

Hosur and Palmaner.

(a) Extension of the farm with a view to increasing the production of seed cocoons.

(b) Hybridization work.

District work.

Extension of mulberry cultivation in suitable areas of the Presidency.

Ericulture.

(a) Development of ericulture in suitable districts of the Presidency.

(b) Ascertainment of suitable markets for the disposal of the eri cocoons.

V. Kerala Soap Institute, Calicut.

(a) Experiments in refining and deodorizing oils.

(b) Preparation of cashew shell oil and its bye-products.

(c) Ascertainment of the economic value of the common vegetable oils for use as lamp oils as compared with kerosene oil.

VI. Leather Trades Institute.

(a) Continuance of semi-factory scale experiments with *Anogeissus latifolia* leaves.

(b) Conduct of further experiments on the soaking of dry hides.

(c) Conduct of a semi-factory scale experiments on the effect of using synthetic tans with different proportions of avaram bark.

(d) Investigation of the bacterial effect in the elangaram process.

(e) Ascertainment of methods for the manufacture of cheap chrome sole suitable for adoption by tanners who have no chemical knowledge.

(f) Experiments with a view to introducing improvements in the production of roller skins from East Indian skins.

VII. School of Arts and Crafts.

(a) Continuance and development of the experiments on enamelling on gold, silver and other metals.

(b) Further experiments in cotton-printing by means of blocks instead of by the costly waxing process.

RECEIPTS AND EXPENDITURE.

The following statement compares the receipts and expenditure of the department during the years 1931-32 and 1932-33. Details are exhibited in Appendix.

Item.	1931-32.	1932-33.	Decrease or increase.
	RS.	RS.	RS.
Expenditure ..	11,08,293	9,59,100	— 1,49,193
Receipts	1,01,077	1,98,719	+ 97,642
	10,07,216	7,60,381	— 2,46,835

Expenditure.—The sharp fall in expenditure amounting to Rs. 1,49,193 in the year under review as compared with that of the year 1931-32 is attributable to the retrenchment effected in the various schools and institutions under the control of the department, to the institution of the 10 per cent emergency deductions in pay and to the decrease in loss of commercial concerns. The savings thus effected were chiefly under Direction Rs. 11,827, District Engineering Rs. 11,848, Grants-in-Aid Rs. 53,169, Industrial Institutes Rs. 40,978, Leather Trades Institute Rs. 2,291, School of Arts Rs. 4,968, Textile Institute Rs. 9,845, Weaving Parties Rs. 10,184 and in Loss in Commercial Concerns Rs. 12,707 while there was an increase in expenditure amounting to Rs. 5,315 under Miscellaneous Experiments and a fall in recoveries of investments in commercial undertakings amounting to Rs. 6,133.

Receipts.—The appreciable rise in receipts during the year under review as compared with that of the year 1931-32 is due to increase in receipts from Industrial Schools, the number of which was increased by the addition of the Government Industrial School, Madura, which was decommercialized with effect from 1st April 1932, from Pumping and Boring Receipts, and to an increase in profit in the Kerala Soap Institute, Calicut.

The net cost of the department during the year was the lowest since 1926-27.

Statement showing the Receipts and Charges of the Department of Industries for the year 1932-33.

Receipts.

	RS.	A.	P.
1 Weaving and Textiles	724	5	4
2 Industrial schools	58,597	15	5
3 School of Arts and Crafts	7,621	7	9
4 Pumping and Boring receipts	68,640	2	1
5 Industrial installation receipts	3,485	9	4
6 Sericultural receipts	419	6	10
7 Sugarcane crushing plant receipts	1,201	0	0
8 Rents of buildings	73	4	0
9 Other receipts	3,832	8	11
10 Recoveries of overpayments	645	15	0
Total ..	1,45,241	10	8
Profits from Government Commercial undertakings—			
Kerala Soap Institute, Calicut	54,150	1	10
Recoveries of indirect charges from Government Commercial undertakings—			
Kerala Soap Institute, Calicut	5,184	4	0
Industrial Engineering Workshops, Madras	3,461	0	0
Gain by exchange	133	7	0
Grand Total ..	2,08,170	7	6
Deduct Refunds ..	9,451	1	9
Net receipts ..	1,98,719	5	9
Net cost of the department ..	7,60,380	5	11
Total ..	9,59,099	11	8

Expenditure.

	RS.	A.	P.
A. Direction	1,16,770	7	1
B. District Engineering	2,86,045	10	6
C. Industrial Schools—Grants-in-aid	1,06,163	11	0
D. Scholarships	32,298	6	1
E. Industrial Institutes	97,520	7	7
F. Trades Schools	94,093	10	9
G. Leather Trades Institute	38,477	11	9
H. School of Arts and Crafts	40,880	11	6
J. Textile Institute	43,955	12	2
K. Weaving parties	4,357	15	11
L. Sericulture	25,301	3	9
M. Miscellaneous—			
(i) Printer's ink experiments	3,089	12	9
(ii) Experiments on oils and fats in Kerala Soap Institute, Calicut	9,423	4	2
(iii) Miscellaneous	8,083	14	8
Total ..	9,06,462	11	8
Loss on Government Commercial undertakings—			
Industrial Engineering Workshops	15,184	0	0
Expenditure in England	37,653	0	0
Total ..	9,59,299	11	8
Deduct—			
Recoveries of investments in Government Commercial undertakings	200	0	0
Total ..	9,59,099	11	8

N.B.—The figures 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 1932-33.

Serial number, name and place of institution.	Number on rolls on 31st March		Metal working or Engi- neering trades.		Engine tending.		Wood- working trades.		Rattan work.		Textiles cotton.		Textiles wool.		Other textile trades.		Lace Embroid- ery and needle- work.		Other subjects (speci- fied in remarks column).		Particulars as to after career of students passed out in last two years.	Remarks.
	1932.	1933.	Number on rolls.		Number on rolls.		Number on rolls.		Number on rolls.		Number on rolls.		Number on rolls.		Number on rolls.		Number on rolls.		Number on rolls.			
			Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.	Number passed out.			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
GOVERNMENT INSTITUTIONS.																						
1 Government Industrial School, Madura.	98	81	69	1	..	..	12	..	..	..	..	..	..	..	..	..	..	..	..	..	(a) 27 Jewellery. 62 Engraving. 44 Drawing and design. 33 Fine arts. 15 Advanced drawing.	
2 School of Arts and Crafts, Madras.	265	271	29	1	..	..	71	..	..	..	..	..	..	..	..	..	..	..	(a) 171	..	..	
3 Government School of Technology, Madras.	1,037	1,154	796	88	..	..	..	..	..	..	..	..	..	..	..	..	..	..	(b) 358	31	..	
4 Government Textile Institute, Madras.	77	80	..	..	..	..	..	..	..	..	..	..	..	..	80	..	..	..	..	..	171	
5 Government Industrial School, Bellary.	69	38	24	..	..	..	14	..	..	..	..	..	..	..	..	..	..	..	..	..	(b) 72 Printing. 33 Plumbing. 138 Drawing. 115 Probationary apprentices.	
6 Government Industrial School, Calicut.	92	57	38	..	..	..	19	..	..	..	..	..	..	..	..	..	..	..	..	..	358	
7 Government Industrial School, Mangalore.	91	78	47	..	..	..	11	4	..	..	..	..	..	..	..	..	..	..	(c) 20	8	..	
																					(c) 20 Motor mechanism, etc.	

APPENDIX I—cont.
Statistics relating to Government and recognized Industrial Schools for 1932-33—cont.

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, rayon.		Textiles, wool.		Other textiles trades.		Lace, embroidery and needle work.		Other subjects (specified in remarks—column).		Particulars as to after career of students passed out in last two years.	Remarks.
	1932	1933.	(4) Number on rolls.	(5) Number passed out.	(6) Number on rolls.	(7) Number passed out.	(8) Number on rolls.	(9) Number passed out.	(10) Number on rolls.	(11) Number passed out.	(12) Number on rolls.	(13) Number passed out.	(14) Number on rolls.	(15) Number passed out.	(16) Number on rolls.	(17) Number passed out.	(18) Number on rolls.	(19) Number passed out.	(20) Number on rolls.	(21) Number passed out.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Armed Schools (Boys).																						
1 A.A.M. Industrial School, Kalpet.	111	107	12	6	..	..	93	82	..	..	..	..	..	..	..	..	..	..	2	2	..	Carving.
2 The Anjuman Industrial School, Vellore.	62	76	..	..	..	..	76	37	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3 The Anjuman Industrial School, Melvisharam.	43	45	..	..	..	..	45	..	..	..	..	..	..	..	..	..	..	..	23	..	..	Drawing.
4 Anjuman Industrial School, Tirupattur.	23	23	..	..	..	..	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5 Don Bosco Industrial School, Vellore.	23	32	..	..	..	..	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6 St. Joseph's Industrial School, Tindivanam.	83	96	7	7	..	..	89	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7 D.M. Industrial School, Panruti.	116	81	..	..	2	2	58	..	..	..	21	..	..	..	..	..	..	..	(d)	..	..	(d) 45 Agriculture, 8 Sericulture, 10 Psychology.
8 C.S.M. Agricultural School, Melospuram.	70	69	..	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	63	..	..	63
9 A.A.M. Industrial School, Saidapet.	7	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

10 Victory Memorial School for the Blind, Poonamalle	30	29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	(c) 2 Billie writers.
11 St. Joseph's Industrial School, Coimbatore.	182	199	50	16	..	..	149	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12 L.M. Weaving School, Erode.	67	52	..	..	..	..	..	..	..	..	62	10	..	..	..	..	..	..	..	..	..	..
13 P.S.G. & Sons, Charity Industrial School, Coimbatore.	76	75	48	..	4	..	19	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..
14 The Raja's Industrial School, Parakkimedi.	27	26	..	..	..	..	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15 C.B.M. Industrial School, Samalkot.	34	32	..	..	..	..	32	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16 U.I.C.M. Rural Reconstruction School, Guntur.	48	18 & 17	..	..	..	..	..	..	..	..	17	17	..	..	18	18	..	..	..	..	..	..
17 American Cabinet Making School, Guntur.	25	21	..	..	..	..	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18 The Commonwealth Trust, Mangalore.	8	14	14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19 Sri Krishna Parishramalayam, Kavayaram.	16	22	..	..	..	..	22	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20 St. Joseph's Industrial School, Gunadala.	62	64	7	..	..	..	57	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21 Municipal Technical Institute, Masulipatam	46	54	54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22 Cole's Vocational Middle School, Kunnool.	76	60	..	..	..	..	29	..	..	..	..	..	..	..	22	..	..	..	..	..	..	..
23 C.N.T. Institute, Vepery, Madras.	474	416	372	140	19	24	13	..	..	..	12	..	..	..	..	..	..	..	..	..	..	(f) 36 Tailoring.
24 The Anjuman Industrial School, Madras.	102	93	..	..	..	..	66	..	..	..	..	..	..	..	..	..	..	..	(g)	..	..	(g) 10 Carpet-weaving, 17 Tailoring.
25 The Orr's Industrial School, Madras.	23	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	(h)	..	..	(h) 34 Scientific Instrument making.
26 Ramakrishna Mission Students' Home Industrial School, Mysapore.	20	21	21	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

APPENDIX I—cont.

Statistics relating to Government and recognized Industrial Schools for 1932-33—cont.

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 after career of students passed out in last two years.	Remarks.
	1932.	1933.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
AIDED SCHOOLS (BOYS)—cont.																						
27 Sri Ram Motor School, Madras.	104	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
28 Madras Penitentiary, Madras.	66	52	..	..	..	..	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
29 Pasumalai Trades School, Pasumalai.	70	44	7	..	7	4	22	4	8	1	..	..	..	..	..	..	..	..	..	..	..	
30 C.S.M. Industrial School, Dindigul.	51	48	..	..	..	..	48	10	..	..	..	..	..	..	..	..	..	..	..	..	..	
31 St. Joseph's Industrial School, Ootacamund.	34	38	..	..	..	..	38	24	..	..	..	..	..	..	..	..	..	..	..	..	..	
32 St. Theresa's Industrial School, Salem.	18	20	..	..	..	..	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
33 St. Francis Xavier's Industrial School, Tanjore.	95	86	..	..	..	..	47	5	25	5	39	2	..	..	..	..	..	..	..	..	..	
34 St. Mary's Industrial School, Kumbakonam.	69	71	11	..	..	..	60	4	..	..	..	..	..	..	..	..	..	..	..	..	..	
35 Municipal Industrial School, Kumbakonam.	20	20	..	..	..	..	10	..	..	..	10	..	..	..	..	..	..	..	..	..	..	

70

36	Borstal School, Tanjore.	172	166	25	..	..	..	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
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71

APPENDIX I—*cont.*
Statistics relating to Government and recognized Industrial Schools for the year 1932-33—*cont.*

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 trade.	Lace embroidery and needle work.		Other subjects (specified in remarks column).	Particulars as to after-career of students passed out in last two years.	Remarks.				
	1932.	1933.		Number on rolls.	Number passed out.		Number on rolls.	Number passed out.	Number on rolls.	Number passed out.	Number on rolls.	Number passed out.		Number on rolls.	Number passed out.							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
AIDED SCHOOLS (GIRLS)																						
—cont.																						
53 St. Joseph's Orphanage Industrial School, Guntur.	24	22	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22	..	..	..	..	
54 C.S.M. Girls' Industrial School, Kripak.	54	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	53	36	..	..	..	
55 Madras Sevashdan Industrial School, Cheput.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
56 St. Bridget's Industrial School for Girls, Nungambakam.	36	40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	40	2	..	..	..	
57 St. Joseph's Industrial School, Madura.	131	79	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79	15	..	..	..	
58 Commonwealth Embroidery School, Calicut.	44	35	..	..	..	..	..	..	..	..	..	..	..	..	..	..	36	7	..	..	..	
59 O.E.L.M. Girls' Industrial School, Gudur.	37	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	2	..	..	..	
60 Nazareth Convent Girls' Industrial School, Ootacamund.	52	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51	..	..	..	..	

61 St. Mary's Convent Industrial School, Kottayam.	61	65	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
62 Leipzig Mission Women's Industrial Home, Mayavaram.	64	51	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51	12	..	..	..	..
63 R.C. Lace School, Vadakangulam.	41	41	..	..	..	..	..	..	..	..	..	..	..	..	..	..	41	13	..	..	..	..
64 Hindu Girls' Industrial School, Kundangulam.	82	84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	84	..	..	..	..	..
65 Holy Cross Convent Industrial School, Tuticorin.	30	25	..	..	..	..	..	..	..	..	..	..	..	..	..	..	25	2	..	..	..	..
66 Methodist Mission Lace and Embroidery School, Karur.	67	72	..	..	..	..	..	..	..	..	..	..	..	..	..	..	72	..	..	..	..	..
67 Holy Cross Convent Industrial School, Tiruchopoly.	27	26	..	..	..	..	..	..	..	..	..	..	..	..	..	..	26	1	..	..	..	..
68 Sacred Heart Convent Industrial School, Anjengo.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Recognition withdrawn.

* Mat weaving.
† Brush making.

APPENDIX II.

Statistics relating to Government and recognized Industrial Schools for the year 1932-33.

Serial number, name and place of institution.	(1)	(2)	(3)	Receipts from		(6)	(7)	(8)	(9)	Recurring grants from Department of Industries.		(12)	(13)	(14)	Non-recurring.		(17)
				(4)	(5)					(10)	(11)				(15)	(16)	
GOVERNMENT INSTITUTIONS.																	
1 Government Industrial Institute, Madras.	81	38,922	..	..	21,265	21,265	17,660	217	..	..	751	..	..	16,909	..	..	..
2 School of Arts and Crafts, Madras.	271	40,887	332	..	7,282	7,614	33,283	122	..	..	4,234	..	..	29,049	..	..	..
3 Government School of Technology, Madras.	1,154	84,400	..	..	..	..	84,400	73	..	..	3,966	..	..	80,434	..	..	..
4 Government Textile Institute, Madras.	80	43,909	..	..	..	..	43,909	548	..	..	2,979	..	..	41,930	..	..	..
5 Government Industrial School, Feltary.	38	14,067	..	..	4,739	4,769	9,318	245	..	..	2,193	..	..	7,152	..	..	..
6 Government Industrial School, Calicut.	57	21,107	..	..	5,600	5,600	15,507	272	..	..	3,293	..	..	12,214	..	..	..
7 Government Trade School, Mangalore.	78	9,772	18	..	556	574	9,198	117	..	..	180	..	..	9,018	..	..	..
Receipts and expenditure to the nearest rupee.																	
Total recurring cost (excluding expenditure on new buildings and equipment).																	
Fees.																	
Sales.																	
Total, columns (4) and (5).																	
Net recurring cost, column (3) minus column (6).																	
Net recurring cost per pupil, column (7) $\div$ column (2).																	
Maintenance.																	
Scholarships.																	
Stipends.																	
Recurring grants from other departments or public bodies (specified in remarks column).																	
Total recurring grant, add columns (9), (10), (11) and (12).																	
Balance of recurring cost met by managers funds, column (7) minus column (13).																	
Expenditure on new buildings.																	
Building grant.																	
Remarks.																	

AIDED SCHOOLS.

1 A.A.M. School, Katpadi.	107	87,774	1,176	74,192	76,368	12,406	82	3,760	260	..	..	..	..	..	4,020	8,386	..	..	..
2 Anjuman Industrial School, Vellore.	75	15,512	..	9,390	9,390	6,422	82	2,100	460	..	106	..	..	..	2,666	3,156	..	..	..
3 Anjuman Industrial School, Melvatas.	45	7,801	..	3,778	3,778	4,023	90	1,500	254	..	..	..	..	..	1,754	2,289	..	..	..
4 Anjuman Industrial School, Tirupattur.	23	2,199	..	686	686	1,513	66	500	70	..	..	..	..	..	570	943	..	..	..
5 Don Bosco Industrial School, Vellore.	32	3,540	..	877	877	2,663	83	680	9	..	..	..	..	..	689	1,974	..	..	..
6 St. Joseph's Industrial School, Tindivanam.	96	45,935	..	14,816	14,816	31,119	350	5,000	485	2,160	..	..	..	..	7,625	23,496	..	..	..
7 D.M. Industrial School, Panruti.	81	13,297	..	9,497	9,497	3,800	46	3,800	600	..	..	..	..	..	600	3,200	..	..	..
8 C.S.M. Agricultural School, Melrosapuram.	69	6,052	..	964	3,934	881,000	..	..	153	..	..	..	..	..	1,153	2,781	..	..	..
9 A.A.M. Industrial School, Velaicheri, Saidapet.	5	2,577	..	953	953	1,624	325	..	110	..	..	..	..	..	110	1,515	..	..	..
10 Victory Memorial Poonamallee.	29	9,156	..	1,900	1,900	7,256	250	..	..	..	..	..	..	..	..	7,256	..	..	..
11 St. Joseph's Industrial School, Coimbatore.	199	77,064	121	55,648	55,769	21,2	9	107	3,000	414	..	..	..	..	633	3,947	17,348	..	..
12 L.M. Weaving School, Erode.	52	5,223	..	1,873	1,873	3,350	64	1,200	32	..	..	..	..	..	1,232	2,118	..	..	..
13 P.S.G. & Sons' Charity Industrial School, Peelamedu.	75	82,739	..	62,768	62,768	19,971	266	1,620	402	..	..	..	..	..	2,022	17,949	17	..	..
14 Raja's Industrial School, Parakkudi.	26	3,510	..	1,564	1,564	1,946	75	500	176	1,256	..	..	..	..	1,932	15	..	..	..
15 C.B.M. Industrial School, Samalkot.	32	7,015	..	450	550	6,465	202	1,150	15	..	3,233	..	..	..	4,398	2,067	3,930	..	..
16 U.L.C.M. Lam Rural School, Guntur.	35	9,520	217	1,474	1,691	7,829	435	1,250	..	..	..	..	..	..	1,250	6,579	4,624	..	..
17 American Mission Cabinet-making School, Guntur.	21	6,118	1,435	..	1,435	4,683	223	600	..	..	..	..	..	..	500	4,183	..	..	..

APPENDIX II—cont.
Statistics relating to Government and recognized Industrial Schools for the year 1932-33—cont.

Serial number, name and place of institution.	(1)	(2)	(3)	Receipts from		Receipts and expenditure to the nearest rupee.										Remarks.	
				(4) Fees.	(5) Sales.	(6) Total, columns (4) and (5)	(7) Net recurring cost, column (3) minus column (6).	(8) Net recurring cost per pupil, column (7) ÷ column (2).	(9) Maintenance.	(10) Scholarships.	(11) Stipends.	(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).	(15) Expenditure on new buildings.		(16) Building grant.	(17)
Anded Schools—cont.																	
18 Commonweath Trust Engineering Classes, Mangalore.	14	RS. 951	RS. ..	RS. ..	RS. ..	RS. ..	RS. 951	RS. 68	RS. 190	RS. ..	RS. ..	RS. ..	RS. ..	RS. 190	RS. 761	RS. ..	RS. ..
19 Sri Krishna Parisamajam, Kavarattam.	22	1,519	..	..	..	..	1,519	82	550	6,941	..	250	1,495	324	..	..	..
20 St. Joseph's Industrial School, Gundala.	64	15,311	..	2,310	2,360	12,961	203	2,490	415	..	..	303	3,122	9,839	..	..	..
21 Municipal Technical Institute, Masulipatam.	54	18,080	445	9,450	9,925	8,155	151	1,300	513	..	..	..	1,813	6,342	..	..	..
22 Cole's Vocational Middle School, Kurnool.	60	8,124	..	324	324	7,800	136	1,600	..	..	..	..	1,600	6,200	..	..	..
23 C.N.T. Institute, Vepery.	416	47,552	19,955	4,091	24,026	43,577	57	3,800	1,177	..	..	..	4,977	18,545	1,038	..	..
24 Anjuman School, Madras.	93	34,515	..	10,015	10,015	14,500	263	6,000	196	..	..	..	6,196	18,304	..	..	..
25 Orr's Assisted Industrial School, Madras.	31	5,400	..	..	..	..	5,400	158	2,700	..	..	..	2,700	2,700	..	..	..
26 Ramakrishna Mission Industrial School, Mysore.	21	7,441	285	319	604	6,837	326	2,000	133	..	..	..	2,133	4,704	13,140	3,535	..

27 Sri Ram Motor School, Madras.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
28 Madras Penitentiary Cabnet-making Classes, Madras.	52	17,627	..	..	4,678	4,678	12,949	249	..	..	..	..	..	..	..	..	..
29 Pasmalai Trades School, Pasmalai.	44	48,166	..	35,465	35,465	13,000	292	1,900	131	..	..	..	2,031	10,970	..	..	..
30 C.S.M. Industrial School, Dindigul.	48	7,000	..	5,817	5,817	1,200	25	1,200	104	..	..	..	1,304	104	..	..	..
31 St. Joseph's Industrial School, Ottacamund.	38	9,821	..	8,123	3,123	6,697	176	900	68	..	..	112	1,080	5,797	12,442	8,000	..
32 St. Theresa's Institute Industrial School, Salem.	20	700	..	500	400	200	10	400	..	..	..	..	400	200	..	..	..
33 St. Francis Xavier's Industrial School, Tanjore.	86	23,291	..	12,386	12,386	10,906	127	2,600	259	..	..	..	2,869	8,037	..	..	..
34 St. Mary's Industrial School, Kumbakonam.	71	33,492	4	19,095	19,099	14,393	203	2,600	390	..	..	..	2,990	11,403	..	..	..
35 Municipal Industrial School, Kumbakonam.	20	3,265	..	426	426	2,838	142	1,250	22	..	..	1,260	2,522	316	..	..	..
36 Borstal School, Tanjore.	166	..	..	2,794	5,794	13,724	116	3,400	935	..	..	..	4,335	8,889	..	..	..
37 S.P.G. Art Industrial School, Nazareth.	114	19,018	..	2,495	2,493	2,980	54	970	73	..	..	..	1,043	1,937	..	..	..
38 St. Joseph's Industrial School, Adakkalapuram.	57	5,475	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
39 C.M.S. Industrial School for the Blind, Palamottah.	61	8,778	..	6,040	6,040	2,738	45	1,700	378	..	..	..	2,078	660	..	..	..
40 St. Ignatius' Industrial School, Tuticorin.	29	3,457	..	775	775	2,682	92	650	50	..	..	..	700	1,983	3,800	..	..
41 St. Joseph's Industrial School, Trichinopoly.	69	36,874	..	25,215	25,215	11,659	169	1,300	198	..	..	270	1,668	1,991	..	..	..
42 Methodist Mission Industrial School, Kavar.	83	9,883	..	16,880	16,880	6,997	111	2,500	1,075	..	..	..	3,575	3,423	..	..	..
43 All Saints' Industrial School, Puthur.	35	8,520	..	2,725	2,765	5,555	160	1,250	196	..	..	1,245	2,696	2,865	..	..	..
44 St. Aloysius' Industrial School, Vizagapatam.	25	..	..	..	..	..	..	..	1,440	..	..	1,440	..	..	..	..	..
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Unaided school, hence no particulars given.

APPENDIX II—cont.

Statistics relating to Government and recognized Industrial Schools for the year 1932-33—cont.

Serial number, name and place of institution.	(1)	Number on rolls on 31st March 1933.	(2)	Total recurring cost (excluding expenditure on new buildings and equipment).	(3)	Receipts and expenditure to the nearest rupee.														Remarks.															
						Receipts from		Recurring grants from Department of Industries.										Non-recurring.																	
						(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)																	
								Total, columns (4) and (5).		Net recurring cost, column (3) minus column (6).		Net recurring cost per pupil, column (7) ÷ column (2).		Maintenance.		Scholarships.		Stipends.		Recurring grants from other departments or public bodies (specified in remarks column).		Total recurring grant, add columns (9), (10), (11) and (12).		Balance of recurring cost met by manager's funds, column (7) minus column (13).		Expenditure on new buildings.		Building grant.		(17)					
Aided Schools—cont.						Rs.		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.		Rs.							
46 D.M. Industrial School, Keelur.						36		5,708		..		4,128		1,580		44		125		170		..		..		295		28			..				
46 St. Joseph's Convent Industrial School, Bellary.						86		2,562		..		868		1,694		20		700		..		..		..		700		994			..				
47 C.S.M. Lacc School, Chingleput.						71		3,670		..		996		2,674		38		500		285		..		..		785		1,889		..					
48 Wesleyan Mission Industrial School, Ikshadu.						171		52,423		..		46,439		5,984		34		..		345		..		..		345		5,639		1,468					
49 St. Antony's Industrial School for Girls, St. Thomas' Mount.						57		6,130		..		1,318		4,812		85		250		..		..		..		250		4,562		..					
50 A.A.M. Women's Industrial Home, Palmar.						77		18,577		203		5,019		5,222		15,355		173		1,200		89		480		200		1,969		11,386		..			
51 L.M. Girls' Industrial Home, Erode.						75		1,360		..		433		433		927		13		400		54		..		..		454		473		..			
52 Immaculate Conception Convent, Coimbatore.						83		5,456		..		1,786		1,786		3,670		45		750		..		..		..		750		2,920		..			

53 A.B.M. Girls' Industrial School, Ongole.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
54 St. Joseph's Orphanage Industrial School, Guntur.	22	3,744	27	1,120	1,147	2,597	116	500	28	..	..	..	..	..	528	2,069	..	..	..	..
55 Madras Seva Sadan, Chelput.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
56 C.S.M. Girls' Industrial School, Kilpuk.	53	5,357	190	1,622	1,812	3,445	67	700	45	396	..	..	..	..	1,141	2,504	..	..	..	..
57 St. Bridget's Industrial School, Nungambakam.	40	6,949	..	1,994	1,994	4,955	124	500	..	..	..	..	..	..	500	4,455	3,838	..	..	..
58 St. Joseph's Convent Industrial School, Madurai.	79	7,652	..	3,450	3,450	4,212	53	800	335	..	1,082	..	..	..	2,168	2,044	..	..	..	..
59 Commonwealth Embroidery School, Calicut.	36	4,079	12	2,167	2,179	1,900	53	750	125	..	..	..	..	..	875	1,025	..	..	..	..
60 O.E.L.M. Girls' Industrial School, Gudur.	32	4,390	..	1,230	1,230	3,116	93	350	22	..	..	..	..	..	372	2,768	..	..	..	..
61 Nazareth Convent Girls' Industrial School, Ootacamund.	51	13,197	..	3,402	3,402	9,794	192	600	254	..	..	..	..	..	854	8,940	..	..	..	..
62 St. Mary's Convent Girls' Industrial School, Kottagiri.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
63 Leipzig Mission Women's Industrial Home, Myavaram.	66	10,131	..	4,607	4,607	5,524	85	1,700	334	..	..	..	..	..	2,034	3,490	..	..	..	..
64 B.C. Lacc School, Vadakangulam.	51	1,832	..	484	484	1,348	26	600	110	..	..	..	..	..	710	638	..	..	..	..
65 Hindu Girls' Industrial School, Kundangulam.	41	3,072	..	407	407	2,666	65	400	346	..	..	..	..	..	746	1,920	..	..	..	..
66 Holy Cross Convent Industrial School, Tuticorin.	84	8,862	..	3,591	3,591	5,262	63	1,000	315	..	..	..	..	..	1,315	3,947	..	..	..	..
67 Holy Cross Convent Industrial School, Trichinopoly.	72	4,752	..	1,716	1,716	3,036	42	700	242	..	..	..	..	..	912	2,034	..	..	..	..
68 Wesleyan Mission Lacc School, Karur.	25	2,416	..	843	843	1,572	62	300	8	..	..	..	..	..	308	1,264	7,000	..	..	..
69 Sacred Heart Convent Industrial School, Anjengo.	26	1,553	..	42	42	1,511	58	400	234	..	..	..	..	..	634	877	..	..	..	..

Recognition withdrawn.

Recognition withdrawn.

APPENDIX III.

Statistics relating to recognized Industrial Schools for the year 1932-33

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)
AIDED SCHOOLS (BOYS).				
1 A.A.M. Industrial School, Katpadi ..	(a) Carpentry, cabinet-making and (b) blacksmith and motor mechanics, (c) carving.	(a) 82, (b) 5 and (c) 2.	Working in Chittoor and North Arcot districts.	Rs. A. P. 2,000 0 0
2 Anjuman Industrial School, Vellore ..	(a) Cabinet-making and (b) freehand outline drawing.	(a) 2 and (b) 5 ..	....	8,871 0 0
3 Anjuman Industrial School, Melvisbaram ..	Cabinet-making .. .. .	....	....	4,178 0 9
4 Anjuman Industrial School, Tirupattur.	(a) Cabinet-making and (b) drawing ..	....	....	686 0 9
5 Don Bosco Industrial School, Vellore.	Carpentry and cabinet-making ..	....	....	1,276 0 0
6 St. Joseph's Industrial School, Tindivanam.	(a) Carpentry, cabinet-making and (b) smithy and fitting.	....	....	17,658 0 0
7 Danish Mission Industrial School, Panruti.	(a) Cabinet-making, (b) cotton weaving, and (c) motor-car driving.	....	....	10,746 0 0
8 C.S.M. Agricultural School, Melrossapuram.	Agriculture and allied trades ..	....	....	..
9 A.A.M. Industrial School, Saidapet.	Cabinet-making .. .. .	....	....	1,007 0 0
10 Victory Memorial School for the Blind, Poonamallee.	Weaving and rattan work .. ..	....	....	2,089 0 0
11 St. Joseph's Industrial School, Coimbatore.	(a) Carpentry and (b) fitting	(a) 15 and (b) 16 ..	....	62,500 0 0
12 L.M. Weaving School, Erode ..	Weaving and dyeing	10	Most of the boys for teachers' training.	1,288 13 3
13 P.S.G. & Sons Charity Industrial School, Coimbatore.	Mechanical engineering, oil engine tending, carpentry and weaving.	....	....	67,841 3 1
14 Raja's Industrial School, Parakkimedi.	Carpentry and cabinet-making ..	....	....	2,346 7 6
15 C.B.M. Industrial School, Samalkot ..	Do.	4	4 working in the school ..	850 0 0
16 U.L.C.M. Rural Reconstruction School, Guntur.	Agriculture and allied trades including weaving.	17 .. ..	....	..
17 American Mission Cabinet-making School, Guntur.	Carpentry and cabinet-making ..	....	....	..
18 Commonwealth Trust, Mangalore ..	Mechanical drawing and workshop mathematics.	....	....	..
19 Sri Krishna Parissamalayam, Kavutaram.	(a) Carpentry, (b) mechanical drawing and freehand drawing.	(a) 4 and (b) 7 ..	7 working in the village ..	500 0 0
20 St. Joseph's Industrial School, Gunadala.	Cabinet-making and blacksmithy ..	9 .. ..	....	2,350 7 3
21 Municipal Technical Institute, Masulipatam.	Mechanical engineering .. ..	....	....	16,012 0 0
22 Coles Vocational Middle School, Kurnool.	Tailoring, weaving and gardening ..	....	....	375 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 blacksmithy.	....	....	4,838 0 0
24 Anjuman Industrial School, Madras ..	Carpentry, carpet-weaving and tailoring.	....	....	10,479 0 0
25 Orr's Assisted Industrial School, Madras.	(a) Mechanical engineering, (b) workshop theory and practice, (c) machine drawing, (d) scientific instruments making and jewellery.	....	....	..
26 Ramakrishna Mission Industrial School, Mylapore.	Mechanical engineering	5	3 employed	1,094 0 0
27 Sri Ram Motor School, Madras ..	Motor-driving and mechanism ..	....	....	..
28 Madras Penitentiary, Madras ..	Cabinet-making .. .. .	....	....	14,611 0 0

APPENDIX III—cont.

Statistics relating to recognized Industrial Schools for the year 1932-33—cont.

Serial number and name of the institution.	Subjects in which instruction is provided.	Number of students who passed out in each subject.	Particulars as to the after-career of passed students.	Approximate total annual value of work turned out.
(1)	(2)	(3)	(4)	(5)
AIDED SCHOOLS (BOYS)—cont.				
				RS. A. P.
29 Pasumalai Trade School, Pasumalai ..	(a) Printing, (b) carpentry, (c) black-smithy, (d) motor-car repairs and (e) engine tending.	(a) 1, (b) 4 and (d) 4.	All are employed	35,465 0 0
30 C.S.M. Industrial School, Dindigul ..	Carpentry and cabinet-making ..	10 .. ..	....	5,800 0 0
31 St. Joseph's Industrial School, Ootacamund.	Cabinet-making	24 .. ..	....	3,500 0 0
32 St. Therese's Industrial School, Salem.	Woodwork .. ..	....	....	500 0 0
33 St. Francis Xavier's Industrial School, Tanjore.	(a) Cabinet-making and (b) weaving ..	(a) 5 and (b) 2 ..	Five are employed. Two are employed in Tanjore factories.	10,500 0 0
34 St. Mary's Industrial School, Kumbakonam.	(a) Cabinet-making, (b) smithy and (c) rattan work.	(a) 4	One electric concern, Naga-patnam.	17,583 0 0
35 Municipal Industrial School, Kumbakonam.	(a) Cabinet-making and (b) weaving ..	(a) 1 and (b) 2 ..	(a) One employed on cotton weaving factories, (b) two employed as professional carpenters.	815 7 3
36 Borstal School, Tanjore	Cabinet-making, weaving and tailoring.	....	....	14,309 13 3
37 S.P.G. Art Industrial School, Nazareth.	(a) Carpentry and cabinet-making, (b) blacksmithy, (c) motor-car driving mechanism and (d) tailoring.	(a) 14, (c) 3 and (d) 4.	....	1,158 15 9
38 St. Joseph's Industrial School, Adaikalapuram.	Carpentry and weaving .. ..	....	....	6,314 9 0
39 C.M.S. Industrial School for the Blind, Palamecottah.	Carpentry, weaving and rattan-work ..	....	....	850 0 0
40 St. Ignatius Industrial School, Tuticorin.	Cabinet-making and carpentry ..	....	....	28,992 8 2
41 St. Joseph's Industrial School, Trichinopoly.	(a) Metal work and trades and (b) cabinet-making.	(a) 7 and (b) 3 ..	All are employed	
42 Methodist Mission Industrial School, Karur.	(a) Carpentry, (b) black-smithy, (c) motor engineering, (d) rattan work and (e) cotton weaving.	5 and (e) 3	(e) employed as teachers ..	20,280 3 2 (e) 2,692 4 1
43 All Saints Industrial School, Puttur.	Cabinet-making	30 .. ..	....	3,450 0 0
44 St. Aloysius Industrial School, Vizagapatam.	Motor-car driving and carpentry ..	4	All are employed	..
AIDED SCHOOLS (GIRLS.)				
45 Danish Mission Industrial School, Keelur.	(a) Lace-making and (b) embroidery ..	(a) 1 and (b) 3 ..	Two got married and two are employed in the school as workers.	4,500 0 0
46 St. Joseph's Convent Industrial School, Bellary.	Lace-making, embroidery and general needle-work.	....	....	932 6 0
47 C.S.M. Lace School, Chingleput ..	Lace-making	40	Teachers and lace-workers ..	1,363 11 0
48 Wesleyan Mission Industrial School, Ikkadu.	(a) Lace-making, (b) embroidery, (c) weaving and (d) general needle-work.	(b) 10 .. ..	....	44,007 6 3
49 St. Anthony's Industrial School for Girls, St. Thomas' Mount.	(a) Embroidery, (b) needle-work, (c) dress-making, (d) tape-making, (e) matting, (f) rattan work and (g) raffia work.	(a) 6, (b) 6, (d) 22, (e) 8, (f) 7 and (g) 2.	....	2,350 0 0
50 A.A.M. Women's Industrial Home, Palmaner.	Lace-making, embroidery, general needle crafts and dress-making.	....	....	5,019 3 8
51 London Mission Girls' Industrial School, Erode.	Mat-making, basket-work and weaving.	7	All have gone for training ..	821 13 6
52 Immaculate Conception Convent School, Coimbatore.	Embroidery, general needle crafts and dress-making.	....	....	2,200 0 0
53 St. Joseph's Orphanage Industrial School, Guntur.	Dress-making and general needle crafts.	3	Two are employed	1,173 0 0
54 C.S.M. Girls' Industrial School, Kilpauk.	(a) Embroidery, (b) general needle crafts and (c) dress-making.	(a) 28 and (c) 8 ..	....	2,487 2 4
55 Madras Seva Sadan Industrial School, Chetput.	....	....	....	..
56 St. Bridget's Girls' Industrial School, Nungambakam.	Embroidery and general needle crafts.	2	Teachers in industrial schools.	1,500 0 0
57 St. Joseph's Industrial School, Madura.	Do. do.	15	Two got married and eight earn their bread by embroidery.	4,099 11 0
58 Commonwealth Embroidery School, Calicut.	Embroidery, lace-making and needle-work.	7	These students are usually entertained in embroidery department.	2,063 0 0

APPENDIX III—*cont.*

Statistics relating to recognized Industrial Schools for the year 1932-33—*cont.*

Statistics relating to recognized Industrial Schools for the year 1932-33—*cont.*

(1) Serial number and name of the institution.	(2) Subjects in which instruction is provided.	(3) Number of students who passed out in each subject.	(4) Particulars as to the after-care of passed students.	(5) Approximate total annual value of work turned out.
AIRED SCHOOLS (GIRLS)—cont.				
59 O.E.L.M. Girls' Industrial School, Gudur.	Lace-making	2	.....	Rs. A. P.
60 Nazareth Convent Girls' Industrial School, Ootacamund.	Dress-making, embroidery and general needle crafts.	.....	.....	3,583 0 0
61 St. Mary's Convent Industrial School, Kotagiri.	.....	.....	.....	..
62 Leipaig Mission Women's Industrial Home, Mayavaram.	Cotton-weaving, mat weaving and basket-making and general needle work.	13	Three working as weaving mistresses, one as mat weaving teacher and one went to Palmaner for spinning.	4,610 0 0
63 R.C. Lace School, Vadakangulam	Lace-making (a). embroidery general needle-work and sericulture.	11 (a) 1 (b)	.....	963 0 0
64 Hindu Girls' Industrial School, Kudangulam.	Lace-making	13	Some of the girls get married and the others take up lace-making and get wages for their work.	866 7 0
65 Holy Cross Convent Industrial School, Tuticorin.	Lace-making, embroidery and dress-making	Nil	.....	3,591 6 0
66 Methodist Mission Lace and embroidery School, Karur.	Lace-making and embroidery	2	.....	843 2 4
67 Holy Cross Convent Industrial School, Trichinopoly.	Embroidery and general needle crafts	.....	.....	1,960 0 0
68 Sacred Heart Convent Industrial School, Anjengo.	Lace-making, embroidery and dress-making.	1	.....	42 6 0