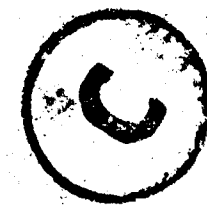


Admin. report of the  
Dept. of Industries.

1922



R  
XBA-2: 2311  
N23

No. 269-E.

From

C. W. E. COTTON, Esq., C.I.R., I.C.S., M.L.C.,  
Director of Industries, Madras,

To

THE SECRETARY TO GOVERNMENT,  
DEVELOPMENT DEPARTMENT,

*Dated Madras, the 21st August 1922.*

SIR,

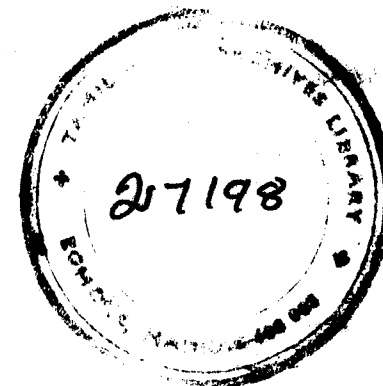
I have the honour to submit the administration report of the  
Department of Industries for the year ending 31st March 1922.

I have the honour to be,

Sir,

Your most obedient servant,

C. W. E. COTTON,  
*Director of Industries.*



343

86-

## CONTENTS

| PAGE. | SUBJECT.                                                               | PAGE  |
|-------|------------------------------------------------------------------------|-------|
|       | <i>Personnel.</i>                                                      |       |
| 1     | Director .. .. .                                                       | 1     |
| 2     | Deputy Director .. .. .                                                | 1     |
| 3     | Director's tours .. .. .                                               | 1     |
| 4     | Industrial Chemist .. .. .                                             | 2     |
| 5     | Inspector of Industrial Schools .. .. .                                | 2     |
| 6     | School of Arts .. .. .                                                 | 2     |
| 7     | Madura Industrial Institute .. .. .                                    | 2     |
| 8     | Leather Trades Institute .. .. .                                       | 2     |
| 9     | Textile Expert .. .. .                                                 | 2     |
| 10    | Kerala Soap Institute .. .. .                                          | 2-3   |
| 11    | Engineering Branch .. .. .                                             | 3     |
| 12    | Minor Industries Laboratories, Coonoor .. .. .                         | 3     |
| 13    | Government Fruit-preserving Institute, Coonoor .. .. .                 | 3     |
| 14    | Deputy Controller, Munitions .. .. .                                   | 3-4   |
| 15    | Organization .. .. .                                                   | 4-5   |
| 16-18 | Re-organization proposals .. .. .                                      | 5     |
| 19    | Exhibitions .. .. .                                                    | 5-6   |
| 20    | Conferences .. .. .                                                    | 6-7   |
| 21-22 | Board of Industries .. .. .                                            | 7     |
| 23    | Classification of the activities of the department .. .. .             |       |
|       | <i>SECTION I.</i>                                                      |       |
| 24    | General assistance to trade and industry .. .. .                       | 7     |
| 25-26 | New floatations .. .. .                                                | 7-8   |
| 27-28 | Mines and minerals .. .. .                                             | 8-9   |
| 29-30 | Commercial inquiries .. .. .                                           | 9-10  |
| 31    | Alizarine dyes .. .. .                                                 | 10-11 |
| 32    | Coal .. .. .                                                           | 11    |
| 33    | Cement .. .. .                                                         | 11-12 |
| 34    | Alkaloids .. .. .                                                      | 12    |
| 35    | Gums and resins .. .. .                                                | 12    |
| 36    | Granite .. .. .                                                        | 12    |
| 37    | Kittool fibre .. .. .                                                  | 12    |
| 38    | Cinnamon bark and oil industry .. .. .                                 | 12-13 |
| 39    | Coal baskets .. .. .                                                   | 13    |
| 40    | Cedar slats .. .. .                                                    | 13    |
| 41    | Overseas trade .. .. .                                                 | 13-14 |
| 42    | Supply of coal to industries .. .. .                                   | 14    |
| 43    | Adulteration of castor and coconut oil .. .. .                         | 14    |
| 44    | Commercial museum .. .. .                                              | 14-15 |
| 45    | Legislation affecting industries .. .. .                               | 15    |
| 46    | Savings Banks and Co-operative Stores for Industrial Employees .. .. . | 15    |
| 47    | Library .. .. .                                                        | 15    |
| 48    | Statistics .. .. .                                                     | 15-16 |
| 49-51 | Munitions .. .. .                                                      | 16-17 |
| 52    | Manufacture orders .. .. .                                             | 17    |
| 53    | Disposal of furniture .. .. .                                          |       |
|       | <i>SECTION II.</i>                                                     |       |
| 54    | Phosphatic nodules .. .. .                                             |       |
| 55    | Clay .. .. .                                                           |       |
| 56    | Utilization of prickly-pear and cashew turnips .. .. .                 |       |
| 57    | Utilisation of limes and tamarind .. .. .                              |       |
| 58    | Coir production .. .. .                                                | 66    |
| 59    | Miscellaneous .. .. .                                                  |       |
| 60    | Palmyra fibre brushes .. .. .                                          |       |
| 61    | Magnesite tiles .. .. .                                                |       |
| 62    | Glass bangles .. .. .                                                  |       |
| 63    | Match factories .. .. .                                                |       |

## CONTENTS

| PARAS.       | SUBJECT.                                                                                             | PAGES |
|--------------|------------------------------------------------------------------------------------------------------|-------|
| SECTION III. |                                                                                                      |       |
| 64-69        | Kerala Soap Institute .. .. .                                                                        | 21-24 |
| 70           | Cautioising plant .. .. .                                                                            | 24    |
| 71           | Government minor industries laboratory .. .. .                                                       | 24    |
| 71           | Inks .. .. .                                                                                         | 24-25 |
| 72           | Vinegar .. .. .                                                                                      | 25    |
| 73           | Adhesives .. .. .                                                                                    | 25    |
| 74           | Miscellaneous—Staff .. .. .                                                                          | 25    |
| 75           | Expenditure and receipts .. .. .                                                                     | 25    |
| 76-77        | Government Glue Factory .. .. .                                                                      | 26    |
| 78           | Pallapalayam Sugarcane-crushing Factory .. .. .                                                      | 26-27 |
| SECTION IV.  |                                                                                                      |       |
| 79           | Peripatetic weaving parties .. .. .                                                                  | 28    |
| 80           | Resume of work done by each Peripatetic Weaving Party Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10. .. .. . | 28-29 |
| 81           | Reorganisation of the weaving branch .. .. .                                                         | 29-30 |
| 82-83        | Textile Institute .. .. .                                                                            | 30-31 |
| 84           | Improved appliances .. .. .                                                                          | 31    |
| 85           | Manufacture of appliances .. .. .                                                                    | 31-32 |
| 86           | Exhibitions .. .. .                                                                                  | 32    |
| 87           | Textile Testing Laboratory .. .. .                                                                   | 32-33 |
| 88           | Conferences .. .. .                                                                                  | 33    |
| 89           | Cottage industries .. .. .                                                                           | 33    |
| 90           | Toys .. .. .                                                                                         | 33-34 |
| 91           | Ellore carpets .. .. .                                                                               | 34    |
| 92           | Palampores .. .. .                                                                                   | 34    |
| SECTION V.   |                                                                                                      |       |
| 93           | Pumping and boring operations .. .. .                                                                | 34-35 |
| 94           | Loans sanctioned .. .. .                                                                             | 35    |
| 95           | Mapping of underground water-supplies .. .. .                                                        | 35    |
| 96-97        | Workshops .. .. .                                                                                    | 35-36 |
| 98-99        | Building work and construction .. .. .                                                               | 36    |
| 100          | Miscellaneous experiments .. .. .                                                                    | 36-37 |
| 101          | Bezawada division—Tours .. .. .                                                                      | 37    |
| 102          | Do. Constitution .. .. .                                                                             | 37    |
| 103          | Fee inquiries .. .. .                                                                                | 37-38 |
| 104          | List of installations erected .. .. .                                                                | 38    |
| 105          | Compounding fees .. .. .                                                                             | 38    |
| 106          | Borings—Torpedoing operations .. .. .                                                                | 38-39 |
| 107          | Testing engines .. .. .                                                                              | 39    |
| 108          | Power drills .. .. .                                                                                 | 39-40 |
| 109          | State loans .. .. .                                                                                  | 40    |
| 110          | Industrial inquiries .. .. .                                                                         | 40    |
| 111          | Coimbatore division—Tours .. .. .                                                                    | 40-41 |
| 112          | Fee inquiries .. .. .                                                                                | 41    |
| 113          | List of installations erected .. .. .                                                                | 41    |
| 114          | Compounded installations .. .. .                                                                     | 41    |
| 115          | Boring .. .. .                                                                                       | 41    |
| 116          | Torpedoing operations .. .. .                                                                        | 41    |
| 117          | Testing engines—Underground water-supply .. .. .                                                     | 41-42 |
| 118          | Power drills .. .. .                                                                                 | 42    |
| 119          | State loans .. .. .                                                                                  | 42    |
| 120          | Industrial inquiries .. .. .                                                                         | 42    |
| 121          | Tanjore division—Tours .. .. .                                                                       | 42-43 |
| 122          | Fee inquiries .. .. .                                                                                | 43    |
| 123          | List of installations erected .. .. .                                                                | 43    |
| 124          | Compounding fees .. .. .                                                                             | 43    |
| 125          | Boring .. .. .                                                                                       | 43-44 |
| 126          | Torpedoing operations .. .. .                                                                        | 44    |
| 127          | Testing engines .. .. .                                                                              | 44    |
| 128          | Power drills .. .. .                                                                                 | 44    |
| 129          | Industrial inquiries .. .. .                                                                         | 44    |

## CONTENTS

| PARAS.      | SUBJECT.                                                                         | PAGES |
|-------------|----------------------------------------------------------------------------------|-------|
| SECTION VI. |                                                                                  |       |
| 130         | State technical scholarships .. .. .                                             | 4     |
| 131         | Scholarships tenable at the Indian Institute of Science, Bangalore. .. .. .      | 4     |
| 132         | Scholarships tenable in the Victoria Jubilee Technical Institute, Bombay .. .. . | 4     |
| 133         | Industrial school scholarships .. .. .                                           | 4     |
| 134-135     | Industrial schools exhibition .. .. .                                            | 4     |
| 136-139     | The Madras Trades School .. .. .                                                 | 4     |
| 140         | Leather Trades Institute .. .. .                                                 | 4     |
| 141         | Admissions .. .. .                                                               | 4     |
| 142         | Research .. .. .                                                                 | 49    |
| 143         | Other inquiries .. .. .                                                          | 49    |
| 144         | Past students .. .. .                                                            | 49    |
| 145         | Examinations .. .. .                                                             | 50    |
| 146         | Plant .. .. .                                                                    | 50    |
| 147         | Prizes and athletics .. .. .                                                     | 50    |
| 148         | Visits to other concerns .. .. .                                                 | 50    |
| 149         | Financial statements .. .. .                                                     | 50    |
| 150         | School of Arts—Accommodation .. .. .                                             | 51-52 |
| 151         | Strength and attendance .. .. .                                                  | 51-52 |
| 152         | Departments .. .. .                                                              | 52    |
| 153         | Library and Museum—Financial statement .. .. .                                   | 52    |
| 154         | Examinations .. .. .                                                             | 52    |
| 155         | School of Arts Committee .. .. .                                                 | 52    |
| 156         | General .. .. .                                                                  | 52    |
| 157-160     | Madura Industrial Institute .. .. .                                              | 54    |
| 161-162     | Aided Industrial Schools .. .. .                                                 | 55-56 |
| 163         | The Addison Press Industrial School .. .. .                                      | 56    |
| 164         | St. Mary's Industrial School, Kumbakonam .. .. .                                 | 56    |
| 165         | St. Joseph's Industrial School, Coimbatore .. .. .                               | 56    |
| 166         | Do. Trichinopoly .. .. .                                                         | 56    |
| 167         | Do. Tindivanam .. .. .                                                           | 56    |
| 168         | The S.P.G. Industrial School, Nazareth, Tinnevely district .. .. .               | 56    |
| 169         | St. Francis Xavier's Industrial School, Tanjore .. .. .                          | 57    |
| 170         | The Danish Mission Industrial School, Tiruvannamalai .. .. .                     | 57    |
| 171         | List of schools receiving grants-in-aid .. .. .                                  | 58    |
| 172-173     | Financial statement of the department .. .. .                                    | 58-59 |
| 174         | General .. .. .                                                                  | 59    |

## APPENDIX I.

|                                                                       |    |
|-----------------------------------------------------------------------|----|
| Profit and Loss account of the Kerala Soap Institute, Calicut .. .. . | 60 |
|-----------------------------------------------------------------------|----|

## APPENDIX II.

|                                                               |    |
|---------------------------------------------------------------|----|
| Trading account of the Kerala Soap Institute, Calicut .. .. . | 60 |
|---------------------------------------------------------------|----|

## APPENDIX III.

|                                                                                                                                  |    |
|----------------------------------------------------------------------------------------------------------------------------------|----|
| School of Arts—Classification of pupils in the Industrial Department according to the occupation of parents or guardians .. .. . | 61 |
|----------------------------------------------------------------------------------------------------------------------------------|----|

## APPENDIX IV.

|                                                                                 |    |
|---------------------------------------------------------------------------------|----|
| School of Arts—Students who left the school and have secured employment .. .. . | 61 |
|---------------------------------------------------------------------------------|----|

## APPENDIX V.

|                                                          |    |
|----------------------------------------------------------|----|
| School of Arts—Statement of receipts and charges .. .. . | 61 |
|----------------------------------------------------------|----|

## APPENDIX VI.

|                                                                                                                    |    |
|--------------------------------------------------------------------------------------------------------------------|----|
| School of Arts—Results of the various Government Technical Examinations held in November and December 1921 .. .. . | 62 |
|--------------------------------------------------------------------------------------------------------------------|----|

## APPENDICES VII AND VIII.

|                                                   |    |
|---------------------------------------------------|----|
| Statistics relating to Industrial schools .. .. . | 66 |
|---------------------------------------------------|----|

## APPENDIX IX.

|                                                                                                                                |    |
|--------------------------------------------------------------------------------------------------------------------------------|----|
| Statement of receipts and charges of the Department of Industries G.O. No. 1525, Development, dated 13th November 1922 .. .. . | 66 |
|--------------------------------------------------------------------------------------------------------------------------------|----|

ADMINISTRATION REPORT OF THE DEPARTMENT OF  
INDUSTRIES FOR THE YEAR ENDING 31st MARCH 1922.

Although this is the third time I have been responsible for the preparation of a similar report, it is the first occasion on which I have had to deal with the work of a year in which I held office as Director.

PERSONNEL.

2. *Director.*—Mr. L. B. Green was holding temporary charge of the appointment of Director until my arrival on the 4th April, and I continued in charge of the department to the end of the year, while Mr. Green performed the functions of Deputy Director and with effect from the 1st February 1922 was confirmed in that appointment on a salary of Rs. 750—50—1,500.

3. *Director's tours.*—I was on tour for 162 days during the year. I visited Simla in May to attend the third conference of Directors of Industries and on my way back inspected the Calcutta Research Tannery in company with Mr. Guthrie. In October I visited Ceylon as one of the representatives of the Madras Government to confer with representatives of Ceylon regarding the delimitation of the Gulf of Mannar and Palk Strait. At the end of November I proceeded to Patna to attend the All-India Hand-weaving Exhibition and at the end of January represented the Madras Government at the annual meeting of the Associated Chambers of Commerce in Calcutta. I also visited Bangalore on four occasions to attend the meetings of the Council of the Indian Institute of Science. Among the important industrial centres visited were Calicut, Madura, Bezwada, Tanjore, Coimbatore, Tindivanam, Tadpatri, Berhampore, Masulipatam and Vizianagram.

4. *Industrial Chemist.*—During the period under review the Industrial Chemist continued to work in the laboratories of the Indian Institute of Science, Bangalore, and I should like to record my appreciation of the facilities afforded to him by the authorities there. Dr. Marsden visited Madras to attend the conference called by the Honourable the Minister for Development on the 15th August to discuss matters relating to the erection of laboratories at Washermanpet, the retting of coir, etc., and in September toured on the West Coast to investigate the prevailing conditions for coir retting and to collect samples for investigation. A visit was also paid to the Vellore Central Jail in connexion with carpet dyeing.

The appointment of chemistry assistant was not filled up during the year.

5. *Inspector of Industrial Schools.*—Mr. Fyfe continued to hold the appointment of Inspector of Industrial Schools throughout the year. He spent 117 days on tour and, in addition to inspecting the aided industrial schools and the Madura Industrial Institute, exercised control over the Madras Trades School and dealt with all correspondence on the subject of industrial and technical education.

6. *School of Arts.*—Mr. W. S. Hadaway held the appointment of Superintendent, School of Arts, throughout the year. M.R.Ry. M. Velayuda Asari, permanent Assistant Superintendent, who was on combined privilege leave and furlough from the 19th July 1920 to 6th September 1921, eventually retired from service with effect from 7th September 1921, and M.R.Ry. N. R. Balakrishna Mudaliyar continued to act.

7. *Madura Industrial Institute.*—Mr. H. E. R. Dunhill was in charge throughout the year with Mr. Rama Rao as Assistant Superintendent. Mr. D. Rajam Ayyar joined duty as Warden on 16th June 1921.

8. *Leather Trades Institute.*—Mr. Guthrie in spite of ill-health carried out with marked efficiency the duties of Principal, Leather Trades Institute, throughout the year. In May he visited the Calcutta Research Tannery. Mr. Rajamanikkam Nayudu continued as Vice-Principal.

9. *Textile Expert.*—Mr. Amalsad who was in charge of the Weaving Branch throughout the year, was confirmed as Textile Expert in G.O. No. 1834, Development, dated the 29th September 1921. He continued to exercise purely technical supervision over the territorial weaving staff, the administrative control of the Peripatetic weaving parties being vested in the Assistant Directors of Industries under the Campbell scheme. He spent 99 days on tour. There was no change in the personnel of Weaving Assistants and Superintendents during the year.

10. *Kerala Soap Institute.*—The Kerala Soap Institute was in charge of Mr. A. K. Menon, Soap Expert and Oil Chemist, from the beginning of the year until he proceeded on leave on the 4th September, when M.R.Ry. P. S. Srinivasa Ayyar was appointed to hold charge. With effect from 1st January 1922, a temporary appointment of Business Manager on a salary of Rs. 300 per mensem was sanctioned by Government and Mr. P. V. Ramunni was appointed to the post. Mr. Krishna Kurup worked in the factory throughout the year except for a period of two months (7th November 1921 to 6th January 1922), when he was on leave, when Mr. Kanna Kurup from the Indian Institute of Science took his place.

11. *Engineering Branch.*—Captain (now Lieut.-Col.) Watts held the appointment of Industrial Engineer throughout the year, no

officiating appointment being made when he proceeded on a month's leave from 2nd May 1921. Mr. V. Ranga Achariyar Assistant Industrial Engineer, continued to be in charge of the departmental workshops.

12. *Minor Industries Laboratory, Coonoor.*—The Minor Industries Laboratory, Coonoor, was in charge of Sir Frederick Nicholson, Honorary Superintendent, throughout the year. From the 1st September until 31st January 1922, Sir Frederick drew an honorarium of Rs. 300 per mensem for his services in this connexion but as soon as he learnt that there was to be a deficit budget, he generously waived his claim to any further remuneration. On the 31st March he resigned his appointment of Honorary Superintendent and I take this opportunity to place on record the deep obligation of the Department for his initiative and counsel over a period of years in so many branches of our activities. Fortunately, the Department is still able to command his advice and assistance in many pending questions and the Lady Manager of the Fruit Preserving Institute, Coonoor, in particular found him most helpful in connexion with the many problems which faced her in starting work on a commercial scale.

13. *Government Fruit Preserving Institute.*—Miss Channing Pearce, Lady Manager, returned from deputation in England on the 16th September 1921 but as the construction of the Institute was not completed by the end of the year, her time was chiefly occupied in making arrangements for supplies of fruit and in giving instructions to the Industrial Engineer with regard to the internal fittings of the factory, and engaging the necessary staff to start work. The manufacture of jam on a considerable scale has now begun.

14. *Deputy Controller, Munitions.*—The appointment of Controller of Munitions, which was held by Mr. A. Y. G. Campbell, was abolished with effect from 23rd March 1921 when he went on leave, but Mr. L. B. Green continued as Deputy Controller till 1st November 1921, when this appointment was also abolished, though Mr. Green acted as the representative of the Chief Controller of ~~Surplus~~ Stores till the end of the official year. As there was no sanction for any staff the work was carried on without additional remuneration by a clerk of the Industries Department.

15. *Organization.*—At the beginning of the year the Presidency was divided into five Assistant Directors' divisions, but it soon became abundantly clear that there was not sufficient work for so many officers, and, as stated in last year's Administration Report, I was addressing myself to the question of curtailing the number of these charges when circumstances arose which enabled me to reduce them from five to three. M.R.Ry. T. K. T. Veeraraghava Achariyar, Assistant Director, Bezvada, who had proceeded on leave on the 24th March 1921, definitely reverted on its expiry to his permanent

appointment as District Board Engineer, Kistna. M.R.Ry. S. Rajagopalaswami Mudaliyar, Assistant Director, Bellary Division, rejoined the Public Works Department on 10th July 1921, and Mr. A. E. Jordan, Assistant Director, Madras Division, resigned his appointment on the 16th July. The three new divisions were constituted as follows, with headquarters at Bezwada, Coimbatore and Tanjore respectively :—

| Name of division.  | Revenue districts comprising the division.                                                        |
|--------------------|---------------------------------------------------------------------------------------------------|
| Bezwada .. .. .    | Ganjam, Vizagapatam, Gōdāvari, Kistna, Guntūr, Nellore, Bellary, Anantapur, Cuddapah and Kurnool. |
| Coimbatore .. .. . | Coimbatore, The Nilgiris, Malabar, South Kanara, Salem, North Arcot and Chittoor.                 |
| Tanjore .. .. .    | Madura, Ramnad, Tinnevely, Tanjore, Trichinopoly, Chingleput, South Arcot and Madras.             |

Mr. L. S. Pinto and M.R.Ry. D. Sadasivam Pillai were in charge of the Coimbatore and Tanjore (formerly Madura) divisions throughout the year and M.R.Ry. Rao Sahib C. S. Ramachandra Ayyar, of the Bezwada Division, from 4th April 1921.

16. *Reorganization proposals.*—On the 15th August, a departmental conference was held, presided over by the Hon'ble the Minister for Development, at which I submitted recommendations for the reorganization of the Department, including the substitution of Assistant Industrial Engineers for Assistant Directors and the reduction of the pay of the Industrial Engineer. These were accepted without modification by the Conference, and on the 9th December last formal proposals were submitted to Government. Proposals were also submitted in the course of the year for the regrading and revision of pay of Supervisors and Mechanics and reorganization of the weaving branch, including the abolition of the appointments of the two weaving assistants and the substitution therefor of five weaving superintendents. The general effect of these recommendations was in the direction of considerable economy.

17. During the year Government in their Order No. 915, dated the 25th May 1921, sanctioned the appointment of eight mechanics to look after the agricultural installations scattered throughout the Presidency, and these appointments were added to the Industries cadre, making up the number of mechanics to 40. Of the staff of forty mechanics, some were temporary while others were on a permanent footing and their scales of pay differed. The orders of Government making all appointments of mechanics permanent and also revising their pay were received shortly after the close of the year under review.

18. In G.O. Mis. No. 1639, Development, dated the 7th September 1921, Government sanctioned the temporary employment of 16 apprentice boring maistris in the Pumping and Boring branch of this department. Sanction was also received during the year for the revision, with effect from 1st March 1921, of the pay of the following staffs:—

(1) Boring maistris of the Pumping and Boring branch (vide G.O. Press No. 108, Development, dated the 24th January 1922).

(2) Clerical staff of the Department (vide G.O. No. 1590, Development, dated the 29th August 1921).

(3) Menial staff of the Department (vide G.O. No. 1436, Development, dated the 5th August 1921).

19. *Exhibitions.*—The Department participated as usual in the annual Agricultural and Industrial Exhibition held at Tiruppur and exhibited a range of soaps manufactured at Calicut, and inks manufactured at Coonoor, both of which were awarded silver medals.

At the Industrial Exhibition which was held at Bezwada during the Kistna Pushkaram festival in August 1921, a comprehensive exhibit representative of the various activities of the Department was shown. The Dresser sizing machine designed by the Textile Expert was awarded a gold medal. The Kerala Soap Institute, Calicut, and the Industrial Laboratory, Coonoor, were awarded gold and silver medals for their respective exhibits of soaps and inks. A great deal of interest was evinced in the departmental exhibits especially the Dresser sizing machine and other improved weaving and preparatory appliances displayed by the Textile branch of the Department.

The Department also arranged to send a representative exhibit from Madras for the All-India Hand Weaving Exhibition held at Patna in November-December 1921. A number of improved weaving appliances newly constructed under the direction of the Textile Expert were shown as well as a wide range of hand-woven cloths and saris. The Government of Madras offered a prize of Rs. 100 for the best simple solid border slay exhibited capable of weaving borders of various widths but no award was made. A gold medal was awarded the department for their exhibits as a whole and in addition three gold and nineteen silver medals were awarded to individual exhibitors from the Presidency. The Director of Industries and the Textile Expert attended the exhibition.

20. *Conferences.*—The third conference of the Departments of Industries was held at Simla in May 1921, at which several important subjects were discussed. The conference was attended by the Hon'ble the Minister in charge of the Development Department and the Director of Industries. The proceedings of the conference have been published as a bulletin by the Government of India.

A conference convened by the Director and attended by Deputy Director, Industrial Chemist, Textile Expert, and the Assistant Directors, Madura and Coimbatore divisions, was held in July 1921 to consider on what lines further action in regard to the development of the coir industry in districts other than the West Coast should be taken and the preliminary experiments, if any, which should be made.

21. *Board of Industries.*—There were four meetings of the Board of Industries during the year. The very heavy agenda dealt with by the Board during the last few months of the year 1920-21 had left little work to be submitted for the consideration of the Board during the year under review. Among the subjects dealt with were—

- (1) proposals for the establishment of a demonstration textile institute;
- (2) the reorganization of the sugarcane crushing station at Pallapalayam and the future conduct of the experiments;
- (3) the question of starting with Government aid a spinning or a combined spinning and weaving mill at some suitable place in the Presidency;
- (4) an application from the South Indian Match Factory, Limited, for a loan of Rs. 1 lakh from Government for the purpose of starting a factory for the manufacture of matches;
- (5) an application from the Carnatic Paper Mills, Limited, Madras, for a loan of Rs. 3,30,000 from Government in connexion with the establishment of a paper mill. In neither case was a loan recommended.

22. The composition of the Board on the 1st April 1921 was as follows:—

- (1) Sir Pitti Tyagaraya Chetti Garu, Kt., M.L.C.
- (2) H. M. Ibrahim Sait Sahib Bahadur.
- (3) The Bishop of Dornakal.
- (4) Mr. A. F. Buchanan.
- (5) Sir Frederick Nicholson, K.C.I.E.
- (6) M.R.Ry. Rao Bahadur T. Ranga Achariyar Avargal, M.L.A.
- (7) " V. Tirumalai Pillai Avargal.
- (8) Jamal Muhammad Sahib Bahadur.
- (9) Mr. A. P. Symonds.
- (10) Mr. N. M. Murray.
- (11) Mr. A. A. Biggs.

With the Director of Industries ex officio as Chairman.

Mr. W. A. Turner succeeded Mr. A. P. Symonds as member of the Board when the latter proceeded to England in April. Mr. J. F. (now Sir James) Simpson was appointed a member of the

Board in place of Sir Frederick Nicholson who resigned his seat on 10th May and Brigadier-General Magniac was appointed a member of the Board in place of Mr. A. A. Biggs who resigned his seat in November. I take this opportunity of expressing my thanks for the great assistance rendered by members of the Board not only at formal meetings but also individually to the Department.

23. In G.O. No. 2355, Development, dated the 21st December 1921, reviewing the administration report of the department for the year 1920-21 Government pointed out that the various activities of the Department of Industries are now grouping themselves under the following heads:—

I. General assistance to trade and industry including collection of statistics and of industrial and commercial information and the supply of information to the public as regards the sources of supply of and markets for various articles of commerce.

II. Experiments and inquiries having for their ultimate object the starting either by private owners or by the Government of new industries or of new branches of or improved processes in existing industries.

III. Management of manufacturing institutions owned by Government which have passed beyond the early experimental stage.

IV. Assistance to scattered industries not conducted in factories, of which the weaving industry is at present the most conspicuous example.

V. Similar assistance intended principally for the benefit of agriculturists.

VI. Industrial education in all its branches, including education in arts and crafts and the grant of scholarships.

It will be convenient perhaps to readers of the present report if the above classification is followed in dealing with the various aspects of the department's activities.

#### I

24. *General assistance to trade and industry.*—This work is chiefly carried out by the bureau of Industrial and Commercial Information which was under the charge of Mr. Green throughout the year. From the increasing number of inquiries received on industrial and commercial questions it is evident that the work of the bureau continues to be appreciated and both Mr. Green and M.R.Ry. S. R. Athmanatha Ayyar, the Superintendent of the section, deserve hearty commendation for their excellent work.

25. *New flotations.*—One hundred and eight joint stock companies with an authorized capital of 285 lakhs were registered during the year as compared with 110 with an authorized capital of 648 lakhs

in 1920-21. The more important of the industrial concerns registered during the year were the following :—

|                                                               | Capital.     |             |           | Registered office. | Object.                               |
|---------------------------------------------------------------|--------------|-------------|-----------|--------------------|---------------------------------------|
|                                                               | Authorized.  | Subscribed. | Paid-up.  |                    |                                       |
| West Coast Industrial Works, Limited.                         | Rs. 2,00,000 | Rs. 10,000  | Rs. 3,350 | Calicut ..         | Manufacture of leather goods.         |
| India Gold Thread Mills, Limited.                             | 3,00,000     | 1,67,500    | 98,861    | Madura ..          | Manufacture of gold thread and lace.  |
| Calicut Hosiery Works, Limited.                               | 1,00,000     | 8,300       | 4,554     | Calicut ..         | Manufacture of cotton goods.          |
| Kantimati Mills, Limited.                                     | 27,00,000    | ..          | ..        | Madras ..          | Cotton ginning, spinning and weaving. |
| Nelathinpathur Spinning and Weaving Mills, Limited.           | 10,00,000    | 7,070       | ..        | Palamcottah.       | Spinning and weaving cotton.          |
| Salem Industrials, Limited.                                   | 5,00,000     | 1,10,250    | 33,075    | Salem ..           | Do.                                   |
| Sri Minakshi Mills, Limited.                                  | 50,00,000    | 5,02,660    | 1,16,990  | Madura ..          | Cotton ginning, spinning and weaving. |
| Sri Ranga Vilas Ginning, Spinning and Weaving Mills, Limited. | 9,00,000     | 3,30,500    | 3,30,500  | Coimbatore.        | Do.                                   |

The disparity between authorized and subscribed capital and again between the subscribed and paid-up capital is very marked : for in the case of the one apparent exception the India Gold Thread Company Rs. 80,000 is accounted for by the purchase price of an old concern which was received by the vendors in the form of paid-up shares.

26. Among the measures taken to assist individuals anxious to start new industries or to extend and improve their business connexions may be mentioned—

- (i) furnishing information in regard to reliable firms from whom machinery, appliances and accessories can be obtained ;
- (ii) indicating possible sources of raw materials ;
- (iii) helping to find markets for finished products by putting manufacturers into touch with consumers, wholesale dealers or exporters ;
- (iv) giving technical advice and offering opinions on the commercial possibilities of projected schemes ;
- (v) arranging for analysis to be carried out where possible by the Industrial Chemist of raw materials forwarded by parties and indicating their commercial value.

27. The Government passed final orders during the year in regard to the transfer to the Director of Industries of the control of the administration of the Mines Act and the mining rules from the Board of Revenue and Collectors. The Government considered that it was

not necessary to disturb the existing arrangements but with a view to safeguard the interests of industrial development issued instructions to the effect that the Director should be kept informed of all applications for prospecting licences and mining leases received by the Board and Collectors. In pursuance of these orders forms of application for prospecting licences and mining leases have been framed and the department receives from the Collectors copies of all the applications received by them and the Board of Revenue is addressed on any point regarding any particular prospecting or mining application which is thought of importance to the development of industries.

28. The search for minerals in the Province continues to develop. During the year the following prospecting licences were granted :—

|                                                                      |          |     |                                               |
|----------------------------------------------------------------------|----------|-----|-----------------------------------------------|
| Fifteen licences for prospecting for mica over an area of 491 acres. |          |     |                                               |
| Two                                                                  | do.      | do. | coal " " 382 "                                |
| One                                                                  | licence  | do. | nitrate of copper and allied minerals } 840 " |
| Three                                                                | licences | do. | manganese " 2,608 "                           |
| Seven                                                                | do.      | do. | barytes " 77 "                                |
| One                                                                  | licence  | do. | garnet " 10 "                                 |
| One                                                                  | do.      | do. | galena " 640 "                                |
| One                                                                  | do.      | do. | all minerals " 64 "                           |
| One                                                                  | do.      | do. | steatite " 97 "                               |
| Two                                                                  | licences | do. | gold " 3,605 "                                |
| One                                                                  | licence  | do. | asbestos " 7 "                                |
| One                                                                  | do.      | do. | asbestos " 7 "                                |

Government sanctioned during the year the renewal of the lease of the Irrakam shell quarries in the Nellore district to the South India Industrials for a further period of three years from the 5th March 1921.

29. *Commercial inquiries.*—It is difficult to summarize in a few paragraphs the very large number of inquiries received from the public in regard to different articles and commodities but to illustrate the extremely wide range of references received it may be mentioned that they include chemicals, drugs and dye-stuffs, metals, minerals and ores, oil, oilseeds and oil cakes, horns, bone and bone-meal, coal, fuel and petrol, biscuits, bananas and other foodstuffs, toys, timber and textile goods, machinery and hardware.

The inquiries received by the Industrial Chemist related to such matters as the manufacture of rose essence, bone glue, German silver, type-metal and crucibles for alloy making, and the possibility of manufacturing pure salt from brine by the use of permutite—a commercial water-softening product. The idea was ingenious, but not practicable, as although permutites will remove salts of calcium and magnesium from waters in which these are present to the extent of a few parts per hundred thousand they are incapable of doing so

when common salt is also present above a given ratio. In bringing this ratio is exceeded. Another inquiry of some interest related to the manufacture of biscuits by a country maker who found that his wares although put up in air-tight tins did not keep. Dr. Marsden was able to show that sterilization had not been complete before packing and to indicate the cure.

Some time since the Fisheries Department invited the assistance of the department in the matter of drying of fish guano. The Industrial Chemist suggested a machine suited to requirements and local conditions but difficulties were experienced when it came to make one. These have now been overcome and a Calcutta firm has quoted for the supply of a machine embodying his ideas which should prove quite effective.

30. In the Dyeing section there have not been many inquiries and it is unfortunate that arrangements could not be made owing to the financial stringency for an assistant to tour in the dyeing centres to get into touch with dyers and study the changed conditions. The old time controversy regarding the relative values of natural and synthetic dyestuffs may be considered as finally disposed of, for, if, under the favourable conditions produced by the post-war difficulties in obtaining synthetic dyes, the use of the natural dyes was not extended, there is little likelihood of their being used now that dyers can command adequate supplies of synthetic products.

Considerable difficulty was felt in disposing of the stocks of reparation dyes received in India but this is only to be expected, seeing that so many of the brands shipped were unknown to dyers and dealers in India and had not been stocked by the agents in pre-war days.

Dr. Marsden was in communication during the year with British makers and has received lists and samples which indicate that all reasonable requirements for dyestuffs of all classes can now be met and it only remains for the selling agencies to be developed to meet Indian market conditions and then perhaps effective competition with German firms may be possible.

Inquiries were dealt with relating to the dyeing of palmyra and coir fibres, to the bleaching of loofah, etc., and to the question of dyes suitable for carpet yarns. Dr. Marsden also rendered assistance in a mercantile dispute regarding the quality of an alizarine consignment, the standard of which was questioned.

31. *Alizarine dyes.*—At the close of 1920-21 it was believed that no further consignments of reparation dye would be received in Madras and no anxiety was felt as to the disposal of the stocks then on hand. The prices of the dyes were much below the level at which similar qualities could be obtained from Germany or elsewhere. When however fresh consignments of reparation dye began

to arrive in September 1921, though the quantity of the dye that was requisitioned was limited to the barest requirements, its disposal soon became a matter of considerable difficulty, for with the rapid depreciation in the value of the mark, German dyes were offered at extremely low rates. The well-known German brands had the great advantage of being put up in small containers with attractive labels and the agents for these dyes embarked on a policy of deliberate price-cutting and also offered buyers of their brands various facilities and concessions, such as extended credits and rebates with retrospective effect in cases where the prices were reduced subsequent to purchase. Prices of reparation dye had therefore to be continually reduced in sympathy with fall in German dyes. For these and other reasons the Government of India decided towards the close of the year to abandon the scheme for securing reparation payments in this manner.

32. *Coal.*—In connexion with the exploration of the Beddadanole coal field to which reference was made in the last year's report, Messrs. Best & Co. were granted prospecting licences over certain areas in the Kistna and Gōdāvari districts. Their attention, however, has so far been largely absorbed in the preparation of accurate geological maps of the area of the deposits as those prepared by the Geological Survey some fifty years ago were found not altogether reliable. It is understood that the requisite boring machinery and the necessary staff of operators have been obtained from England and that the firm hope to be in a position to commence systematic boring operations very shortly.

33. *Cement.*—It is to be regretted that little progress can be reported during the year under review with regard to the starting of cement manufacture at Bezwada though Government approved of the grant to any syndicate willing to pioneer this important industry, of certain rights in respect of mining and quarrying the limestone and shale required, subject to the condition that an outturn of not less than 30,000 tons of cement per annum is attained within four years from the grant of the lease. The necessary lease for the grant of rights for mining and quarrying limestone and shale required for cement manufacture has however recently been executed by Mr. A. Ghose of Betamcherla.

Meanwhile another concern called the Kistna Cement Works has been formed and the company is understood to have obtained lease of limestone quarries in certain zamindari lands and are sanguine that the necessary financial backing will be forthcoming in due course. It is doubtful, however, whether there is room for more than one cement factory in the neighbourhood of Bezwada. Apart from the large amount of capital required for plant and running expenses and the difficulty of securing the necessary

expert management, very good cement must be made if a market is to be found for the entire output.

34. *Alkaloids*.—No progress has been made with the construction of a factory for the manufacture of crude alkaloids at Vizagapatam by a leading firm of manufacturing chemists which is referred to in paragraph 28 of the last Administration Report.

35. *Gums and resins*.—A report has now been received from the London firm of manufacturing chemists on whose behalf a collection of samples of aromatic gums and oleo resins available in commercial quantities in the Madras forests was made through the medium of the Forest Department, and to which reference was made in the report for 1919-20. The report does not encourage the hope which was at one time entertained that the firm would establish a factory in Southern India for the manufacture of drugs and essential oils.

36. *Granite*.—In connexion with the lease granted to them for quarrying granite with the help of modern machinery and plant, Messrs. Lakshmi Ratan, Ltd., requested the Madras and Southern Mahratta Railway to reopen a railway siding at the quarries. The railway regretted their inability to comply with the request as the cost of re-opening the siding was prohibitive and the traffic offered by the firm was inadequate. As unless the Railway authorities are prepared to grant the concession, there is little prospect of the scheme materialising, the question whether it will not be possible to reduce the cost of providing a new siding is being examined in consultation with the Railway Company.

37. *Kittool fibre*.—In paragraph 35 of last year's report reference was made to the arrangements then in progress to stimulate the collection of kittool fibre. Preliminary investigations have now been completed by the Assistant Director, Coimbatore Division, and steps have been taken to distribute the sample lot of fibre obtained from Ceylon among the *adhigaris* of 78 *amsams* in Ernad, Ponnani and Walavanad taluks of the Malabar district. It is hoped by this means to make the local collectors of this fibre acquainted with the standard and quality required for export.

38. *Cinnamon bark and oil industry*.—Investigation has been made with a view to ascertain the possibility of the improvement in the extraction of the oil in the South Kanara district. There is some export of cinnamon in the form of quills from the Anjerakandi estate near Tellicherry.

39. *Coal baskets*.—In response to a request from the Madras and Southern Mahratta Railway asking to be put in touch with suitable suppliers of cane coal baskets which were urgently required by them, tenders were forwarded from a contractor in the South Arcot district and the Controller of Stores placed a large order. The

supplies were not however up to the countersample which the contractor forwarded and on which the original order was placed. The Railway authorities therefore declined to accept the baskets except at reduced rates to which the contractor would not agree. This case is quoted to illustrate the difficulties which the department has to meet when attempting to assist individual industrialists.

40. *Cedar slats*.—On the Madras Pencil Factory representing that they were experiencing difficulties in finding a market for their pencils, the Superintendent of Stationery, Madras, the Superintendent of Stationery, Bombay, and the Controller of Printing, Stationery and Stamps, Calcutta, were addressed on the subject and substantial orders were secured in consequence. The firm experienced some difficulty in procuring supplies of suitable cedar slats, but through the help of the department they have now been put in touch with one or two reliable firms in British East Africa. The factory contemplate taking up shortly the question of manufacture of coloured crayons.

41. *Overseas trade*.—A large number of applications were received during the year from Indian firms, merchants and petty traders asking for lists of oversea firms interested in Indian produce and manufactures. As a result of the decision come to at the third Conference of the Departments of Industries all questions of overseas trade are dealt with exclusively by the Director-General of Commercial Intelligence and all applications from parties seeking markets abroad are transferred to him for disposal but the department furnishes confidential reports on the financial standing and business reputation of the applicants.

It seems necessary here to sound a note of warning against firms and individuals who embark upon overseas trade with insufficient capital and who do not carry sufficient stocks to fulfil contracts in time. An English house complained, for example, of the loss sustained by them owing to the default of a local firm which had contracted to supply nux vomica but it is only fair to say that the latter made a counter-complaint that they had not been furnished in good time with the bank credits that had been promised. A case of a different type is that of a small Indian firm which supplied lace to a concern in Australia whose stability or standing they had not apparently fully investigated. The latter failed to make any payments for the consignments received and from inquiries made by the department of the authorities in Melbourne it is learnt that the proprietor has disappeared and there is no prospect of any portion of the debt being recovered.

42. *Supply of coal to Industries*.—Much difficulty was felt by several industrial concerns in obtaining their supplies of coal. The Coal Transportation Officer, Calcutta, was in one or two instances

moved to afford the requisite shipping facilities for the transport of coal. Requests for transport of coal by all-rail route were received in a few cases but these could not be recommended as the policy of the Government of India is that except strictly for railway purposes *en route*, coasting steamers should be utilized for the purpose of moving coal to various parts of India from Calcutta. Requests for the provision of facilities for transport of coal have now to be made to the Chamber of Commerce.

43. *Adulteration of castor and coconut oil.*—Only one firm took advantage of the facilities provided by Government for the issue of official certificates showing the standard of purity attained in respect of coconut oil while no application was received in respect of castor oil. All the three specimens of coconut oil, forwarded by the firm were reported to be pure and were granted official certificates of purity. The Chemical Examiner agreed to do these analyses free in the hope that manufacturers would be encouraged to sell their oil with a certificate of purity and that buyers would get used to expecting such a certificate and thereby a reputation for reliability and good quality would be established for the oils produced by these firms. The fact that only eight samples have been analysed under this scheme in two years would appear to indicate that manufacturing firms in India do not wish to sell their oils with certificates of purity. The Chemical Examiner accordingly suggested that the scheme which was introduced as an experimental measure should be dropped and that in future he should charge his usual fees for these analyses as was done before the scheme came into operation. This has since been approved by Government.

44. *Commercial Museum.*—The establishment of a Commercial and Industrial Museum in connexion with the Bureau of Industrial and Commercial Information has been under the consideration of Government for some time past. Though the desirability of such an institution has been recognized by Government it has not been found possible owing to the existing financial stringency to find funds even for a start in rented premises. A small beginning has however been made with the nucleus of such a museum on the ground floor of the office premises in Commander-in-Chief's Road where a wide range of British dyes suitable for dyeing, various kinds of fibre, pencils manufactured at the Madras Pencil Factory, inks manufactured at the Industrial Laboratory, Coonoor, and soaps made at the Kerala Soap Institute, Calicut, may be inspected. A collection of inferior soaps made in the country in imitation of the soaps manufactured at the Kerala Soap Institute and also of adulterated foreign soaps is also on view to serve as a awful warning.

45. *Legislation affecting Industries.*—The question of introducing legislation to prevent the adulteration of leather was eventually

dropped by Government while the taking of powers by legislation to render financial assistance by Government to private industries or towards the establishment of new industries to which reference was made in the last year's report was still under consideration. The Government of India having remitted to local Governments for consideration in the Provincial Legislative Councils, the question of introducing legislation on the lines of section 54-A of the Calcutta Police Act, 1866, to deal with the prevalence of petty thefts in industrial districts, the matter was under correspondence with the railway authorities at the close of the year.

46. *Savings Banks and Co-operative Stores for Industrial employees.*—The possibility of a systematic organization of savings banks and co-operative stores for the benefit of factory workers was examined during the year but it was considered that in the existing condition of relations between employers and employees it would be impracticable to undertake such arrangements for the benefit of factory workers in large industrial centres and that attempts in this direction would be more likely to meet with success in rural areas. It is understood that the question is engaging the attention of the Registrar of Co-operative Societies.

47. *Library.*—The library attached to the Central office contains a number of useful books on the subjects relating to commerce, technology and manufacture and though primarily intended as a reference library for the use of the departmental officers was open to the public from 11 a.m. to 5 p.m. Some interesting additions were made in the course of the year. Proposals to keep the library open on Sundays and holidays were, however, negatived by Government on account of the cost involved.

48. *Statistics.*—The department continued to compile statistics of rail-borne trade, information regarding minerals, planting products and sundry industries and a summary on the subject of manufactures is also prepared for inclusion in the Administration Report of the Presidency. I regret I have again to record a considerable delay in the receipt of returns in respect of planting products from Collectors of districts.

49. *Munitions.*—The beginning of the official year was marked by the complete closing down of the munitions organization at Madras. The work of winding up the commitments of the Indian Munitions Board was one of considerable magnitude even though there were no special indents for compliance. The question of obtaining countersigned invoices for overseas consignments was taken up and dealt with, and this occupied the full time of one clerk till the 30th June 1921.

In a letter No. E. 1045, dated the 19th May 1921, from the Chief Controller of Surplus Stores, it was directed that all the

outstanding files in which account matters were involved should be handed over to the Assistant Controller of War Accounts, Madras. In accordance with the above order a list of files then pending was prepared and handed over in June. There were, besides, a number of requisitions for files from the Assistant Controller of War Accounts from time to time and nearly a hundred were transferred to him during the year. The service of the clerk who was attending to the munitions work in this office was also lent to the Assistant Controller of War Accounts for ten days in order to clear up intricate cases relating to consignees' receipts.

The balance stock of fish oil and the empty barrels which were held by the Assistant Director of Fisheries, Calicut, was completely disposed of in May 1921 and the Assistant Controller of War Accounts was requested to audit the accounts.

There were three tanstuffs claim pending orders from the Government of India at the beginning of the official year which were handed over to the Assistant Controller of War Accounts for disposal on receipt of necessary sanction.

50. Messrs. Prakasam & Co. of Berhampur, again raised the question of their claim for Rs. 97,286-8-0 and sent in a notice in September last. Copies of missing letters from the original files handed over by the late Controller of Tanstuffs were obtained from the firm with the concurrence of the Chief Controller, Surplus Stores. The whole case was then handed over to the Government Solicitor for advice who after consulting the late Controller of Tanstuffs advised that the firm had no claim and he was requested to inform them accordingly.

51. In July last the suit against the Metal Fitting Manufacturing Company for the recovery of Rs. 10,035-2-0 due from them was filed and the case was decreed on 14th September 1921 in favour of Government. The firm then requested permission to pay off the dues in monthly instalments of Rs. 250 per mensem and the Government of India accorded their sanction. The firm after paying five instalments went into voluntary liquidation. The Government of India who were addressed whether priority should be claimed in respect of the balance of Rs. 8,785-2-0 expressed in reply their unwillingness to claim priority as the amount was small and it would prejudice the other creditors also. Mr. P. Holt, one of the Directors of Messrs. Chettle and Holt, Ltd., who was appointed liquidator of the firm has undertaken to furnish a copy of the firm's statement of accounts.

52. *Manufacture orders.*—There were eight orders at the beginning of the official year in which the component fittings supplied to contractors to assist in the manufacture of stores has to be

recovered. On six orders the component fittings were completely recovered from the respective firms and were delivered to the Arsenal. The remaining two orders were handed over to the Assistant Controller of War Accounts for necessary action.

53. *Disposal of furniture.*—The furniture belonging to the several offices of the late Indian Munitions Board were completely taken over by this department and credit to the extent of Rs. 2,879 was given to the Controller of War Accounts, Simla. Two type-writing machines and the balance of unused stationery articles on hand when the Munitions offices were closed were returned to the Superintendent of Stationery and the necessary credit for Rs. 400 and Rs. 253-5-0, respectively, were given to the War accounts.

## II

54. Under the head of 'experiments and inquiries having for their ultimate object the starting either by private owners or by the Government of new industries or of new branches of or improved processes in existing industries' may be mentioned :—

*Phosphatic nodules.*—Reference was made in last year's report to the question of the exploitation and development of the deposits of phosphatic nodules in the Trichinopoly district. Before an experimental factory for the production of flour phosphates and the handling of the products found in association with the nodules is attempted, it was thought advisable to conduct boring operations with a view to determine the depth of the deposits and the formation of the subsoil and to ascertain the cost of crushing the nodules. Five tons of nodules collected on the surface and another five obtained by quarrying were crushed in the departmental ball mill and samples of flour phosphate produced were forwarded to the Director of Agriculture for analysis and report as to their respective value for fertilizing and manurial purposes. The report of the Agricultural Chemist received after the close of the year under review was not very encouraging and it is doubtful if there will be any large demand for the phosphatic meal except for use in conjunction with green manure for the rice fields of the Cauvery delta. Average samples of the products found in association with the nodules such as gypsum, red ochre and white clay were assembled and sent to the Industrial Chemist for analysis at the Indian Institute of Science, Bangalore, but the quality of none of them was particularly high.

55. *Clay.*—A large collection of clays, kaolin, felspar, quartz, etc., from different parts of the Presidency were collected and sent to Coonoor for examination by Sir Frederick Nicholson in connexion with the proposed starting of an experimental pottery.

56. Under this category also fall the most of the experiments conducted by the Industrial Chemist.

Several important investigations were carried in the laboratories of the Indian Institute of Science at Bangalore by Dr. Marsden during the year. The question of prickly-pear utilization was discontinued as the experiments showed that there was no hope of obtaining any appreciable quantity of alcohol by fermentation and the matter was handed over to the Bio-Chemical department of the Institute for the study of points of scientific interest. The suitability of cashew fruit as a source of power alcohol was investigated, and from the samples of fruit received it was found that the sugar content was 8 per cent and the alcohol yield 4 per cent on the weight of the fruit. The price at which the fruits are usually marketed, however, precludes the possibility of their use for this purpose. A much more reasonable source of alcohol is the tamarind fruit, as experiments have shown that yields of 12 to 15 per cent are possible.

57. The question of the utilization of limes and tamarind as sources of citric and tartaric acids respectively has been under investigation. Limes from the Kistna district were examined and found to contain 3 per cent citric acid which could be expressed and citrate of calcium of fair quality prepared from the juice. The success of the manufacture would appear to require the evolution of a machine press which would treat the whole fruit and yield a juice containing but little of the mucilage or pulp of the lime. The tamarind investigation gave interesting results for although it had been proved that tartaric acid could be obtained in reasonable quantity from 'cleaned' pulp, pressure autoclaving was necessary to bring the pulp into a condition permitting of easy filtration. Our experiments had in view the possibility of working up the whole fruit, as it comes into the market, not only for tartaric acid production but also for the utilization of the sugar contents. It has been found that by suitable working it will be possible to leach the tamarind with an economic quantity of water, that the extract is fermented by an organism carried by the tamarind, that distillation yields alcohol equal to some 30 gallons per ton of fruit and that calcium tartrate of reasonable quality (from which tartaric acid can be prepared by the usual methods) can be obtained from the liquors after distilling off the alcohol. So far as can be seen the autoclave process of Sudborough and Vriddhachalam permits of a better recovery of the potassium hydrogen tartrate but not of the alcohol.

58. The other main investigation in hand has been into the process of coir production. Although this is an old-established industry, there is practically no literature on the subject and no information regarding the fundamental facts was available. The opinion was generally held that for the efficient retting, tidal waters, in which to soak coconut husks, were essential and that the presence of salt in

water played an important part. The preliminary investigation was opened up a wide field of most interesting work for my supposition that the process is bacterial is confirmed and it will be necessary to elucidate not only the characteristics and behaviours of the bacterial flora and its sources, but also the constituents of the husk which require to be removed before the fibre is freed. Attempts have been made in some quarters to treat it as a chemical problem, but general opinion in coir centres is that chemical treatment prejudicially affects the quality of the coir produced. Dr. Marsden has found that salt water is apparently not essential for retting, as he has obtained progressive softening by using fresh water only. The coconut husk is built up of fibres which appear to be held together by inter-fibral cellular tissue and glutinous matter. Among the contents of the inter-fibral cells tannin matter is very pronounced and its presence necessitates the immediate immersion of the split husks in water if excessive reddening of the coir is to be avoided, as by exposure it is readily converted into deep red insoluble phlophenone like compounds which cannot be removed from the fibre. It is also manifestly responsible for the fault known as blueing by which the coir takes on a dull greyish colour and is much depreciated in value. Contact with water containing traces of iron salts produces this discolouration, so that retting pits liable to flooding by drainage from laterite soils should be avoided. Up to the present he has been chiefly interested in the organisms which appear to produce the retting effect by feeding upon the glutinous content of the husk and evidence is accumulating that these organisms are inherent to the coconut itself.

59. *Miscellaneous.*—The exploitation of the sunn hemp and coconut fibres of Tanjore, of the coconut trees in the Circars for establishing an oil mill industry together with the subsidiary coir industry, the organization and improvement of the slate industry of Markapur, also received attention during the year. The possibility of recovering sodium carbonate from alkaline earths is also being examined by the Industrial Chemist.

The question of establishing a factory for the manufacture of sulphuric acid was raised during the year, but as the most essential raw materials required have all to be imported and as the production of Messrs. Parry & Co.'s factory at Ranipet appears to be sufficient to meet all local demands, the inquiry was not pursued.

Information was collected during the year in regard to the condition of the Bimlipatam jute industry in Guntūr and Northern Circars and the quantity and value of the classes of textile yarns and fabrics produced in the various mills in the Presidency. A new mill larger than either of those at Chittivalasa and Ellore was opened under the management of Messrs. Binny & Co. at Nellimarla near Vizianagram

during the year. There are possibilities about the development of this industry in the Coimbatore district.

The question of installing machinery for the production of sheet brass and metal work at Chalisseri near Pattambi was considered. Quotations for the supply of machinery were obtained from Messrs. Jessop & Co., Madras, and forwarded to the party, Mr. A. V. Thavoo. The matter is still under correspondence between the party and the firm.

60. *Palmyra fibre brushes*.—The question of arranging for instruction in the manufacture of brushes from palmyra fibre was taken up during the year, and arrangements have now been made for the opening of such a class in St. Francis Xavier's Industrial School, Tanjore. The authorities have agreed to train a number of men nominated and supported by various district boards as instructors in brush manufacture who on the completion of their period of training will be employed as brush-making instructors in schools to be established by the respective local bodies. An additional grant-in-aid has been sanctioned to the school and a small initial grant has also been made for the provision of equipment and for the cost of raw material that is likely to be spoilt by the stipendiaries in the initial stages of their training.

61. *Magnesite tiles*.—The question of the establishment of a factory for the production of magnesite tiles and allied products was also considered during the year but as the Salem Magnesite Syndicate was understood to be dealing with the question, its further consideration was deferred.

62. *Glass bangles*.—The possibility of manufacturing glass in Madras was again examined during the year. It is proposed to carry out investigations in the direction of the manufacture of bangles as this line seems to offer fair prospects of success.

63. *Match factories*.—The proprietor of the Micanite and Mica Powder Factory at Gudur, Nellore district, has added a small match factory to his business. The factory employs ten men and the operations are carried on entirely by hand and in a somewhat primitive manner. The boxes are manufactured from palmyra leaves and the stems of the matches from *Aristida setacea* (broomstick). Matches are not produced at present on a commercial scale. The department is in close touch with the factory and efforts at mass production are being watched, but as the proprietor lacks capital and his methods of manufacture are crude in the extreme, little is likely to be achieved. Much valuable information in regard to the working of match factories in other provinces has been collected and in view of the great potentialities of the match industry in this Presidency, the question of the investigation by an expert is under

consideration. The great difficulty so far experienced is that of obtaining supplies of suitable woods to make the splints and match boxes within a reasonable distance from the factory. There are no forest blocks for example of *Bombax Malabaricum* and no arrangements exist for growing trees to replace those felled. There are therefore great potentialities about the scheme which Mr. Cox of Messrs. Brunton & Sons of Cochin has evolved for working with *eeta* (*Ochlandra travancorica*), a bamboo-like reed which grows over considerable areas in the Travancore jungles, and if the machines which he has devised for obtaining both boxes and splints from this material prove suitable for driving by power, the problem of match manufacture in Southern India would appear to be solved, for the growth of *eeta* is so rapid that after twelve months a felled area is ready for felling again. The investigation of forest blocks in Malabar and South Kanara, where a similar species (*Ochlandra rheedii*) occurs is in progress. It has been suggested that to begin with a match factory might advantageously be started in conjunction with the existing paper mills at Punalur as there are unlimited supplies of *eeta* in that neighbourhood and all the match refuse could be utilized for paper manufacture.

### III

#### MANAGEMENT OF MANUFACTURING INSTITUTIONS OWNED BY GOVERNMENT.

64. *Kerala Soap Institute*.—The year opened with a stock of 110 tons of soap; 368 tons of all classes were manufactured during the year and 286 tons valued at Rs. 2,27,437-10-9 were sold as compared with 234 tons in 1920-21 leaving a balance of 192 tons in stock on the 31st March 1922. The trading operations of the institute were closely controlled by the Director throughout, and the costing statements on which the new price list was based were worked out by him. In the first half of the year the demand for soaps was by no means brisk but later a judicious reduction of prices and the stimulus of improved terms given to the travellers led to a considerable increase in business in spite of the increasing competition of imported soaps and the cheaper but generally inferior productions of small factories in different parts of the Presidency. Mr. V. K. Nair and Mr. Erasa Menon continued to be in charge of the West Coast and Southern divisions with headquarters at Calicut and Madras respectively. The value of soaps sold in Mr. V. K. Nair's jurisdiction, chiefly attributable to his energetic canvassing exceeded one lakh while Mr. Erasa Menon, who in August last opened a depot in Bunder street on his own responsibility to further the sale of soap in Madras City, disposed of nearly Rs. 60,000 worth. As the sales effected by Mr. K. Narayana Rao in the Telugu districts continued to be unsatisfactory, his services were dispensed with and after an interval Mr. Kasipathy was appointed in December 1921 as

traveller for the northern districts but he was able to achieve very little before the year closed, as the districts within his jurisdiction are those in which the non-co-operation movement was most active and the sale of soaps was prejudiced by the fact that they were made in a Government institution. The fact that they were *swadeshi* and contained no animal fat counted for little.

65. The profit and loss statement and trading account will be found in Appendices I and II. A gross profit of Rs. 72,352-9-3 was made during the year including sundry sales, stock-taking excess and revaluation of soda ash and if from this amount is deducted the sum of Rs. 56,200-5-1 for overhead charges, depreciation and other expenses referred to, the net gain on actual working amounted to Rs. 16,152-4-2 which may, I think, be considered satisfactory. The following table shows the profit or loss of the factory from the commencement of working on a commercial scale:—

| Year.      | Table.     |    |    | Net profit. |    |    | Net loss. |    |    |
|------------|------------|----|----|-------------|----|----|-----------|----|----|
|            | Net sales. |    |    | RS. A. P.   |    |    | RS. A. P. |    |    |
| 1917-18 .. | 1,38,511   | 13 | 1  | 38,409      | 1  | 2  | ..        | .. | .. |
| 1918-19 .. | 2,37,931   | 12 | 0  | 47,400      | 8  | 5  | ..        | .. | .. |
| 1919-20 .. | 2,75,996   | 3  | 10 | 6,216       | 10 | 7  | ..        | .. | .. |
| 1920-21 .. | 1,72,008   | 0  | 2  | ..          | .. | .. | 14,268    | 4  | 5  |
| 1921-22 .. | 2,28,340   | 3  | 11 | 16,152      | 4  | 2  | ..        | .. | .. |

An application which was made for further expenditure of Rs. 2,500 on advertising in January last was unfortunately not sanctioned until the year was about to close.

66. The accounts of the year 1921-22 were audited by Mr. C. F. George, Special Officer of the Accountant-General's office, Madras, who expressed general satisfaction with the way in which the books were maintained. As regards the two bad debts referred to in the last administration report that amounting to Rs. 3,443-15-4 due by Messrs. Myrl & Co. was written off as irrecoverable in G.O. No. 1419, Development, dated 3rd August 1921, while little is likely to be recovered of the sum of Rs. 4,488-1-0 due by Messrs. V. Subramanya Chetti & Co. On the Official Assignee disputing the right of Government to claim priority in respect of the insolvency of this firm under the Presidency Towns Insolvency Act, a suit was filed in the High Court and it was decided by Mr. Justice Coutts Trotter in favour of Government whereupon, having established the principle for which they were fighting, Government waived their claim for priority in this particular instance. This sum of Rupees 4,488-1-0 or so much as is proved to be irrecoverable should in equity be debited to the profit and loss statement of 1920-21 and not to that of the current year. This question is being separately taken up with the Accountant-General. As the factory continued in very unsuitable rented buildings, it was not possible in the year under

review to extend the instructional side of the factory. Though applications for training were received in large numbers from persons in all parts of India and Burma, only eight persons were admitted for training of whom one was a scholarship holder in the Indian Institute of Science, Bangalore. Gangadara Menon, one of the students, on the completion of his training started a small cold process soap factory near Alwaye in Travancore.

67. The estimates and plans for the new factory were sanctioned in October 1921 and the work of construction begun in December. It is hoped that the new buildings will be completed and ready for occupation by the 1st April 1923. The estimated cost of the buildings alone excluding the acquisition of the site is Rs. 94,350 which is practically paid for by the profits made by the Soap Factory since 1916.

68. Although Vegetol soap on account of its cheapness and purity continues to demand a ready sale in all parts of India with occasional orders even from abroad, there was some excess of manufacture and the year closed with about 65 tons in stock. About 152 tons of Washwell were disposed of, the most popular form being that of twin tablets of which 118 tons were sold of the net value of Rs. 88,831. Of milled toilet soaps, approximately 112,445 cakes were manufactured during the year and 113,627 cakes valued at Rs. 24,000 were sold during the same period. Some reduction was made in the number of varieties of these soaps when it was found that certain perfumes were not in large demand. Leaf soap which has the same uses as Lux and is an excellent soap for washing silk and other fabrics is being increasingly appreciated and when the present packing has been improved (at present it is put up in rather fragile envelopes), the demand is likely to be further increased. About 1,600 packets valued at Rs. 767 were sold during the year. About 8 tons of Fish Oil Plain and Rosin and other cheap soaps valued at over Rs. 3,000 were disposed of. The net value of all soap sold during the year including those invoiced for packing on the 31st March 1922 was Rs. 2,30,579.

69. Messrs. Charlton and Cockburn, Chartered Accountants, representing Messrs. Price Waterhouse & Co., London, inspected the system of accounts maintained in Calicut and on the whole they found little to find fault with. Owing to the very limited accommodation available for a laboratory, very little could be done in the way of research but a good many tests were made on oils and on soaps from the various small factories which have sprung up in various parts of the Presidency generally with unfavourable results.

Reference has already been made to the exhibition of soaps at the Tiruppur and Bezvada Exhibitions at both of which medals were awarded.

A number of European and Indian gentlemen, both official and non-official, visited the factory during the year as well as a number of students from local colleges and schools.

70. *Causticising plant.*—Provision was made in the new factory for the installation of the causticising plant which was supplied by the Public Works Workshops in 1920. It may be recalled that large quantities of soda ash were purchased and this plant ordered early in 1918 when the war looked as if it might go on for many years more and some doubt was felt whether it would be possible to secure sufficient quantities of caustic soda to keep the factory running. The situation is now entirely altered and it is extremely doubtful whether caustic soda can be manufactured at the Institute from the stocks of soda ash as cheaply as can be purchased in the open market. The Business Manager was therefore directed to lose no opportunity when the price of soda ash was higher than that at which it stood in our books, to reduce stocks, but at the end of the year there remained on hand 173 tons valued at Rs. 32,004-9-4 on which, as the audit officer has pointed out, a considerable sum by way of interest is being debited to the profit and loss statement year after year. The causticising plant cost about Rs. 12,544-4-6, the principal items being causticising pans, tanks, boiler and rotary paddles, but for the bulk of these, others uses can easily be found at the factory or elsewhere. Therefore it is under contemplation to dispose of all the soda ash as opportunity offers and to utilize the space originally intended for the causticising plant in the factory for other purposes in consultation with Mr. A. K. Menon.

71. *Government Minor Industries Laboratory.*—The laboratory remained in the bungalow rented for the purpose until the 31st January 1922 when the lease expired and it was transferred to one of the blocks of the Fruit Preserving Institute.

*Inks.*—Of the 1,400 gallons of ink held in stock at the beginning of the year, only 54 gallons were disposed of, sales to the trade being restricted owing to the difficulty of obtaining suitable containers. A firm in the United Provinces agreed to manufacture glass ink bottles but the samples supplied did not answer to the specifications given and no order could be placed with them. Orders have since been placed through a firm in Madras for the supply of 2, 4, and 8 oz. bottles by the United Glass Manufacturing Company in the United Kingdom and with the soap travellers canvassing also for ink, it is hoped in the current year largely to increase the volume of sales. About 600 gallons of record ink, red ink, etc., were made during the year. Red ink of superior quality is made at prices which compare favourably with any obtainable elsewhere. Of record ink which is made chiefly to meet the requirements of the Registration Department, 253 gallons were supplied during the year

under review to the Superintendent of Stationery, Madras. About 17 gallons were distributed as samples among other likely consumers, such as Railways and business firms and heads of departments.

Ink exhibited at the Tiruppur Show in May and at the Bezwada Exhibition in August was awarded a silver medal on each occasion.

Experiments with a view to reducing the period of maturation were continued during the year which, if successful, will be advantageous when large scale manufacture is begun.

72. *Vinegar.*—After the difficulties encountered in manufacture reported last year, a 'pure culture' method was tried in the laboratory with remarkable success. The preliminary work being of a very delicate nature requires laboratory facilities for its success but the vinegar so far made on an experimental scale is excellent in colour, aroma and purity.

73. *Adhesives.*—Casein adhesives being alkaline do not serve the purpose of stationery adhesives. Other raw materials, particularly starch from various sources, have therefore been examined. Though the results (especially with wheat starch) are encouraging so far as they go, large scale experiments were deferred for the present on account of considerations of cost. Glue has been used as a basis with success in the factory and further experiments in making, labelling glue and paste for use in the Fruit Preserving Institute are in hand.

74. *Miscellaneous.*—Specimens of clay, felspar and silica were collected and the clays analysed in the Cordite Factory in connexion with projected pottery experiments.

*Staff.*—M.R.Ry. S. Venkatarama Ayyar continued as Chemical Assistant during the whole period. The additional posts of an accountant and of a peon were sanctioned in G.O. Mis. No. 1991, dated the 22nd October 1921, and the posts were filled up on the 24th December and 8th February respectively.

75. *Expenditure.*—The total expenditure including establishment amounted to Rs. 10,483-0-4, viz., pay and allowance of the staff Rs. 4,064-11-6; travelling allowance Rs. 394-3-0 and contingencies Rs. 6,024-1-10. Out of this about Rs. 500 was spent in connexion with experiments in pottery.

*Receipts.*—The sale-proceeds of all varieties of ink was Rs. 1,464-0-6 and refunds into the treasury amounted to Rs. 70-2-4. At the close of the year there was in hand a stock of inks worth about Rs. 3,489, containers (kegs, jars, bottles), etc., valued at Rs. 1,140-9-11; chemicals Rs. 322-12-1 and raw materials (including soluble blue, etc.); Rs. 1,502-13-5 besides furniture, apparatus, plant, etc., valued at about Rs. 1,963-11-0.

76. *Government Glue Factory.*—M.R.Ry. V. S. Chinnaswami Ayyangar took charge of the factory on the 1st October 1921. He immediately set about certain necessary improvements and arranged for a reliable supply of raw material.

Some experimental research and analytical work had to be done in addition and this was executed in the laboratories at Guindy and Bangalore. Incidentally some interesting work was done for Messrs. Peirce Leslie & Co., in connexion with a proposal to make glue as a bye-product of their bone manure industry at Calicut.

Regular work on manufacture commenced on 4th January 1922. After considerable trouble a suitable plant was installed for the sulphitation of fleshings and glue liquors on the lines of investigation conducted by Mr. Chinnaswami Ayyangar and others in the Journal of the Institute of Science, Bangalore. This necessitated the removal, repair and slight remodelling of the Patent Clayton Disinfecting Plant which for the past fifteen years had lain unused in the Public Works Stores.

From sixty-two thousand six hundred and seventy-four pounds of fleshings treated, ten thousand six hundred and fifty pounds of glue were obtained. The total expenditure on the Glue Factory from 1st October 1921 to 31st March 1922 was Rs. 25,000 in round figures, of which Rs. 16,000 was 'non-recurring'. Receipts from the sale of glue amounted to Rs. 453 only, but there were stocks in hand valued on a conservative basis at Rs. 5,300.

77. The Indian Science Congress visited the factory early in February. There were about 200 visitors all of whom evinced considerable interest in the setting of glue at high temperatures.

A few large scale experiments were tried with the intention of testing some interesting results obtained in the laboratory in experiments on tryptic digestion with partial success. These will be repeated after more laboratory data have been obtained. Five thousand two hundred and seventy-four pounds of fleshings were used in this connexion. There is reason to believe that the ageing of glue improves the quality. It is pleasing to note that the glue hitherto turned out has met with a high degree of approval. The Controller of Stores, Madras and Southern Mahratta Railway, suggested the manufacture of an ordinary grade of glue at a cheaper price and this suggestion is being acted upon.

Mr. K. C. Srinivasa Ayyangar, the Consulting Chemist, was closely co-operating with the Superintendent in working the factory especially on the experimental side. Mr. R. Nilakanta Warriar, a scholarship holder at the Indian Institute of Science, Bangalore, who was deputed to learn glue-manufacture, joined the factory on the 19th January 1922.

78. *Pallapalayam Sugarcane crushing factory.*—This factory started work on 8th August and closed for the season on 28th

December 1921, working on an average 12 hours per day. The total output of jaggery made was 1,785 pothies (1 pothie=10 maunds), 5 mds. (1 maund=28 lb.) and 4 lb. As will be seen from the profit and loss account appended below, the factory worked at a profit of Rs. 2,049-6-10, against a debit of Rs. 1,836-13-5 in 1920-21 exclusive in both years of interest on capital, allowance for depreciation and overhead charges not actually incurred. Mr. Pinto estimates the present value of the buildings (two corrugated iron sheds and tiled quarters for the mechanic and watchman) at Rs. 2,000 and the engine, three roller mill, pans, furnaces, etc., at another Rs. 2,000. Depreciation on the former may be fixed at Rs. 120, and on the latter at Rs. 200. The original capital expenditure should not have exceeded Rs. 8,000 (exact figures are not readily available) the interest on which at 6 per cent is Rs. 480. Taking Rs. 200 for overhead charges not actually incurred a total of Rs. 1,000 is arrived at, which leaves a net profit of Rs. 1,050 in round figures on the season's working. This is the more satisfactory as the three roller mill, as pointed out in paragraph 111 of the last administration report continued to give very disappointing extraction yields. Mr. Pinto who personally supervised all the arrangements and placed the system of accounts on a more business like footing, is to be congratulated on the results obtained, and a word of praise is also due to the competent mechanic in charge N. K. Muthuswami Ayyar.

#### Profit and loss statement.

|                                                                                            | RS.   | A. | P. | RS. | A. | P. |                                                                                 | RS.   | A. | P. | RS.   | A. | P. |
|--------------------------------------------------------------------------------------------|-------|----|----|-----|----|----|---------------------------------------------------------------------------------|-------|----|----|-------|----|----|
| (1) By charges on 1,788 pothies, 5 mds. and 4 lb. of jaggery made at Rs. 3-8-0 per pothie. | 6,260 | 1  | 8  | ..  |    |    | To Wages—                                                                       | 276   | 4  | 0  | ..    |    |    |
| (2) By value of trash sold.                                                                | 30    | 0  | 0  | ..  |    |    | (1) Of Mechanic in charge—August — December inclusive at Rs. 55-4-0 per mensem. |       |    |    |       |    |    |
| (3) By advance from two parties forfeited.                                                 | 20    | 0  | 0  | ..  |    |    | (2) Maistri at Rs. 40 per mensem.                                               | 200   | 0  | 0  | ..    |    |    |
| (4) By value of furnace ashes sold for manure.                                             | 50    | 0  | 0  | ..  |    |    | (3) Two watchmen ..                                                             | 109   | 8  | 0  | ..    |    |    |
| (5) By value of megass and trash in stock.                                                 | 250   | 0  | 0  | ..  |    |    | (4) Permanent factory labour (11 men and 10 women).                             | 1,538 | 13 | 0  | ..    |    |    |
| (6) By value of liquid fuel, etc., left over returned.                                     | 84    | 15 | 0  | ..  |    |    | (b) For collection of cane trash.                                               | 1,240 | 10 | 8  | ..    |    |    |
| (7) By value of useless scrap auctioned.                                                   | 46    | 12 | 0  | ..  |    |    | To Materials—                                                                   |       |    |    |       |    |    |
|                                                                                            |       |    |    |     |    |    | (6) Liquid fuel ..                                                              | 824   | 8  | 3  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (7) Kerosene oil ..                                                             | 77    | 2  | 9  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (8) Lubricating oil and chunam, etc.                                            | 175   | 0  | 2  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (9) Repairs and renewals.                                                       | 180   | 7  | 0  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (10) Rent ..                                                                    | 20    | 0  | 0  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (11) To depreciation—                                                           |       |    |    |       |    |    |
|                                                                                            |       |    |    |     |    |    | (a) on buildings.                                                               | 120   | 0  | 0  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (b) on plant ..                                                                 | 200   | 0  | 0  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (12) Interest in capital.                                                       | 480   | 0  | 0  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    | (13) Unincurred overhead charges.                                               | 200   | 0  | 0  | ..    |    |    |
|                                                                                            |       |    |    |     |    |    |                                                                                 |       |    |    | 5,642 | 5  | 10 |
|                                                                                            |       |    |    |     |    |    | By net profit ..                                                                |       |    |    | 1,049 | 6  | 10 |
|                                                                                            |       |    |    |     |    |    |                                                                                 |       |    |    | 6,691 | 12 | 8  |

## IV

79. Amongst scattered industries not conducted in factories the most important was the handloom weaving industry.

*Peripatetic Weaving Parties.*—Although Government sanction was accorded last year for employment of 18 Peripatetic Weaving parties, it was not found possible to utilize the budget provision and organize so many parties, and in the absence of any convenient training centre for Telugu maistris in particular, only seven parties were at work during the greater part of the year under report and only ten at its close. The weaving block of the Government Industrial Institute, Madura, was ill designed for the purpose of a Textile Institute, but such makeshift arrangements as were possible were made to continue the training of operatives for duty with the parties without incurring any expenditure on remodelling the building. It was difficult to ensure effective supervision so far from the Textile Expert's headquarters, and it had not previously been realized that it would be so difficult to recruit weavers with sufficient general intelligence and practical experience for appointment after training as maistris in the peripatetic weaving parties. No Telugu candidates offered themselves, though the most urgent need for the department is for additional parties in the Andhra country. Even the Tamil recruits were reluctant to go to Madura owing to lack of suitable accommodation and the high cost of living in that city.

80. *Resume of work done by each Peripatetic Weaving Party—*

*Party No. 1.*—This party continued to work in the Ganjam district throughout the year with Berhampore as headquarters and was under the supervision of the Weaving Superintendent, S. Swaminatha Ayyangar, till July 1921 and under K. Swamy for the rest of the year. The party visited 33 villages and introduced 134 slays, 210 plain shuttles, three dobbies, and other accessories of a total value of Rs. 1,672.

*Party No. 2.*—This party, which was organized during the year 1920-21, continued to work in the Vizagapatam district with Vizianagram as headquarters under the same supervision as Party No. 1. It visited 27 villages and introduced 239 fly shuttle slays, 163 plain shuttles, one dobby, besides a number of other accessories of a total value of Rs. 2,106.

*Party No. 3.*—This party, which was also organized in 1920-21, continued to work in the Bellary district with Adonis as headquarters under the Weaving Assistant V. Hanumantha Rao. The party visited 14 villages, including Rayadrug, and introduced 64 slays, 110 shuttles, 84 shuttle wheels, 10 dobbies and other accessories valued at Rs. 1,090.

*Party No. 4.*—This party was also organized in the previous year and was working in the Cuddapah district with Pullampet as headquarters under the Weaving Assistant V. Hanumantha Rao. It visited 16 villages and introduced 71 slays, 178 shuttles, 197 shuttle wheels, 16 dobbies and other accessories valued at Rs. 2,157.

*Party No. 5.*—This party, which was also organized in the previous year, continued to work in the Anantapur district with Tadpatri as headquarters under the same supervision as Party No. 4. This party visited nine villages, including Uravakonda, and introduced 82 slays, 14 dobbies, 121 shuttles and other accessories of a total value of Rs. 1,175.

*Party No. 6.*—This party continued to work in the Chittoor district with Chittoor as headquarters under the supervision of the Weaving Superintendent, K. Swamy, till July 1921 and under S. Swaminatha Ayyangar for the rest of the year. Twenty-seven villages were visited by the party which introduced 73 slays, 89 dobbies, 140 shuttles, one tape loom, besides a large number of minor accessories of a total value of Rs. 1,628.

*Party No. 7.*—This party, which was organized in the year 1920-21, continued to work in the North Arcot district with Gudiyattam as headquarters and was under the same supervision as Party No. 6. The party which was not up to full strength visited four villages and introduced six slays, nine shuttles, three dobbies and other accessories valued at Rs. 107.

*Party No. 8.*—This party was newly organized in February 1922 in Kurnool district with Nandyal as headquarters and was placed in charge of the Weaving Assistant, M. R. Krishna Ayyar. A preliminary investigation of the chief weaving centres of the district is being carried out and arrangements are being made to encourage local manufacture of slays, dobbies, etc.

*Party No. 9.*—This party was also newly organized in the last week of March 1922 in the Malabar district with Cannanore as headquarters and was under the supervision of the Weaving Superintendent, S. Swaminatha Ayyangar.

*Party No. 10.*—This party, which was working in the weaving block of the Madura Industrial Institute under the supervision of the Weaving Assistant, M. R. Krishna Ayyar, was transferred to Madras in December 1921 and was under the direct control of the Textile Expert. Its work consisted in the demonstration of the improved weaving appliances displayed in the Textile Branch of the department. One maistri was on deputation to the Kallarnad to impart training to Kallars.

81. *Reorganization of the Weaving branch.*—Under Mr. Campbell's scheme of territorial organization it was arranged that the work of

the weaving parties should be supervised in everything except technical matters by the Assistant Directors of Industries but as considerable objections to this dual control were disclosed in practice, I recommended as a corollary to my proposals for the substitution of Assistant Industrial Engineers for Assistant Directors, that the entire control of the P.W. parties should be transferred by Government to the Textile Expert upon whom the ultimate responsibility, both administrative and technical, should hereafter devolve. This recommendation, along with detailed proposals for the reorganization of the weaving branch, was submitted to Government on the 20th February 1922 and their orders are still awaited.

82. *Textile Institute*.—Early in 1920 Mr. Amalsad prepared a memorandum in which he pointed out that the introduction of improved weaving appliances was only a partial solution of the problem of how to effect the salvation of the handloom weaver, for weaving after all constitutes only one stage in the process of converting cotton into manufactured cloth and if the economic condition of handloom weavers is to be materially ameliorated, increased attention must be paid to the preparatory processes. The cost of machinery is beyond the purchasing capacity of the weavers though even in a small weaving centre labour-saving hand-operated appliances should benefit them materially. The most economical system where a large number of weavers have to be supplied with warps is to put up a power-driven factory containing winding, warping and dresser-sizing plant. In this way the material can be delivered to the handloom weavers in a condition suitable for immediate use on their looms and the community would then be in a position to devote their whole attention to weaving instead of giving much of it to the slow, tedious and costly preparatory processes as at present. In this direction improved organization of the industry is possible. Mr. Amalsad went on to recommend the opening of a Textile Institute in Madras and his detailed proposals were approved by a large number of individuals interested in the resuscitation of the handloom industry. The scheme was finally placed before the Board of Industries at the meeting held on 2nd June 1921 whereat approval was given to the general policy, but it was recommended that the supply of silk warps should not for the present be attempted and that a beginning should be made with the distribution of cotton warps only. The scheme was submitted to Government on the 23rd August 1921, but favourable orders were not received until after the close of the year.

83. The Textile Institute, when opened, will serve the following purposes:—

(1) to manufacture various types of handlooms and hand-driven warp and weft preparation machinery for the requirements

of the several classes of weavers, and to serve as a central distributing factory for the supply of improved weaving appliances and accessories connected with the handloom industry, including special warp and weft preparation machinery;

(2) to produce and supply machine-made warps and to demonstrate to handloom weavers the economy of such warps;

(3) to afford, by holding classes, practical training to weavers and maistris engaged in handloom weaving and to teachers of weaving employed in schools;

(4) to serve as a permanent museum for the display of all types of hand-woven fabrics, improved looms and accessories; and

(5) to serve as a Research Institute in which experiments can be carried out on various problems connected with the textile industry which still await solution.

Government have sanctioned an expenditure of Rs. 48,000 on the purchase of machinery and plant required for producing machine-made warps and also a recurring expenditure not exceeding Rs. 39,780 for the running charges of the Institute. Government have also approved since the close of the year of the transfer of the training class for maistris from the Madura Industrial Institute to the Textile Institute when opened in Madras and the utilization of the weaving block in Madura partly as a motor garage and repair shop and partly for exhibiting improved weaving appliances and as the headquarters of the peripatetic weaving party so long as one continues to work in the district.

84. *Improved appliances*.—Mr. Amalsad devoted a great deal of attention during the year to the construction of a suitable hand-driven winding, warping and sizing machine which will enable warps to be made of any desired length equal in quality to hand-sized, the operation being conducted on the same principle as the indigenous method. Warps sized on these machines having been tried and found to stand the strain and friction during weaving, sample warps were sent to selected weavers to be tried on their looms. The only difficulty which Mr. Amalsad has not yet completely overcome is that of maintaining uniform and sufficient heat without the use of steam boilers. Various experiments were made with cheap fuel which villagers can purchase readily, but the problem which has baffled several experienced engineers is not yet satisfactorily solved.

Two varieties of dobbies for all-over figure patterns and a mechanism on the Jacquard principle for weaving figures in borders of *angavastrams* were constructed and a special slay for weaving dhurries and a slay for tape weaving were contrived.

85. *Manufacture of appliances*.—The manufacture and supply of weaving appliances by the Government Industrial Institute, Madura

cannot be carried out without seriously interfering with the training of the students and though the departmental workshop in Madras rendered some assistance in the preparation of new models and in effecting improvements in existing appliances, much difficulty was found in getting the new patterns duplicated, not only for customers from within the Presidency, but from other parts of India. Various foundries and industrial institutes were approached with a view to their manufacture on a commercial scale, but the prices quoted were in all cases too exorbitant to lead to business.

86. *Exhibitions.*—A most representative exhibit was sent from Madras for the All-India Hand-weaving Exhibition held in Patna in December 1921, and a gold medal was awarded for the general exhibits and appliances. Three gold medals, 15 silver medals and 19 bronze medals were in addition awarded for the cloths forwarded by various private individuals in the Presidency. The Textile Expert and I attended the Exhibition, and the presence of a number of Directors and Textile Experts from different provinces was availed of to hold an interesting conference at which questions of general interest regarding the hand-loom weaving industry were discussed. Arrangements were made for a comprehensive exhibit of a number of improved weaving appliances during the currency of the *Pushkaram* festival at Bezwada in August 1921 at which the departmental sizing machine was awarded a gold medal.

87. *Textile Testing Laboratory.*—A set of yarn-testing appliances were purchased for the purpose of conducting research and tests and these were set up in the office of the Textile Expert. A few persons brought their yarns to be tested for actual lengths contained in the hanks and to ascertain the true counts. After the debate of the Legislative Council on the question of spinning on the *charka*, various counts of handspun yarns were tested for breaking strength and stress, true counts, number of turns per inch and regularity in diameter of the yarn which have a material bearing on the future of hand-spinning. In the same connexion, Mr. Amalsad prepared a memorandum which proved that in this Presidency at least hand-spinning as a form of whole-time employment was not an economic proposition. Information relating to the economic condition of handloom weaving industry in this Presidency was collected and forwarded to the Census Superintendent. Memoranda were also prepared on the starting of spinning mills by Government aid, instructions to the weaving superintendents for carrying out a detailed survey of the handloom weaving industry and a weaving map of the Madras Presidency was prepared in colour showing the distribution of handloom weavers according to the recent census.

The Textile Expert visited a number of jails, orphanages, private weaving factories and schools and interviewed a number of people

from all parts of the Presidency who sought for technical assistance and expert advice on the starting of power-driven spinning and weaving factories, silk spinning, handloom weaving factories and opening of weaving schools. A departmental exhibition was opened in January 1922 in a temporary shed put up in the compound of my office and proved such a success that though originally intended to be kept open for one month only, it was not actually dismantled until the end of June. This Demonstration Hall was visited daily by a considerable number of merchants, missionaries and others interested in handloom weaving and has proved an excellent advertisement for the Textile Expert's inventiveness and general knowledge of his subject.

88. *Conferences.*—The Conference at Patna has already been mentioned. At a meeting of all the officers of the department held in Madras the problem of the development of coir fibre, coir yarn industry and coir weaving industry was discussed. The question of devising quicker artificial methods of retting coir fibre was entrusted to the Industrial Chemist. It was further proposed that improved appliances such as replacing the country method of crushing the husks, willowing and hand-spinning be taken up separately by the Textile Expert as soon as Government orders were obtained for the opening of a Textile Institute at Madras.

89. *Cottage Industries.*—On receipt of information from the Victoria Technical Institute to the effect that stocks of Ganjam brass fishes, Madura brass insects, carved figures of red sandalwood, Kurnool lacquer ware, etc., were very low, endeavours were made through the departmental divisional officers to supply as many as possible, but much difficulty was experienced in getting work executed in time and up to specification.

A survey of the crochet lace industry of the Kistna district was carried out by the Assistant Director of Industries, Bezwada, during the year. The trade in lace, which assumed large proportions during and after the war chiefly with the United States of America is now in a bad way. A wide range of the samples has been collected and Mr. Green who has since gone home on six months' leave has undertaken to ascertain whether a suitable market cannot be found for this lace in the United Kingdom.

90. *Toys.*—An investigation into the Kondapalli toy industry was made during the year. Sir Frederick Nicholson has raised the general question of toy making and has furnished the department with valuable information. The question is receiving attention. Sir Frederick Nicholson has also drawn attention to the possibilities of fancy matting and straw braid manufacture as a suitable and profitable industry in this Presidency. It is proposed to study at

first hand the straw plaiting industry which appears to be thriving in Ceylon.

91. *Ellore carpets.*—The development of the Ellore carpet industry has been under the consideration of the department for some time. Exhaustive lists of overseas importers of carpets and rugs have been obtained from the Director-General of Commercial Intelligence and communicated to reliable exporting firms. The Victoria Institute allotted Rs. 1,000 for the purchase of high class Ellore rugs and ordered them through this department with a view to create a steadily growing demand for the best production. One carpet was completed and was sold for Rs. 150. The second carpet is being completed. There is of course a great demand for inferior carpets but the Council of the Victoria Institute are opposed to their sale through them.

92. *Palampores.*—With a view to stimulate the production of high class Masulipatam palampores, which have deteriorated in recent years alike in colouring, design and workmanship and to create a demand for them in preference to cheap inferior patterns, the Victoria Institute was induced to place a firm order for five pairs at Rs. 40 per pair. A fine example of an old palampore was obtained from the Museum attached to the School of Arts and one of the leading firms in Masulipatam from whose workshop it originally came was induced to attempt its reproduction. This involved the preparation of a number of new wooden blocks and for this purpose the services of a skilled carver and of an old printer recruited specially from Gudur were engaged. If the printers are successful in producing palampores of the old standard of quality and excellence, there is reason to believe that it will be possible to effect at least a partial revival of the industry, as there is apparently an almost unlimited demand for palampores in Madras and also in Europe in spite of the general complaint that the standard has deteriorated greatly. The Persian market seems to have been definitely lost.

## V

Under the head of assistance intended principally for the benefit of agriculturists, the work of the pumping and boring branch of the department during the year may appropriately be detailed.

93. *Pumping and boring operations.*—Under the Campbell scheme the Industrial Engineer had no direct concern with pumping and boring operations, maintenance of private installations, fee inquiries or the erection of plants but was expected to furnish information and advice on engineering questions and to maintain a sufficient stock of boring tools, departmental power drills, engines, pumps and other machinery and arranged for the repairs of such machinery at the workshops when sent by the Assistant Directors. Under the

reorganization scheme the Industrial Engineer will exercise general supervision over all these operations in future. The department maintained the following boring sets and pumping plants:—

47 hand-boring sets and 4 power-boring sets and 1 hand-driven calyx drill.

Pumping sets—12 crude oil sets and 6 high speed kerosene test sets.

94. *Loans sanctioned in 1921-22.*—Twenty-eight applications for loans for the purchase of machinery in connexion with installations for agricultural purposes were received during the year and Rs. 33,000 was sanctioned to five applicants, all from the Coimbatore division. I regret to note that there is again a very considerable delay in dealing with these loan applications. The question of speeding up the machinery is under examination. The difficulty is that there are so many authorities to be consulted before any loan can be sanctioned.

95. *Mapping of underground water-supplies.*—During the year under review, one of the two surveyors was employed for six and a half months and the other for ten months for connecting the levels of the boreholes put down by the department with mean sea level. The place of one surveyor was unfilled for two months and another was on leave for one month and for another two months was fully employed by the Industrial Engineer in taking block levels of the area occupied by the industrial department at Washermanpet in connexion with the new workshops and proposed extension of the Leather Trades Institute, while for two and a half months the same surveyor was engaged in plotting the levels for the South Arcot district which he had already worked out. The appointment of these surveyors was made permanent during the year. Altogether 178 boreholes were connected with mean sea level. The levels of borings put down in the South Arcot district have very nearly been completed and the department should shortly be in a position to map out with some degree of accuracy and completeness the underground water-supplies of that district.

96. *Workshops.*—The departmental workshops are necessary for the effective maintenance of the machinery employed by the pumping and boring branch and for the prompt execution of repairs. Repair work is also done from time to time for other departments and for private individuals who have compounded installations. The number of jobs done during the year 1921-22 was 290 as against 215 in 1920-21 and of these 17 were outside orders. The following table summarizes the work done under different heads:—

|                               | Jobs. |                            | Jobs. |
|-------------------------------|-------|----------------------------|-------|
| Test engine repairs ...       | 47    | Miscellaneous ...          | 11    |
| Power drill repairs ...       | 15    | Boring tools for stock ... | 111   |
| For compounded fee payers ... | 17    |                            |       |
| Inter-departmental ...        | 71    | Total ...                  | 290   |
| Repairs to boring sets ...    | 18    |                            |       |

97. During the year three test engine sets were fitted up with engines of higher horse-power and a Keystone drill which had long been neglected was reconstructed. Several tests were made with different sizes of centrifugal pumps to find out the horse-power required by each size for a particular lift and to ascertain the fuel consumption of the engine required to drive it. A water lift invented by a private party was tested but proved unsatisfactory. Six Ramachandra water lifts, the invention of one Mr. Ramachandra Ayyar, which have already achieved something of local reputation, were constructed at the workshops and one of these has undergone a more recent test for efficiency at the Agricultural College, Coimbatore. Experiments were being made at the end of the year with a coconut shell lift. A sizing machine and a Jacquard machine were constructed in the workshops and repairs to a good deal of textile machinery attended to.

98. *Building work and construction*—The construction of the Fruit Preserving Institute at Coonoor was very nearly completed by the 31st March 1922. The construction of the new Soap Institute commenced in September and the contractor is making good progress. Sanction was received in September for the erection of new workshops at Washermanpet as the landlord of the premises in Poonamallee Road has given the department notice to quit. The construction is progressing. When at the end of August 1921 the glue factory was surrendered to the department by Messrs. Beardsell & Co., a sum of Rs. 2,000 was spent in additions and repairs to the buildings including the provision of a Cuddapah slab floor.

99. A statement of the expenditure incurred on buildings in progress on 31st March 1922 is subjoined—

|                                          | Amount sanctioned.                                                                    | Amount spent.                                                                        |
|------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1. Fruit Preserving Institute, Coonoor.  | Buildings—Rs. 49,500 (including cost of land Rs. 6,828)—Internal fittings Rs. 10,940. | Buildings Rs. 41,955-6-5 (excluding cost of land)—Internal fittings Rs. 13,782-15-9. |
| 2. Korala Soap Institute, Calicut.       | Rs. 94,350 (allotment for 1921-22, Rs. 20,000)                                        | Rs. 20,000.                                                                          |
| 3. Departmental Workshops, Washermanpet. | Rs. 69,000 (allotment for 1921-22, Rs. 19,000).                                       | Rs. 3,500.                                                                           |

100. Among other miscellaneous experiments initiated in the Engineering branch may be mentioned—

- (1) the manufacture of a new type of groundnut decorticator by Messrs. Massey & Co. to departmental design; and
- (2) the grinding of 10 tons of phosphatic nodules which dealt with elsewhere.

This summary may conveniently be supplemented by an abstract of the work done in the three Assistant Directors' divisions.

101. *Bezwada division—Tours.*—M.R.Ry. C. S. Ramachandra Ayyar was on tour for 205 days during the year. The following table shows the jurisdiction of the supervisors of the division on the 31st March 1922 :—

| Number and districts comprising Bezwada division. | Name of subdivision in charge of supervisor. | Headquarters of subdivision. |
|---------------------------------------------------|----------------------------------------------|------------------------------|
| 1. Ganjam ... ..                                  | Vizagapatam ...                              | Waltair.                     |
| 2. Vizagapatam ... ..                             |                                              |                              |
| 3. Gōdāvari ... ..                                |                                              |                              |
| 4. Kistna ... ..                                  | Bezwada ... ..                               | Bezwada.                     |
| 5. Guntūr ... ..                                  |                                              |                              |
| 6. Nellore ... ..                                 | Nellore ... ..                               | Nellore.                     |
| 7. Bellary ... ..                                 |                                              |                              |
| 8. Anantapur ... ..                               | Bellary ... ..                               | Bellary.                     |
| 9. Kurnool ... ..                                 |                                              |                              |
| 10. Cuddapah ... ..                               |                                              |                              |

102. In December 1921 it was decided, as there was very little work for the supervisor in charge of the Kurnool and Cuddapah districts, to club that subdivision with Bellary and Anantapur while the Bezwada subdivision where work was decidedly heavy was bifurcated into Bezwada and Nellore subdivisions. The staff employed on the 31st March 1922 were 4 supervisors, 6 mechanics, 24 boring maistris, 4 apprentice maistris and one surveyor distributed as in the following table :—

| Name of subdivision. | Supervisor. | Mechanics. | Boring maistris. | Surveyor. | Apprentice boring maistris. |
|----------------------|-------------|------------|------------------|-----------|-----------------------------|
| Vizagapatam .. ..    | 1           | 2          | 4                | 1         | 2                           |
| Bezwada .. ..        | 1           | 1          | 8                | ..        | 1                           |
| Nellore .. ..        | 1           | 1          | 7                | ..        | 1                           |
| Bellary .. ..        | 1           | 2          | 5                | ..        | 1                           |

The Assistant Director notes that the professional capacity of some of the mechanics and boring maistris recently appointed is not as good as it used to be and steps are being taken to give the new hands a longer course of instruction at the workshops. It is also under consideration to put the Madras and Chingleput districts in direct charge of the Industrial Engineer so that he can supervise the practical training of these men without going far from headquarters.

103. *Fee inquiries.*—There were five applications for investigations pending on the 31st March 1921. During the year under report 33 fee inquiries were received of which nine were in connexion with pumping plants (of which three postulated the grant of a State loan) and eight for boring, five for sinking wells with the aid of

departmental testing sets, eight for industrial purposes, two for compounding and one for inspecting an engine which it was proposed to sell. Out of a total of 38 applications pending, 27 were disposed of during the year and one was withdrawn, the number pending on the 31st March 1922 being 10, but in three cases delay was due to the failure of the parties to reply in spite of repeated letters and reminders. Out of 17 fee enquiries for industrial pumping plants, 4 matured and plants for the same were purchased during the year.

104. *List of installations erected.*—Three plants were pending erection on the 31st March 1921, and during the year two pumping installations and two industrial installations were completed. One party who had requested the department in the previous year to help him in the erection of a rice mill gave up the idea and another who paid the erection fee asked for a refund of advance made. Of the two pumping installations completed, one was erected on a temporary foundation for dealing with an emergent demand for water-supply to a distillery and the permanent re-erection of the same will be taken up during the current official year. The two pumping installations completed were—

(1) 10½ H.P. National oil engine (second hand), 4" Massey's ball bearing pump (new)—Donamukkala near Guntakal.

(2) 3½ H.P. Hornsby oil engine and 2½" R.R. pump (both second hand)—Tadpatri distillery.

Of the two pumping installations completed, one was of a 15 H.P. Blackstone oil engine with a circulating pump and a No. 7 Engelberg Huller and the other of a 9 N.H.P. semi-portable steam engine and fibre cleaning machine, in the first instance all new and the second, all second-hand machinery. The latter is a case of re-erection as the plant was badly aligned and clumsily erected by private agency. During the year five applications were received for erection of which three were pending on the 31st March, but these are now in course of erection. Many of the ryots who contemplated the purchase and installation of machinery are deterred from doing so at present on account of economic distress and the inflated price of machinery and hardware generally.

105. *Compounding fees.*—During the year under report 38 installations were compounded including six Government installations (three for the Department of Agriculture, two for the Fisheries and one for the Education Department). Out of the total of 38, 18 are industrial, 6 semi-industrial and 14 agricultural. All the installations received during the year the prescribed number of visits. The total number of installations compounded during the year 1920-21 was 41.

106. *Boring.*—Fifty-nine applications were pending on the 31st March 1921, while 124 new applications were received, making

total of 183. Of these 130 applications were dealt with during the year and 53 were pending. One hundred and seventy-eight borings were put down during the year and the total depth bored was 8,391 feet. Out of the total of 178 borings, 114 were for improving supplies in existing wells and 64 in connexion with sinking of fresh wells. It is to be regretted that only 71 borings were reported to be successful. In 57 cases boring had to be given up on account of meeting with rock at some considerable depth below ground and of 23 at the request of the parties who were discouraged by the early failure to find water. Most of the borings put down in this division were for irrigation and only in a few cases they were intended for industrial purposes. Six borings were however put down in Chittivalasa Jute Mill but with unsatisfactory results. One of the most successful borings was made for a private party at Munagapaka, Vizagapatam district, and another at Lakkavaram in the same district where the water level rose to 8 feet from ground level when the boring had been taken down to 50 feet. Fees payable to Government on account of these boring operations were Rs. 4,390.

*Torpedoing operations.*—No torpedoing operations were conducted during the year under review.

107. *Testing engines.*—Two applications were pending at the beginning of the year and 18 applications were received during the 12 months making a total of 20, of which 13 applications were disposed of and 7 were pending at the end of the year. Many of the ryots who applied for the testing sets could not be supplied with any promptitude as the number of these is too limited to meet the demand. A proposal to increase the number of testing sets by 12 at a cost of Rs. 1,10,000 was negatived by Government. The demand for these sets during the year under report was very great owing to the partial failure of the north-east monsoon and it is unfortunate that the two available crude oil sets were out of commission during the latter part of the year on account of repairs and replacements. A regrettable accident took place at Koilkuntla; the driver of the Test Engine No. 3 was burnt by a jet of burning oil from the stove as a result of which he succumbed to his injuries. The mechanic who was also present had his face and hands badly burnt but he was brought to the General Hospital, Madras, for treatment and is now convalescent.

108. *Power-drills.*—One application was pending at the beginning of the year and three applications were received during the year, of which only one was disposed of. The Key-stone drill completed two borings, one for the Deccan Sugar Abkari Company at Palem near Nidadavole, and the other for the Zamindar of Yentraragada. In the former case a sub-artesian spring was tapped between 100—110 feet from ground level, but the discharge was disappointing and the

company discontinued work after going down to 152 feet. In the boring for the Zamindar of Yentrappagada at Nuzvid a spring was tapped which is able to supply six gallons per minute continuously at about 36 feet below ground level. The water is good and potable.

109. *State loans.*—The following table shows the detailed list of applications pending on the 1st April 1921:—

| Serial number. | Applicant's name.         | Place.              | District.      | Extent of land to be irrigated. | Amount of loan applied for. |
|----------------|---------------------------|---------------------|----------------|---------------------------------|-----------------------------|
|                |                           |                     |                | ACS.                            | RS.                         |
| 1              | P. Appanna Patnaik ..     | Samabara ..         | Vizagapatam .. | 29                              | 2,000                       |
| 2              | S. Somayajulu ..          | Ingilapalli ..      | Do. ..         | 30                              | 8,000                       |
| 3              | P. L. Narayana ..         | Sunnampad ..        | Kistna ..      | 50                              | 2,000                       |
| 4              | A. Krishna Rao ..         | Ponnur ..           | Guntur ..      | 60                              | 3,000                       |
| 5              | B. Garamurthi Chetti ..   | Proddatur ..        | Cuddapah ..    | 30                              | 5,000                       |
| 6              | Mr. Muhammad Yusuf Sahib. | Chowliur ..         | Anantapur ..   | 7                               | 2,000                       |
| 7              | P. C. Thimma Reddi ..     | Donamukkala ..      | Do. ..         | 40                              | 2,000                       |
| 8              | K. Krishna Rao ..         | Parigi ..           | Do. ..         | 160                             | 5,000                       |
| 9              | Arshi Adevi Achar ..      | Narayana Devarkary. | Bellary ..     | 26                              | 5,000                       |

Seven applications were received during the year under review but in four cases the inspection fees were not paid. In one case the scheme is under investigation and in another the prospects are not favourable and the party has been advised trial borings to see if there is any adequate supply of water to warrant the installation of a pumping plant. The remaining scheme was first investigated by the supervisor of the Madras subdivision and was re-investigated by Mr. Ramachandra Ayyar and a loan of Rs. 500 was recommended for sanction, but orders had not been passed when the year closed.

110. *Industrial inquiries.*—Among the inquiries dealt with by the Assistant Director during the year may be mentioned those relating to the carpet industry of Ellore and Masulipatam, the ivory carving industry of Vizagapatam, the toy industry of Kondapalli, the crochet lace industry of Kistna and the barytes industry of Betamcherla.

111. *Coimbatore division—Tours.*—Mr. L. S. Pinto was on tour for 259 days during the year.

The following table shows the jurisdiction of the supervisors of the division on the 31st March 1922:—

| Serial number and districts comprising Coimbatore division. | Name of subdivision in charge of supervisor. | Headquarters of subdivisions. |
|-------------------------------------------------------------|----------------------------------------------|-------------------------------|
| 1. Malabar and Anjengo                                      | Calicut                                      | Calicut.                      |
| 2. South Kanara                                             |                                              |                               |
| 3. Coimbatore                                               |                                              |                               |
| 4. The Nilgiris                                             | Coimbatore                                   | Coimbatore.                   |
| 5. Salem                                                    |                                              |                               |
| 6. North Arcot                                              |                                              |                               |
| 7. Chittoor                                                 | Vellore                                      | Vellore.                      |

On the abolition of the old Bellary and Madras divisions, North Arcot and Chittoor districts were added to Mr. Pinto's charge.

112. *Fee inquiries.*—Seven cases were pending on 31st March 1921, 34 were received during the year, 29 were disposed of and 12 remained to be dealt with.

113. *List of installations erected.*—Two cases were pending at the beginning of the year. Sixteen fresh applications were received in the course of the year making a total of 18 to be dealt with. Twelve cases in all were disposed of and six were pending at the end of the year. The increase in the number of installations during the year under review is satisfactory.

114. *Compounded installations.*—The year opened with 49 installations to which 58 were added in the course of the year bringing the total up to 107 on the 1st April 1922. With very few exceptions all the plants received the usual number of inspections. This service is being increasingly appreciated by the public in this division.

115. *Boring.*—The total depth bored in the division was 4,053 feet as against 1,304 last year. Twenty-nine boring applications were pending on 31st March 1921, and 106 were received during the year. Out of the total number of 135 in the list, 104 were disposed of during 1921-22, leaving a balance of 31 at the end of the year. All borings were done in existing wells. Five borings were provided with lining pipes with an aggregate length of 65 feet 10 inches.

There are at present 13 hand boring-sets in the division and since there is a very large demand for these the Assistant Director has since indented for two more sets.

116. *Torpedoing operations.*—One set was deputed to the Assistant Director's division. There were seven applications pending at the beginning of the year, and nine were received during the year. Of these seven were disposed of, leaving 9 to be dealt with in the current year.

117. *Testing engines.*—Two test-engines were working in the division during the year under report. There is a constant demand for these engines especially from the Vellore section. Details of the applications that were received and disposed of during the year are given below:—

|                                   |     |      |
|-----------------------------------|-----|------|
| Number pending on 31st March 1921 | ... | Nil. |
| Do. received during the year      | ... | 15   |
| Do. disposed of during the year   | ... | 10   |
| Balance to be taken up in 1922-23 | ... | 5    |

*Underground water-supply.*—There was no surveyor working in this division during the year.

118. *Power-drills.*—There were two power-drills in this division, of which one was sent away to Trichinopoly for phosphatic nodule work about the middle of the year. As in the case of hand-boring sets the demand for power-drills has been and is very great, but until Government are able to find funds for more of these, there is likely to be considerable delay in dealing with individual applications. The number of these pending at the beginning of the year was 6 and 17 more were received during the year. This figure does not however indicate the extent of the demand as several prospective applicants were verbally informed that there was no prospect of any power-drills being available in the near future. Of the total of 23, only seven were disposed of and 16 are pending. A second-hand Calyx drill was purchased for Rs. 2,000 from Messrs. Krishna Nayak & Bros., Mangalore, in the course of the year.

119. *State loans.*—The following table shows details of the loans sanctioned during the year under review:—

| Serial number and name of applicant. | Place.                     | Amount of loan sanctioned. |
|--------------------------------------|----------------------------|----------------------------|
|                                      |                            | RS.                        |
| 1. Narasimha Ayyar ... ..            | Udamalpet ... ..           | 5,000                      |
| 2. Palni Kavandan ... ..             | Andigoundanur ... ..       | 6,500                      |
| 3. P. T. Ramaswami Ayyar ... ..      | Mettupalaiyam ... ..       | 6,500                      |
| 4. Jangamma Nayudu ... ..            | Guruvappa Naickanur ... .. | 10,000                     |
| 5. Gopalaswami Nayudu ... ..         | Ondiputhur ... ..          | 5,000                      |

120. *Industrial inquiries.*—Various inquiries for advice and information were received during the year chief among which may be mentioned those relating to the starting of match, brush and power-driven knitting factories, machinery for cinema and paper making, process of sugar-refining, dyeing of palmyra fibre, extraction of dyes from shellac and reduction of fuel consumption at the Central Jail, Coimbatore.

121. *Tanjore division—Tours.*—M. R. Ry. D. Sadasivam Pillai was on tour for 214 days during the year.

The following table shows the jurisdiction of the supervisors of the division on the 31st March 1922:—

| Number and districts comprising Tanjore division. | Name of subdivision in charge of supervisor. | Headquarters of subdivisions. |
|---------------------------------------------------|----------------------------------------------|-------------------------------|
| 1. Madras ... ..                                  | Madras ... ..                                | Madras.                       |
| 2. Chingleput ... ..                              |                                              |                               |
| 3. South Arcot ... ..                             |                                              |                               |
| 4. Tanjore ... ..                                 | Cuddalore ... ..                             | Cuddalore.                    |
| 5. Trichinopoly ... ..                            | Tanjore ... ..                               | Tanjore.                      |
| 6. Madura ... ..                                  | Trichinopoly ... ..                          | Trichinopoly.                 |
| 7. Ramnad ... ..                                  |                                              |                               |
| 8. Tinnevely ... ..                               | Tinnevely ... ..                             | Tinnevely.                    |

On the abolition of the old Madras division the following districts, viz., Madras, Chingleput and South Arcot were added to Mr. Sadasivam's charge. The headquarters of the new division continued to be at Madura till November 1921, when it was shifted to Tanjore.

122. *Fee inquiries.*—One application was pending on 31st March 1921, 46 were received during the year and 40 disposed of. The number of applications pending on 31st March 1922 was 7. Of those disposed of, 12 matured into installations.

123. *List of installations erected.*—The number of applications pending on 31st March 1921 was 12 and those received during the year was 20. The number of applications disposed of during the year was 31 and only one was pending on 31st March 1922, which is very creditable to all concerned. Seven erections of installations are in progress and have been included under those disposed of.

The Co-operative Industrial and Agricultural Society in Kallakurichi in South Arcot district has started a pioneer factory consisting of the following machinery, viz., one 37 H.P. Hornsby Gas Engine, two decorticators, one huller and two gins. The erection of the entire plant was carried out under departmental supervision. Work started towards the end of November 1921 and the plant has been running satisfactorily since. If this concern is successful, it is hoped that other co-operative societies will follow suit.

A loan of Rs. 4,000 under the Agriculturists Loans Act was sanctioned by the Director of Agriculture during the year 1920-21 but disbursed during the year under report. A 15 B.H.P. Tangye oil-engine was purchased from Messrs. Jessop & Co., on behalf of Mr. Venkittu Ayyangar of Perumbakkam to whom the above loan was sanctioned and the erection of the plant is in progress.

124. *Compounding fees.*—The number of installations compounded during the year was 115, a very satisfactory total. Of these 27 are pumping plants, 77 industrial plants, and 11 are combined pumping and industrial plants.

125. *Boring.*—Eighteen boring sets were the maximum number working in this division during the year under review. Sixteen sets were working on the 31st March 1922. The number of boring applications pending on 31st March 1921 was 41. The number of applications received during the year was 134 and the number disposed of 128. The number of applications pending on 31st March 1922 was 47.

Two hundred and ten borings in all were conducted with departmental boring sets. Out of the above 83 were well-borings and 127 were ground-borings. Out of these 180 were successful in tapping sub-artesian springs including 37 for ascertaining the nature of sub-strata. The total depth bored for the year is 7,914 feet.

Two parties in Cuddalore subdivision are taking their boreholes down to 250 feet below ground level as they expect to meet with some artesian springs. Boring is still in progress.

126. *Torpedoing operations*.—Two torpedoing sets were in use in the division during the year under report. The number of applications pending on 31st March 1921 was 6. The number of applications received during the year was 5 and the number pending on 31st March 1922 was 3. Of those disposed of, three were successful.

127. *Testing engines*.—Two high speed sets and five liquid fuel sets were working in this division throughout the year, the number of parties who utilized them being 29.

This division comprising of eight districts has many inquiries for power-drills, test-engines and boring sets. The departmental plants supplied for the use of this division are not adequate to meet the demand and hence many potential users are disappointed.

128. *Power-drills*.—Two power-drills were supplied for the use of this division. One power-drill was lent to the Shomtir Salt Company, Kilombakkam, Chingleput district. But owing to its indifferent working the set had to be withdrawn and returned to the departmental workshops, Madras. The other set is at present working in Trichinopoly subdivision at Alathudayaupatti for Mr. Ramaswami Pillai.

129. *Industrial inquiries*.—Among the industrial inquiries dealt with by the Assistant Director during the year under report may be mentioned those relating to the manufacture of brushes, extraction of coir-fibre, sources of supply of cane coal baskets, garnets, and palmyra fibre, sunnhemp spinning and silk twisting.

## VI

The last head covers industrial education in all its branches including arts and crafts and the grant of scholarships.

130. *State technical scholarships*.—During the year under review the Government of India decided to provincialize the State technical scholarships hitherto awarded by them to students from different provinces. The responsibility for four scholarships was accordingly assumed by the Provincial Government, thus bringing the total number of scholarships tenable abroad payable from provincial funds to eight.

During the year one scholarship fell vacant by termination, on the 31st July 1921, of the scholarship awarded to Mr. S. R. Gershom. In response to the usual advertisements 42 applications were received for the vacancy and on the recommendation of the Board of Selection the scholarship was awarded to Mr. Kallur Adinarayana

Rao, Chief Assistant to the Bacteriologist to the Government of Madras, for the study of industrial alcohol but Mr. Adinarayana Rao has not yet left India as the question of the particular institution in which he should study is still under correspondence with the High Commissioner.

Mr. Kanna Kurup to whom a scholarship was awarded over a year and a half ago for research work in connexion with hydro-generation of oils is also still in India and efforts are still being made through the office of the High Commissioner to secure for him suitable training facilities in England or elsewhere for the study of which he was awarded a scholarship.

During the year two vacancies occurred on the State Scholarship Selection Board, and Government were pleased to appoint Mr. Ralph Marsh, Deputy Chief Engineer, Madras and Southern Mahratta Railway, in the place of the Rev. E. M. Macphail resigned and M.R.Ry. Diwan Bahadur R. Venkataratnam Nayudu Garu, ex-Principal, P.R. College, Cocanada, in the place of Mr. H. O. Kershaw who had proceeded on long leave out of India.

131. *Scholarships tenable at the Indian Institute of Science, Bangalore*.—No fresh scholarships tenable in this institute were awarded during the year under review. On the 31st March 1922 five scholarships were being enjoyed.

132. *Scholarships tenable in the Victoria Jubilee Technical Institute, Bombay*.—During the year three scholarships were awarded tenable in this institute, one for Sanitary Engineering and Plumbing and two for Technical and Applied Chemistry, but at the last moment all three nominees declined on one pretext or other to proceed to Bombay and the awards were cancelled. Government subsequently awarded a scholarship to Mr. V. Sri Rangasayi who had already been one year at the institute to enable him to complete the three years' course in textile manufacture.

The real reason why scholarships awarded at the Victoria Jubilee Technical Institute were seldom taken up was due to their low value. Thirty rupees per mensem may have been just sufficient to meet the cost of maintenance in Bombay in 1914 but is certainly not sufficient now. A candidate on completing his school course filed his application for a scholarship but continued to look round for other avenues of study or employment and when the scholarships were awarded, they were declined because the successful applicants had found other and apparently more remunerative fields of work or study, or from inquiries made through friends at Bombay, had concluded that Rs. 30 per mensem would not support life in that city. In order to make these scholarships sufficiently attractive to induce well-qualified young men to apply for them, I recommended

that their value should be increased to Rs. 60 per mensem, a proposal which Government sanctioned with effect from the 28th January 1922.

The increase in the value of the scholarships has coincided with the issue by the authorities of the Institute of new regulations regarding the admission of candidates. Under new regulations all candidates for admission without exception must sit for the Entrance Examination and the Government of Madras have accordingly ruled that applications from secondary-school leaving certificate holders for these scholarships should be considered along with applications from graduates and those who have passed the Intermediate Examination.

From 1923 onwards only those candidates who have completed the first year's Art course in a University will be eligible to sit for the Entrance Examination of the Institute for the Mechanical and Chemical and Electrical course. As the Madras Government scholarships tenable in this Institute are not awarded for study in Mechanical and Electrical courses, only the scholarships awarded for study in the Chemical department will be affected by this new rule.

133. *Industrial school scholarships.*—Sixty scholarships tenable in aided industrial schools or classes or workshops and mills where provision exists for the instruction of apprentices and learners in subjects likely to improve their value as workers are annually awarded by the Director. These scholarships are of the value of Rs. 1-8-0 per mensem rising to Rs. 7-8-0 per mensem and are tenable for periods not exceeding five years. They are found to be of considerable assistance in enabling needy students to remain long enough in training to acquire something more than the rudiments of a trade. In the Madras Anjuman Industrial school, for example, where it is found extremely difficult to retain the pupils long enough for them to profit by the instruction provided, it has been observed that the attendance of the holders of these small scholarships is particularly good and there seems every likelihood that the majority will complete their course satisfactorily.

134. *Industrial schools Exhibition.*—An exhibition of work done in the industrial schools aided by the department was held in January at the Lawley Hall, Mount Road. It had long been felt that a central sales room or clearing house in Madras would be of considerable value to the assisted schools by providing an outlet for their products and acting as a central agency for the purchase of miscellaneous school stores but financial considerations preclude the idea of any such scheme materializing in the near future. As an alternative Mr. Fyfe suggested that an effort should be made by the correspondents of the leading schools to establish some form of

buying and selling agency in Madras on co-operative lines and by way of stimulating such co-operative effort it was decided to hold a small exhibition of school products partly to advertise the schools but more particularly to afford an opportunity to the school authorities themselves to see what their colleagues in other schools, many of them in very out-of-the-way parts, were doing towards the common end. The actual holding of the exhibition was made possible by the kindness of Khan Bahadur Laljee Waljee Sait, the Honorary Secretary of the Madras Anjuman Industrial school, who obtained the consent of his committee to the use of the fine and centrally situated Lawley Hall for its location.

135. The exhibition which was opened by the Hon'ble Minister for Development on Tuesday the 10th January 1922 and kept open for two weeks was very successful indeed. The range of objects exhibited was very wide and the space available was fully taxed. Over Rs. 8,000 worth of articles were disposed of by the various schools but the great value of the exhibition lay in the bringing together under one roof of articles from schools conducted by various organizations in almost every part of the Presidency and the mutual inspection of these articles by the correspondents, managers and others interested in the different institutions.

The thanks of the department are due to the various superintendents of aided schools for their co-operation and assistance in making the exhibition the success it was; but particularly to Mr. Venkatarama Ayyar, Superintendent of the Anjuman, since unhappily deceased, for his invaluable assistance throughout. The cost to Government of this exhibition amounted to Rs. 973-9-9 only.

136. *The Madras Trades school.*—The Government Trades school, Madras, continues to do very good work in providing instruction in the theory and principles of their occupation for a number of apprentices and young workmen in Madras city. During the year under review there were 145 students on the rolls, of whom 9 were Brahmans, 102 non-Brahmans, 6 Muhammadans, 27 Anglo-Indians and 1 European. The school is now firmly established as part of the industrial educational machinery of the Presidency, but it is still conducted in rented premises and until the school is housed in its own buildings with a permanent staff and space and funds made available for development, little further advance can be expected. Mr. Fyfe would like to start more classes in the school in subjects not hitherto catered for and is even more anxious to get a start made with a preparatory trade school which will provide a three years' course of day school instruction heavily biassed towards industry for boys who have completed the primary school course and are likely to enter mills and workshops in the city as apprentices and learners on the completion of such a course. In this way the department should

be able to assist employers to recruit a better prepared type of apprentice or learner, and terminate the present want of system in the recruitment and training of lads for the work of artisans.

137. The Trades school was first started in 1916 and Government in G.O. No. 723, dated the 6th June 1918, resolved to 'place the Madras Trades school on a permanent footing and to open an industrial preparatory class therein to train intelligent apprentices of a type suitable for subsequent admission into workshops'. Later still a site was secured for the new buildings and plans and estimates prepared, but the progress hitherto made is very slow. I trust that one of the first recommendations of the Committee appointed to advise on Technical and Industrial Education will be that Government should give orders to accelerate the building programme for the Madras Trades school and to place the staff of that school on a permanent footing in place of the present temporary arrangement sanctioned from year to year which is discouraging alike to the staff and to the students. I would much sooner see money spent on improving an institution of tried value like this Trades school than on pioneering a new industry.

138. The school has now reached a stage when an up-to-date workshop fitted with modern machine tools is urgently required. A small hydraulic laboratory was erected last year for demonstration work, and a small electric laboratory was also fitted up with a generating set, battery, etc., for the use of students learning electric wiring; but these items do not cover much ground, and until a fully equipped workshop and a small demonstration foundry are available it will not be possible to do justice to the senior students of the school or to carry their training as far as they have a right to expect.

139. The Perambur branch of the Trades school attached to the Railway Workshops at Perambur continued during the year to provide instruction for one hundred of the apprentices in the Railway Workshops. The classes are held in working hours so that the building is not used in the evenings. When funds permit the entertainment of an extra lecturer, Mr. Fyfe hopes to be able to open vernacular classes in the evenings in this school for the benefit of the large number of young workmen anxious to improve their knowledge of mechanical drawing as applied to Railway Workshop work in general, and to carriage repair and construction work in particular.

In this Presidency we have not yet got a real industrial atmosphere or industrial class. Much of the labour used in industry is drawn from agriculture and ready at any time to return to agriculture, and the ordinary industrial worker, though performing his own job to the best of his ability, takes little interest in other

processes or in the works as a whole. Institutions like the Madras Trades school and its Perambur branch go some way to create an industrial atmosphere and to stimulate a livelier interest in the mind of the worker in his work and allied occupations. The creation of such an atmosphere can be further accelerated by lectures and discussions outside the class room on matters of general industrial interest, by the use of industrial films wherever possible, and by anything which tends to give the individual workman a broader outlook on life.

140. *Leather Trades Institute.*—Plans for additional laboratories were prepared by the Industrial Engineer early in the year but as no budget allotment has been obtained for the work, it seems unlikely that any start will be made for some time though the need is urgent. The plans submitted provided accommodation sufficient for all the routine chemical work of the department.

The much-needed gas plant was installed early in the year and has greatly improved the work in the laboratories.

141. *Admissions.*—By cutting down the space occupied by each student in the laboratories to a minimum and by the addition of a new working bench, it was found possible to take more students than in the previous year. The number of new admissions each year since the opening of the institute was as follows:—

|         |     |     |     |     |     |     |     |    |
|---------|-----|-----|-----|-----|-----|-----|-----|----|
| 1915-16 | ... | ... | ... | ... | ... | ... | ... | 3  |
| 1916-17 | ... | ... | ... | ... | ... | ... | ... | 2  |
| 1917-18 | ... | ... | ... | ... | ... | ... | ... | 7  |
| 1918-19 | ... | ... | ... | ... | ... | ... | ... | 7  |
| 1919-20 | ... | ... | ... | ... | ... | ... | ... | 16 |
| 1920-21 | ... | ... | ... | ... | ... | ... | ... | 15 |
| 1921-22 | ... | ... | ... | ... | ... | ... | ... | 18 |

Of the total of 68 students, 45 were from the Madras Presidency, 4 from Delhi, 4 from Lahore, 3 from Sialkot, 3 from Kashmir, 1 from the Punjab, 2 from Hyderabad, 2 from the United Provinces, 1 from Hill Tippera, 1 from Mysore, 1 from Travancore and 1 from Jammu. Several applications from other provinces had to be refused owing to lack of accommodation.

142. *Research.*—During the vacation the staff started two important pieces of research, but as their whole time is taken up during the session in lecturing and supervising the work of the students, this work had to be left in an unfinished condition which is greatly to be regretted. During the year a number of local tanners consulted the Principal as to the type of water best for local avaram tannages. The Principal was unable to advise them on this question as research is necessary to clear up certain obscurities, and although the study of this problem has been started, it is of such a nature that constant work at different seasons of the year is essential

before definite results can be arrived at. A proposal to engage one of the best of the past students of the institute to carry out this work under the Principal's supervision was rejected by Government on the ground that they were 'not convinced that an ex-student of the Leather Trades Institute will be able to do the kind of research work which the Director has in view'.

143. *Other inquiries.*—During the year certain local tanners who have been experimenting on chrome tanning brought in material with a request to be informed what was wrong with it. As in most cases there was nothing right about the material and in some cases they could not or would not give details of the processes employed, it was absolutely impossible to help them. In many cases a considerable amount of material had been absolutely ruined and the only thing that could be done was to point out to them that it would be cheaper to pay a man who knew something about chrome tanning to start with than to start experimenting on a 'small factory' scale with very costly materials.

144. *Past students.*—Of the nine students who completed their course last year, the whereabouts of all except one are known. One is working in his father's tannery, two are working in large tanneries in Northern India (one as chemist and one as assistant tanner). One has started the manufacture of leather for sports goods on his own account, one is serving an apprenticeship in the Government Harness and Saddlery Factory, Cawnpore, two are acting as foremen in this Institute and one is working in a local tannery. Further, one of the first students who afterwards got a Government of India scholarship has on his return to India secured employment in a tannery near Madras, as has also another old student. These results may, I think, be considered very satisfactory, considering the great depression in the leather trade during the past two years.

145. *Examinations.*—For the first time it was arranged that the final examinations should be conducted by an examiner not directly connected with the Institute. Mr. Taylor of the Chrome Leather Company was examiner in Leather Manufacture and Dr. F. Marsden of this department in Leather Chemistry. Mr. Taylor reported as follows on the papers examined by him:—

"I have much pleasure in returning herewith the examination papers on Leather Processes, together with the list of marks allocated. The questions asked were of a comprehensive nature requiring considerably more than a superficial knowledge to answer the whole of them, and I was pleased to note that with the exception of the question on colour that every student tackled more or less successfully the whole of the questions. The general knowledge displayed was excellent, particularly in the case of several of the students who answered the questions as asked. Several questions

were purposely worded to test them in this respect. Also I was glad to note that several of the questions were answered from entirely different aspects. This in itself is admirable, it being common knowledge in the leather trade that 'one man's meat is another man's poison' and in the production of good leather, it is necessary to adapt oneself to conditions and environment. The man whose knowledge embraces the means of arriving at a good result from different directions, consistent with economy, is the man most fitted to command success."

146. *Plant.*—A 63" rubber roller setting-out machine and a new type buffing machine were purchased during the year and are working satisfactorily. The small paddles have been constructed locally for small scale experiments.

147. *Prizes.*—The distribution of certificates and prizes was held on the 28th March at which I presided. It is interesting to record that for the first time since the opening of the Institute, a Madras student, Mr. S. Raja, headed the examination results of the senior students in all subjects and is to be congratulated on his achievement.

*Athletics.*—In athletics the Institute is run on 'reform' lines. The students elect their own committee who make all arrangements, and, though few games were won, the team is generally voted a sporting lot.

148. *Visits to other concerns.*—The thanks of the department are due to the following firms and gentlemen for allowing the students to visit their works or tanneries:—To Mr. Chambers, proprietor of the Chrome Leather Company, for again kindly permitting the students to visit his tannery near Pallavaram and to Mr. Wood and other members of the staff for kindly explaining various processes, machines, etc.; to Messrs. Binny & Co. for according permission to the students to visit the Carnatic Mills and to the Mill Manager for the trouble he took in showing all the processes, machines, etc., in which leather is used; and to various engineering firms who allowed the students of the Trades school, including the students who were taking engineering lectures in this Institute to visit their workshops.

149. *Financial statement.*—A sum of Rs. 5,591 was realized from fees and from the sale of leather. The total expenditure during the year, including salaries but excluding the value of Europe stores, was Rs. 68,814. Of this amount, Rs. 14,570 was paid to the Corporation of Madras as compensation for land taken over by the department for the new workshops and contemplated additions to the Institute.

150. *School of Arts—Accommodation.*—There were no additions to the school buildings during the year. The sheds along the

X8A. 217 N4  
1000

27198

eastern wall of the compound were demolished and partly rebuilt, the roof being made considerably higher but the floor area reduced. The usual annual repairs were carried out by the Public Works Department.

151. *Strength and attendance.*—The number of pupils on the rolls on the 31st March 1922 was 234, of whom 18 were females. The average attendance during the year was 166 and the average number on the rolls was 233. The figures for the last three years are—

|         |     |     |     |     |     |     |     |
|---------|-----|-----|-----|-----|-----|-----|-----|
| 1919-20 | ... | ... | ... | ... | ... | 222 | 154 |
| 1920-21 | ... | ... | ... | ... | ... | 241 | 145 |
| 1921-22 | ... | ... | ... | ... | ... | 234 | 166 |

The school has decreased very slightly in number from 241 to 234, but the increase in average attendance has been over 10 per cent in 1920-21, the average being 60 per cent, and in 1921-22, 71 per cent. Taking into consideration the poor attendance during the time that disturbances in the mill area kept many students from the school, the increase is the more remarkable.

152. *Departments.*—Appendix III shows the distribution of the students according to the different departments in which they are working and the community to which they belong. It will be noted that the engraving class was especially popular. The percentage of artisans is the same as last year, viz., 64 per cent.

The number of scholarships are at present as follows :—

|                              |     |     |     |     |     |    |
|------------------------------|-----|-----|-----|-----|-----|----|
| Government of Madras         | ... | ... | ... | ... | ... | 80 |
| Government of Mysore         | ... | ... | ... | ... | ... | 1  |
| Government of Hyderabad      | ... | ... | ... | ... | ... | 1  |
| Victoria Technical Institute | ... | ... | ... | ... | ... | 4  |
|                              |     |     |     |     |     | 86 |

Most of the pupils continue to be drawn from the Madras and Chingleput districts and this preponderance is not likely to be reduced until some hostel accommodation is provided for boys from the mufassal. A larger volume of work was turned out in the various departments and more sales effected than in the previous year.

Appendix IV gives a list of students who left the school during the year and the appointments they have obtained. More students were accounted for this year than last and the average pay they are receiving also shows an increase.

153. *Financial Statement.*—This is given in Appendix V. An auditor from the Accountant-General's office audited the accounts up to the 28th February 1922 and had no criticisms to offer.

*Library and Museum.*—The number of new books added to the library during the year was 41. The purchase of Mr. Baker's

important book on old decorated cottons accounted for such a large proportion of the budget allotment that little remained for other books.

There were 62 articles added to the museum during the year.

154. *Examinations.*—Appendix VI gives the results of the various Government Technical examinations. The figures of the last three years are as follows :—

| Year.   | Number appeared. | Number passed. | Percentage of passes. |
|---------|------------------|----------------|-----------------------|
| 1919-20 | 168              | 134            | 80                    |
| 1920-21 | 176              | 149            | 85                    |
| 1921-22 | 165              | 120            | 73                    |

The percentage of passes in design and painting was disappointing, but scarcely unexpected. It is to be regretted that the examination in cabinet making abolished a year or two ago still remains in abeyance.

155. *School of Arts Committee.*—At the meeting of the Legislative Council held on 2nd September 1921, a resolution was moved by Dr. C. Natesa Mudaliyar in the following terms :—

“That this Council recommends to the Government that a committee of five members of the Council, to be nominated by the Minister for Development, be formed to reorganize the School of Arts.”

This resolution was accepted by the Hon'ble Minister for Development on behalf of Government, and, in a resolution dated 6th October 1921, the following committee was appointed, the terms of reference being sufficiently comprehensive :—

*President*—Mr. Justice F. D. Oldfield, I.C.S.

C. W. E. Cotton, Esq., C.I.E., I.C.S., M.L.C.

R. Littlehailes, Esq., M.A., M.L.C.

Mr. C. Jinarajadasa, M.A.

Dr. C. Natesa Mudaliyar, M.L.C.

*Members*—Khan Bahadur Muhammad Usman Sahib Bahadur, B.A., M.L.C.

Mr. T. Sivasankaram Pillai, M.L.C.

Mr. Rama Varma Raja.

Mr. C. Ramalinga Reddi, M.A.

Mrs. Hilda Chamier.

*Secretary*—Dr. P. Subbarayan, M.L.C.

The committee, it is understood, submitted their report (with a minute of dissent and a separate report by one of the members) to Government on the 12th April 1922.

156. *General.*—Apart from the painting class which needs complete reorganization under a better qualified teacher, the work carried on in the School of Arts during the year continued to reflect credit upon the Superintendent and his staff.

157. *Madura Industrial Institute.*—The year opened with 7 second-year and 18 first-year apprentices on the rolls. During the year one apprentice was admitted to the second-year course from the St. Joseph's Industrial School, Trichinopoly, whilst two second-year and two first-year apprentices were dismissed.

Twenty-three new boys were admitted as probationers in July, 18 being paid and 5 paying fees. All passed the examination held at the end of the probationary period. Of the twenty-three, seventeen were admitted as paid apprentices and three as fee-paying apprentices to the five years' course of training laid down in the syllabus. Later in January, one paid apprentice was dismissed and two vacancies in the paid apprentices grade were filled by transfer of two deserving cases from the fee-paying grade. The other two fee-paying apprentices did not rejoin after the probationary period. They were Brahmans from the Telugu districts and found it difficult to secure suitable accommodation in Madura. The year closed with 42 apprentices on the rolls—8 wood-workers and 33 metal workers and 1 in the motor-driving course—of whom 8 were Brahmans, 11 non-Brahman Hindus, 15 Christians, 4 Muhammadans and 2 Anglo Indians.

158. With the completion of the extensions and the erection of a timber store, it has been possible to rearrange the workshops and put the courses of instruction on a regular and better organized footing.

The equipment of the Institute has been augmented by the erection of a 30 b.h.p. oil engine, the transfer to the Institute of 3 h.p. gas engine with suction gas plant from the departmental workshops, Madras, the erection of four quadruple hearths (16 forges and a small cupola. A large cupola is ready for erection, but will require a new blower before it can be put into operation. Vices and benches for the fitting section are being made departmentally and the motor section has been provided with a second-hand Ford car for using in teaching car-driving and mechanism.

159. The motor section has recently been transferred to the block originally designed for weaving. This section is very popular with the public and orders are constantly being refused owing to inability to cope with the volume of work. A few machine tools and a small electric plant for charging batteries are urgently required to complete the equipment of this section.

160. On the whole, the reorganization scheme may be said to be working well, but the conduct of the Institute has been rendered much more difficult than it should have been by the delay in completing the building programme. It has been possible to keep things going up till now by various makeshifts because the Institute is not yet at full strength, but if the number of apprentices is to go on increasing year by year as the reorganization scheme contemplates, it will be necessary for the Public Works Department to finish their part of the contract without further delay. For example, the site is still unfenced and undrained. The hostel is still incomplete; kitchens, latrines, etc., have not yet been started. The warden and the superintendent are still waiting for their quarters and the elevated tank now very urgently required is not yet even estimated for.

161. *Aided Industrial Schools.*—In this Presidency Government institutions for industrial education are few and the spread of industrial education is catered for largely by aided institutions. The public do not perhaps realize how much they owe in the field of industrial education to missionary labours and mission funds. During the year under review there were 38 such assisted industrial schools scattered throughout the Presidency, many of them located in out-of-the-way places and a few of them seldom heard of by the general public. These assisted schools provide a reasonably efficient form of trade instruction at an extremely low cost to Government. They are conducted by very differently constituted bodies who approach the end in view from different angles and in different ways. The schools require a frequent, careful and watchful inspecting agency in order to keep them up to date in methods and in efficiency, but they fill a real need and accomplish work which could not be accomplished by purely Government institutions except at a very high cost to the State.

162. The year under review has been a period of stress and strain for most of these institutions. Owing to the financial stringency Government have not been able to allot funds under grant-in-aid for the construction of new buildings which are urgently required by several aided schools, whilst grants in-aid for the purchase of equipment have also had to be cut down to the absolute minimum. The concerns which belong to foreign missions have been hard hit by the Continental exchanges; while the cost of conducting the schools has increased and the managers of several of these institutions have had, and are having a very anxious time indeed.

During the year, the number in training in assisted schools was 1,748 and the recurring teaching grant-in-aid amounted to Rs. 53,467, whilst a sum of Rs. 33,451 was spent on non-recurring building

equipment grant. It is impossible to deal in this report with all these aided schools in detail, but some outstanding particulars of a few of them are given below.

163. *The Addison Press Industrial School.*—Government have agreed to support with grant-in-aid a set of classes for the apprentices employed in the Addison Press. The classes will be conducted on the same lines as those of the Orr assisted Industrial school, which it is hoped will prove popular generally with employers of labour.

164. *St. Mary's Industrial School, Kumbakonam,* had a very successful year. The number in training increased from 40 to 55 and the value of the work turned out from Rs. 14,000 to Rs. 24,000. The work done covers a wide range, from fine cabinet making to heavy and elaborate roof construction. The accommodation is now very fully taxed and it is greatly to be regretted that Government have not been able to meet the request of the management for a grant-in-aid towards fresh buildings urgently needed.

165. *St. Joseph's Industrial School, Coimbatore,* has not suffered so much financially as some other institutions and the management have been able by hard work and careful management to complete a fairly large building programme without Government assistance. The new building makes possible a rearrangement of the different departments which the Inspector of Industrial Schools has urged on the manager's attention during recent years as a means towards greater and more efficient supervision of the details of the work. The staff has been strengthened by the appointment of a carpentry teacher from the Training section of the St. Joseph's Industrial School, Tindivanam, and of an ex-pupil of Bro. Emile at Vizagapatam as teacher of motor-car repair work. The Rev. Fr. Perrin, after a long period as manager of this school, a period which was only interrupted by a spell of duty as interpreter with the British forces in France, has found it necessary owing to failing health to resign his post as manager, but his place has been taken by the Rev. Fr. Beyls who acted as his assistant and colleague from 1909 to 1914.

166. *St. Joseph's Industrial School, Trichinopoly,* continued to do good work during the year in providing training in cabinet making and metal work. A hostel is very urgently required for this institution, but Government have not been able to provide a building grant-in-aid and the finances of the school do not permit of the management attempting the erection of hostel buildings unaided.

167. *St. Joseph's Industrial School, Tindivanam,* had a very busy year. A new building for the use of the Training section for teachers of cabinet making attached to this school was completed and

occupied during the year and is being found of great convenience and assistance in the work of training teachers. A no less important item of construction was the erection during the year of quarters for the European staff of the school. For seventeen years the French Lay Brothers who form the teaching staff had to be content to live in a screened-off portion of the boys' dormitory and the two-storey bungalow now provided for them was long overdue. In January the manager, the Rev. Br. John Baptiste, who founded the school eighteen years ago and has been in charge of it without a break ever since, proceeded home to France on furlough. His health has been very indifferent for some time, but I trust that a long vacation in his native land will enable him to return to Tindivanam with his old-time vigour and energy to inaugurate a new era of prosperity.

168. *The S.P.G. Industrial School, Nazareth, Tinnevely district.*—Being buried away in the extreme south of the Presidency far from the railway, this school is not so prominently before the public as other schools nearer Madras, but it is well worth a visit from those interested in industrial education. The manager, the Rev. P. Randle, is a man with ideas which he is not afraid to put into practice. He considers that an artisan will be a much better artisan if he gets a good general education and whilst most school managers are agreed that industrial school boys should have completed the primary school course, Mr. Randle aims at getting each boy through the lower secondary course before he completes his practical training. In this school eleven hours a week are devoted to instruction in literary subjects which means a corresponding reduction of the time given to practical work, but the results achieved so far go to support Mr. Randle's thesis. The pupils take a keener interest in their work and have begun to realize that industrial education is something more than coolie work. The quality of the work done in this particular school has in fact improved rather than suffered by the change in the programme.

The lads who complete their course in this school seem prepared to go anywhere to secure employment in the trade they have learnt. Very recently three of them secured employment in the Perambur Railway Workshops, two have gone out as weaving masters and three carpenters are about to proceed to Burma on a four years' engagement.

169. *St. Francis Xavier's Industrial School, Tanjore,* is another institution the development of which is retarded by the present financial stringency. Some years ago Government acquired about nine acres of land for the expansion of this school. While the Development Department have been unable to obtain funds for a grant-in-aid towards the erection of the long overdue industrial school buildings and the carpentry and weaving classes still assemble

in dilapidated thatched sheds, the Education Department made a handsome contribution towards the erection of a Secondary School building which has been finished and occupied for over a year and stands on part of the site originally acquired by this department for the industrial school.

170. *The Danish Mission Industrial School, Tiruvannamalai*, was quietly closed during the year and a new school opened with the same manager and staff and practically the same pupils in well-built new premises on a more suitable site at Panruti. Government gave no grant towards the purchase of this new site or for the erection of the buildings. The necessary funds were collected by the Manager, the Rev. Victor Theill when on furlough in Denmark and great credit is due to that gentleman for the efficient and very unostentatious manner in which he has brought about the transfer and reorganization of this school. With the new buildings now available and the room there is for expansion, this new venture should do very well under Mr. Theill's capable direction.

171. In appendices VII and VIII will be found a complete list of the Industrial Schools receiving grants-in-aid from this department with details showing the number of pupils, the work taught and the grants paid in the year under review.

172. This report may appropriately conclude with a Financial statement showing the receipts and expenditure of the department during the past two years.

Details of the receipts and expenditure of the Department for the year 1921-22 are exhibited in Appendix IX.

| Items.            | 1920-21. |    |    | 1921-22.  |    |    | Increase or decrease. |    |    |
|-------------------|----------|----|----|-----------|----|----|-----------------------|----|----|
|                   | Rs.      | A. | P. | Rs.       | A. | P. | Rs.                   | A. | P. |
| Expenditure .. .. | 8,69,190 | 14 | 8  | 11,49,593 | 14 | 2  | + 2,80,402            | 16 | 6  |
| Receipts .. ..    | 2,67,635 | 4  | 1  | 2,86,644  | 2  | 8  | + 19,008              | 14 | 7  |
| Net cost .. ..    | 6,11,555 | 10 | 7  | 8,62,949  | 11 | 6  | + 2,51,394            | 0  | 11 |

173 The increase is chiefly due to the following causes. Mr. Campbell's reorganization proposals only became operative in the latter half of the year 1920-21. Mr. Campbell's leave allowances were debited to the department during the year 1921-22. Non-recurring expenditure on Europe stores largely accounts for the increased expenditure on the Madras Trades School. The increased expenditure on the Kerala Soap Institute in the year under review is more than counterbalanced by increased receipts from the sale of soap. The School of Arts was only transferred to the control of the Department of Industries on the 1st October 1920. So the year 1921-22 is the first complete year in which the expenditure on this

institution is shown in this report. An increase in the number of schools aided and larger building grants explain the higher cost of Industrial education, while miscellaneous experiments include the working of Glue Factory taken over from Messrs. Beardsell & Co. on the 1st September 1921 and apparatus and appliances purchased therefor.

174. The staff, both executive and clerical, with few exceptions, rendered me loyal assistance during the year. I would particularly bring to the notice of Government the excellent service rendered by Mr. L. B. Green, as Deputy Director, by Mr. Fyfe, Mr. Amalsad and Mr. Pinto in their respective appointments, and among the clerical establishment Mr. C. K. Kunhiraman, Manager of the office, and Mr. S. R. Atmanatha Ayyar, the Bureau Superintendent, deserve special mention.

## APPENDIX I.

## KERALA SOAP INSTITUTE, CALICUT.

## Profit and Loss account for the year ending 31st March 1922.

| To—                                           | RS.    | A. P. | By—                                | RS.    | A. P. |
|-----------------------------------------------|--------|-------|------------------------------------|--------|-------|
| Establishment charges ..                      | 24,369 | 6 10  | Gross profit from trading account. | 70,325 | 13 4  |
| Bonus to travellers ..                        | 5,682  | 10 7  | Sunday sales ..                    | 202    | 11 6  |
| Travelling expenses ..                        | 1,768  | 8 0   | Stocktaking excess.                | 1,369  | 0 5   |
| Postage and telegram ..                       | 667    | 1 0   | Revaluation of soda ash ..         | 455    | 0 0   |
| Printing and stationery ..                    | 1,071  | 1 11  |                                    |        |       |
| Rent and taxes ..                             | 5,557  | 11 6  |                                    |        |       |
| Advertisement charges ..                      | 952    | 14 8  |                                    |        |       |
| Miscellaneous office expenses.                | 809    | 15 9  |                                    |        |       |
| Repair and replacement.                       | 626    | 10 3  |                                    |        |       |
| New site charges (net) ..                     | 27     | 4 2   |                                    |        |       |
| Discount and exchange ..                      | 21     | 5 8   |                                    |        |       |
| Stock-taking deficiencies.                    | 618    | 11 7  |                                    |        |       |
|                                               |        |       |                                    |        |       |
| Bad and doubtful debt ..                      | 559    | 2 0   |                                    |        |       |
| Depreciation buildings ..                     | 857    | 4 0   |                                    |        |       |
| Plant and machinery ..                        | 3,128  | 0 0   |                                    |        |       |
| Laboratory apparatus ..                       | 91     | 4 0   |                                    |        |       |
| Furniture and fittings ..                     | 358    | 8 0   |                                    |        |       |
| Loose tools ..                                | 162    | 11 4  |                                    |        |       |
|                                               |        |       |                                    |        |       |
| Reserve for expenses not actually incurred—   | 1,740  | 0 0   |                                    |        |       |
| Moisty of Director's pay.                     |        |       |                                    |        |       |
| Pay of clerk of Director.                     | 480    | 0 0   |                                    |        |       |
| Director's travelling expenses.               | 855    | 0 0   |                                    |        |       |
| Director's expenses for postage and telegram. | 60     | 0 0   |                                    |        |       |
| Insurance premium ..                          | 601    | 13 0  |                                    |        |       |
| Interest on capital ..                        | 4,263  | 4 10  |                                    |        |       |
| Audit fee ..                                  | 850    | 0 0   |                                    |        |       |
| Net profit carried to balance sheet.          |        |       |                                    |        |       |
|                                               |        |       |                                    |        |       |
| Grand total ..                                |        |       |                                    |        |       |

Grand total .. 72,352 9 3

## APPENDIX II.

## KERALA SOAP INSTITUTE.

## Trading account for the year ending 31st March 1922.

|                                                 | Vegetol soap.        | Washwell soap.        | Toilet soap.        | Cheap bar soap.     | Fish oil soap.       | Total.               |
|-------------------------------------------------|----------------------|-----------------------|---------------------|---------------------|----------------------|----------------------|
| Stock on hand ..                                | RS. A. P. 13,997 5 2 | RS. A. P. 30,593 3 10 | RS. A. P. 6,863 0 5 | RS. A. P. 2,940 0 0 | RS. A. P. 2,854 10 2 | RS. A. P. 57,248 3 5 |
| Raw materials ..                                | 86,801 1 3           | 60,911 3 1            | 11,870 2 4          | .. 7 2              | 1,230 5 3            | 1,80,812 11 11       |
| Wages ..                                        | 2,753 0 3            | 4,214 2 11            | 639 9 1             | 41 3 0              | 48 1 10              | 7,654 5 3            |
| Packing expenses ..                             | 4,769 7 6            | 10,844 8 5            | 3,629 5 3           | .. 3 7 9            | 47 10 6              | 19,182 2 8           |
| Outward charges ..                              | 376 5 0              | 536 9 6               | 31 5 9              | ..                  | 27 8 9               | 975 4 9              |
| Trade mark registration ..                      | 30 13 0              | 43 14 2               | 2 13 3              | ..                  | ..                   | 77 8 6               |
| Total ..                                        | 94,730 11 0          | 76,350 6 1            | 16,173 3 8          | 49 1 11             | 1,348 10 4           | 1,88,652 1 0         |
| Gross profit carried to Profit and Loss.        | 25,692 15 2          | 40,106 7 1            | 4,089 9 5           | 205 11 8            | 231 2 0              | 70,325 13 4          |
| Total ..                                        | 1,34,420 15 2        | 1,17,050 1 0          | 27,125 13 6         | 3,194 13 7          | 4,434 6 6            | 3,16,226 1 9         |
| Sales less returns ..                           | 83,924 2 2           | 1,16,430 8 2          | 24,582 10 6         | 463 5 7             | 2,949 5 6            | 2,23,340 3 11        |
| Less discount and allowance ..                  | 507 14 0             | 459 4 2               | 23 1 6              | ..                  | ..                   | 990 3 8              |
| Total ..                                        | 83,416 8 2           | 1,15,971 4 0          | 24,569 9 0          | 463 5 7             | 2,949 5 6            | 2,27,350 0 3         |
| Soap issued for manufacture of other varieties. | 11,515 0 0           | ..                    | ..                  | ..                  | ..                   | 11,515 0 0           |
| Stock on hand ..                                | 39,489 7 0           | 31,078 13 0           | 2,566 4 6           | 2,741 8 0           | 1,485 1 0            | 77,361 1 6           |
| Total ..                                        | 1,34,420 15 2        | 1,47,050 1 0          | 27,125 13 6         | 3,194 13 7          | 4,434 6 6            | 3,16,226 1 9         |

## APPENDIX III.

## SCHOOL OF ARTS.

Classification of pupils in the Industrial Department according to the occupation of parents or guardians.

| Departments.             | Officials. | Inferior servants. | Traders. | Land-holders. | Artisans. | Coolies. | Mendicants. | Others. | Total. |
|--------------------------|------------|--------------------|----------|---------------|-----------|----------|-------------|---------|--------|
| Woodwork .. .. .         | 2          | 3                  | 13       | 3             | 38        | 1        | ..          | ..      | 60     |
| Carpet weaving .. .. .   | ..         | ..                 | ..       | ..            | 4         | ..       | ..          | ..      | 4      |
| Metal work .. .. .       | ..         | 1                  | ..       | 1             | 8         | ..       | ..          | ..      | 10     |
| Jewellery .. .. .        | 1          | 1                  | ..       | ..            | 11        | ..       | ..          | ..      | 13     |
| Modelling .. .. .        | ..         | ..                 | ..       | ..            | ..        | ..       | ..          | ..      | ..     |
| Engraving .. .. .        | 6          | 2                  | 5        | 3             | 55        | ..       | ..          | ..      | 71     |
| Lacquer work .. .. .     | 9          | 4                  | 6        | 3             | 19        | ..       | ..          | ..      | 41     |
| Special painting .. .. . | 7          | ..                 | 5        | 2             | 8         | ..       | ..          | ..      | 17     |
| Total .. .. .            | 25         | 11                 | 29       | 12            | 138       | 1        | ..          | ..      | 216    |

## APPENDIX IV.

## SCHOOL OF ARTS.

Students who left the school in 1921-22 and have secured employment.

| Name.                   | Highest examinations passed.                                                                                                          | Period spent in the school. | Present employment.                                      | Salary.        |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------------------------------------------------------|----------------|
| Benjamin Due-man.       | Group certificate in Drawing, Painting and Design (Intermediate), Freehand outline drawing and Geometrical drawing (Advanced).        | TEARS.<br>5                 | Artist, Messrs. Spencer & Co., Madras.                   | RS.<br>40      |
| S. Mahadeva Asari.      | Freehand outline drawing (Intermediate), Geometrical drawing and Painting (Elementary).                                               | 4                           | Engraver, Messrs. P. Orr & Sons, Limited, Madras.        | 15             |
| G. Muniswami Mudali.    | Freehand outline drawing (Intermediate), Design and Painting (Intermediate) and Copper plate engraving (Advanced).                    | ..                          | Engraver, Messrs. Barton & Sons, Bangalore.              | 35             |
| B. Venugopal Pillai.    | Freehand outline drawing (Intermediate) and Copper plate engraving (Advanced).                                                        | 6                           | Tracer, Corporation of Madras.                           | 35             |
| K. Ganga Reddi.         | Diploma in Drawing and Painting (Advanced).                                                                                           | 5                           | Drawing Master, Technical Institute, Bangalore.          | 45             |
| J. Sivapatham Mudali.   | Freehand outline drawing and Cabinet making (Elementary).                                                                             | 4                           | Carpenter, Perambur Workshops.                           | As. 14 per day |
| S. R. Kinasabai Pillai. | Painting and design (Intermediate).                                                                                                   | 3                           | Tracer, Madras Survey office.                            | 20             |
| M. Kandaswami Mudali.   | Group certificate in Drawing, Cabinet making (Advanced) and Trained Teachers' Certificate in Drawing and Cabinet making (Elementary). | 6                           | Handicraft Instructor, Corporation Model School, Egmore. | 35             |
| Joseph Dawson Pillai.   | Group certificate in Drawing and Freehand outline drawing (Advanced).                                                                 | 6                           | Artist, Carnatic Mills, Choolai.                         | 30             |
| B. M. Parasuraman.      | Diploma in Drawing .. .. .                                                                                                            | 6                           | Artist, Medical School, Rayapuram.                       | 75             |
| S. Masilomony Pillai.   | Cabinet making (Elementary).                                                                                                          | 4                           | Carpenter in a private firm at Choolai.                  | 15             |
| P. L. Nagesh Rao.       | Group certificate in Drawing .. .. .                                                                                                  | 5                           | Artist, Rayapuram Medical School.                        | 40             |
| K. Natesa Mudali.       | Do. .. .. .                                                                                                                           | 7                           | Do.                                                      | 75             |

**APPENDIX V.**  
**SCHOOL OF ARTS.**  
**Statement of Receipts and Charges for 1921-22**

| RECEIPTS.                                                                                            | Amount.     | CHARGES.                                                                           | Amount.                                                                      |
|------------------------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <b>Fees—</b>                                                                                         | RS. A. P.   | (Superintendent ..<br>Assistant Superintendent ..<br>Permanent ..<br>Temporary ..) | RS. A. P.<br>20,578 3 2<br>4,279 6 10<br>23,898 4 0<br>339 0 0<br>24,037 4 0 |
| Sales :—Cash .. .. .                                                                                 | 5,337 4 0   | Allowances : Travelling .. ..                                                      | 890 0 0                                                                      |
| Realisation upon bills .. ..                                                                         | 2,183 0 0   |                                                                                    |                                                                              |
| " by adjustment .. ..                                                                                | 436 0 0     |                                                                                    |                                                                              |
| Stock of manufactured articles on 31st March 1922 ..                                                 | 13,647 7 6  | Supplies and Services :—Stipends .. ..                                             | 2,658 12 8                                                                   |
| Stock of unfinished articles on 31st March 1922 ..                                                   | 1,206 6 0   | Library and prizes .. ..                                                           | 976 1 4                                                                      |
| Stock of materials on 31st March 1922 .. ..                                                          | 6,946 15 4  | Art collections .. ..                                                              | 1,999 8 0                                                                    |
| Stock of tools and plant on 31st March 1922 .. ..                                                    | 6,771 10 3  | Materials .. ..                                                                    | 9,536 8 3                                                                    |
| " .. ..                                                                                              |             | Wages .. ..                                                                        | 10,614 1 3                                                                   |
| Stock of tools and plant on 31st March 1922 .. ..                                                    | 28,572 7 1  | Tools and Plant .. ..                                                              | 890 14 0                                                                     |
| Stock of manufactured articles on 31st March 1921 .. ..                                              | 10,815 5 6  | Contingencies :—                                                                   |                                                                              |
| Stock of unfinished articles on 31st March 1921 .. ..                                                | 2,506 0 0   | Furniture and apparatus .. ..                                                      | 814 4 0                                                                      |
| Stock of materials on 31st March 1921 .. ..                                                          | 6,359 3 6   | Postage and telegraph .. ..                                                        | 100 0 0                                                                      |
| Stock of tools and plant on 31st March 1921 .. ..                                                    | 6,323 15 2  | Rev's, rates and taxes .. ..                                                       | 1,663 13 0                                                                   |
| Increase of stock of manufactured articles, materials, tools and plant during the current year .. .. |             | Office and other contingencies .. ..                                               | 3,660 4 3                                                                    |
|                                                                                                      |             |                                                                                    | 6,288 5 3                                                                    |
| Balance .. ..                                                                                        | 77,297 11 8 |                                                                                    |                                                                              |
| Total .. ..                                                                                          | 82,699 0 9  |                                                                                    | 82,699 0 9                                                                   |

**APPENDIX VI.**  
**SCHOOL OF ARTS.**  
**Results of the various Government Technical Examinations held in November and December 1921 (School of Arts).**

| Subjects.                      | Grade.             | 1920-21.         |                | 1921-22.         |                | Average. |          |
|--------------------------------|--------------------|------------------|----------------|------------------|----------------|----------|----------|
|                                |                    | Number appeared. | Number passed. | Number appeared. | Number passed. | 1920-21. | 1921-22. |
| Freehand outline drawing .. .. | Elementary .. ..   | 47               | 36             | 27               | 25             | 77       | 93       |
|                                | Intermediate .. .. | 30               | 26             | 47               | 44             | 87       | 94       |
|                                | Advanced .. ..     | 11               | 9              | 4                | 3              | 82       | 75       |
| Geometrical drawing .. ..      | Elementary .. ..   | 2                | 2              | 4                | 1              | 60       | 25       |
|                                | Intermediate .. .. | 2                | 2              | 4                | 3              | 100      | 75       |
|                                | Advanced .. ..     | 4                | 3              | ..               | ..             | 75       | ..       |
| Design .. ..                   | Elementary .. ..   | 23               | 19             | 16               | 3              | 86       | 19       |
|                                | Intermediate .. .. | 4                | 4              | 7                | 5              | 100      | 71       |
|                                | Advanced .. ..     | ..               | ..             | 1                | 1              | 100      | 100      |
| Painting .. ..                 | Elementary .. ..   | 18               | 18             | 26               | 13             | 100      | 50       |
|                                | Intermediate .. .. | 10               | 10             | 9                | 7              | 100      | 78       |
|                                | Advanced .. ..     | 7                | 6              | 4                | 2              | 86       | 50       |
| Modelling .. ..                | Elementary .. ..   | ..               | ..             | 1                | 1              | 100      | 100      |
|                                | Intermediate .. .. | ..               | ..             | 4                | 4              | 100      | 100      |
|                                | Advanced .. ..     | 6                | 4              | 5                | 3              | 67       | 60       |
| Wood Engraving .. ..           | Elementary .. ..   | ..               | ..             | ..               | ..             | ..       | ..       |
|                                | Intermediate .. .. | ..               | ..             | 4                | 4              | 100      | 100      |
|                                | Advanced .. ..     | 3                | 3              | ..               | ..             | 100      | ..       |
| Copper plate engraving .. ..   | Elementary .. ..   | 3                | 3              | ..               | ..             | 100      | ..       |
|                                | Intermediate .. .. | 1                | 1              | 1                | 1              | 100      | ..       |
| Jewellery .. ..                | Elementary .. ..   | 1                | 1              | 1                | 1              | 100      | 100      |
|                                | Intermediate .. .. | ..               | ..             | ..               | ..             | ..       | ..       |
| Total .. ..                    |                    | 176              | 149            | 165              | 120            | 85       | 73       |

APPEN  
Statistics relating to

| Statistics relating to |                                                               |                 |                                     |                         |                |                    |                 |            |             |                 |                 |
|------------------------|---------------------------------------------------------------|-----------------|-------------------------------------|-------------------------|----------------|--------------------|-----------------|------------|-------------|-----------------|-----------------|
| District.              | Name of institution.                                          | Boys or girls.  | Number on rolls on 31st March 1922. | Mechanical Engineering. |                |                    |                 |            | Metal work. | Weaving.        |                 |
|                        |                                                               |                 |                                     | Drawing.                | Fitter's work. | Blacksmith's work. | Other branches. | Carpentry. |             | Cotton weaving. | Carpet weaving. |
| (1)                    | (2)                                                           | (3)             | (4)                                 | (5)                     | (6)            | (7)                | (8)             | (9)        | (10)        | (11)            | (12)            |
|                        | <i>Recognized Schools—Government.</i>                         |                 |                                     |                         |                |                    |                 |            |             |                 |                 |
| Madras                 | Government Trades School, Madras (including Perambur Branch). | Boys.           | 245                                 | 65                      | ..             | ..                 | 80              | ..         | ..          | ..              | ..              |
| Do.                    | School of Arts, Madras..                                      | Boys and girls. | 234                                 | ..                      | ..             | ..                 | ..              | 60         | 10          | ..              | 4               |
| Do.                    | Leather Trades Institute, Madras.                             | Boys.           | 42                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Madura                 | Government Industrial Institute, Madura.                      | Do.             | 42                                  | ..                      | ..             | ..                 | ..              | 8          | 33          | ..              | ..              |
|                        | Total ..                                                      |                 | 563                                 | 65                      | ..             | ..                 | 80              | 68         | 43          | ..              | 4               |
|                        | <i>Aided.</i>                                                 |                 |                                     |                         |                |                    |                 |            |             |                 |                 |
| North Arcot            | A.A.M. Industrial School, Katpadi.                            | Boys.           | 51                                  | ..                      | ..             | 7                  | ..              | 44         | ..          | ..              | ..              |
| Do.                    | Anjuman-i-Isha-A-Thul Hassanath, Vellore.                     | Do.             | 47                                  | 33                      | ..             | ..                 | ..              | 47         | ..          | ..              | ..              |
| Do.                    | Anjuman-i-Muaddul Muhammadan Orphanage, Melvisharam.          | Do.             | 16                                  | ..                      | ..             | ..                 | ..              | 16         | ..          | ..              | ..              |
| Tinnevely              | S.P.G. Art Industrial School for Boys, Nazareth.              | Do.             | 64                                  | ..                      | ..             | 10                 | ..              | 44         | ..          | 10              | ..              |
| Trichinopoly           | All Saints' Industrial School, Puthur.                        | Do.             | 12                                  | 12                      | ..             | 2                  | ..              | 12         | ..          | ..              | ..              |
| Ganjam                 | Raja's Industrial School, Parlakimedi.                        | Do.             | 38                                  | 16                      | ..             | ..                 | ..              | 16         | ..          | 22              | ..              |
| Tanjore                | St. Francis Xavier's Industrial School, Tanjore.              | Do.             | 65                                  | ..                      | ..             | ..                 | ..              | 29         | ..          | 36              | ..              |
| South Arcot            | St. Joseph's Industrial School, Tindivanam.                   | Do.             | 55                                  | 55                      | ..             | 2                  | ..              | 51         | ..          | ..              | ..              |
| Trichinopoly           | Wesleyan Mission Industrial School, Karur.                    | Do.             | 69                                  | 2                       | ..             | 4                  | ..              | 46         | ..          | 7               | ..              |
| Vizagapatam            | St. Aloysius' Industrial School, Vizagapatam.                 | Do.             | 16                                  | 16                      | 16             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Tanjore                | St. Mary's Industrial School, Kumbakonam.                     | Do.             | 55                                  | ..                      | ..             | 3                  | ..              | 52         | ..          | ..              | ..              |
| Chingleput             | U.F.C.M. Agricultural School, Melrosapuram.                   | Do.             | 38                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Trichinopoly           | St. Joseph's Industrial School, Trichinopoly.                 | Do.             | 57                                  | ..                      | 18             | 24                 | ..              | 35         | 11          | ..              | ..              |
| Chingleput             | A.A.M. Industrial School, Velacheri.                          | Do.             | 32                                  | 10                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Tinnevely              | C.M.S. Industrial School for Blind, Palamcottah.              | Boys and girls. | 60                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | 60              | ..              |
| Coimbatore             | St. Joseph's Industrial School, Coimbatore.                   | Boys.           | 81                                  | ..                      | 40             | ..                 | ..              | 41         | ..          | ..              | ..              |

**DIX VII.**  
Industrial schools for 1921-22.

[illegible]

## APPEN

Statistics relating to

| District.          | Name of institution.                                  | Boys or girls. | Number on rolls on 31st March 1922. | Mechanical Engineering. |                |                    |                 | Carpentry. | Metal work. | Weaving         |                 |
|--------------------|-------------------------------------------------------|----------------|-------------------------------------|-------------------------|----------------|--------------------|-----------------|------------|-------------|-----------------|-----------------|
|                    |                                                       |                |                                     | Dawing.                 | Fitter's work. | Blacksmith's work. | Other branches. |            |             | Cotton weaving. | Carpet weaving. |
| (1)                | (2)                                                   | (3)            | (4)                                 | (5)                     | (6)            | (7)                | (8)             | (9)        | (10)        | (11)            | (12)            |
| <i>Aided—cont.</i> |                                                       |                |                                     |                         |                |                    |                 |            |             |                 |                 |
| Tinnevelly ..      | The Weaving Institute, Alwartiranagari.               | Boys.          | 22                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | 22              | ..              |
| South Arcot ..     | D.M. Industrial School, Panruti.                      | Do.            | 47                                  | ..                      | ..             | ..                 | ..              | 47         | ..          | ..              | ..              |
| Madras ..          | C.N.T. Institute, Vepery.                             | Do.            | 187                                 | 81                      | 69             | ..                 | ..              | 53         | ..          | 35              | ..              |
| Do. ..             | Anjuman-I Muhi-I-Alla-I-Islam, Madras.                | Do.            | 130                                 | ..                      | ..             | ..                 | ..              | 37         | ..          | ..              | 11              |
| Do. ..             | Orr Assisted Industries School, Madras.               | Do.            | 19                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Kurnool ..         | S.P.G. Weaving School, Nandyal.                       | Do.            | 1                                   | ..                      | ..             | ..                 | ..              | ..         | ..          | 1               | ..              |
| Guntur ..          | Municipal Industrial School, Guntur.                  | Do.            | 5                                   | ..                      | ..             | ..                 | ..              | 5          | ..          | ..              | ..              |
| Trichinopoly ..    | Wesleyan Mission Lace School, Karur.                  | Girls          | 11                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Coinbatore ..      | L.M. Girls Industrial School, Erode.                  | Do.            | 39                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Guntur ..          | A.B.M. Girls Industrial School, Ongole.               | Do.            | 15                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| South Arcot ..     | D.M. Girls Industrial School, Keelur.                 | Do.            | 20                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Tinnevelly ..      | R.C. Girls Industrial School, Vedakangulam.           | Do.            | 78                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Do. ..             | S.P.G. Girls Lace School, Edaiyangudi.                | Do.            | 34                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Do. ..             | S.P.G. Girls Lace School, Kudangulam.                 | Do.            | 25                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Madras ..          | C.S.M. Girls Industrial School, Kilpauk.              | Do.            | 77                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Madura ..          | St. Joseph's Convent Girls Industrial School, Madura. | Do.            | 64                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Trichinopoly ..    | C.S.M. Girls Industrial School, Kempstow.             | Do.            | 22                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Chingleput ..      | U.F.C.M. Lace School, Chingleput.                     | Do.            | 58                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Bellary ..         | St. Joseph's Girls Industrial School, Bellary.        | Do.            | 72                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Cuddapah ..        | O.E.L.M. Lace-making School, Koduru.                  | Do.            | 19                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| North Arcot ..     | A.A.M. Women's Industrial Home, Ranipet.              | Do.            | 40                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Tinnevelly ..      | S.P.G. Art Industrial School for Girls, Nazareth.     | Do.            | 12                                  | ..                      | ..             | ..                 | ..              | ..         | ..          | ..              | ..              |
| Total ..           |                                                       |                | 1,748                               | 225                     | 148            | 62                 | ..              | 579        | 11          | 193             | 11              |
| Grand total ..     |                                                       |                | 2,311                               | 290                     | 148            | 52                 | 80              | 647        | 54          | 193             | 15              |

## DIX VII—cont.

Industrial schools for 1921-22—cont.

| Needle crafts. |             |                 | Agriculture. | Oil-engine driving. | Rattan work. | Plumbing and minor sanitary science. | Motor-car driving. | Mat-making. | Basket-making. | Chemistry of Leather Manufacture. | Electric wiring. | Railway apprentices. | Engraving. | General Educational School Department. | Scientific instrument making. | Goldsmith's work. | Lacquer work. | Special painting. | Other subjects. |
|----------------|-------------|-----------------|--------------|---------------------|--------------|--------------------------------------|--------------------|-------------|----------------|-----------------------------------|------------------|----------------------|------------|----------------------------------------|-------------------------------|-------------------|---------------|-------------------|-----------------|
| Lace making.   | Embroidery. | Other branches. |              |                     |              |                                      |                    |             |                |                                   |                  |                      |            |                                        |                               |                   |               |                   |                 |
| (13)           | (14)        | (15)            | (16)         | (17)                | (18)         | (19)                                 | (20)               | (21)        | (22)           | (23)                              | (24)             | (25)                 | (26)       | (27)                                   | (28)                          | (29)              | (30)          | (31)              | (32)            |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| ..             | ..          | ..              | ..           | 2                   | ..           | ..                                   | 23                 | ..          | ..             | ..                                | ..               | ..                   | ..         | 82                                     | ..                            | ..                | ..            | ..                | 58              |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | 19                            | ..                | ..            | ..                | ..              |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 11             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | 39             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| ..             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 15             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 20             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 78             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 34             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 25             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 66             | 11          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 6              | 58          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 2              | 20          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 58             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 14             | 59          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 19             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 40             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 12             | ..          | ..              | ..           | ..                  | ..           | ..                                   | ..                 | ..          | ..             | ..                                | ..               | ..                   | ..         | ..                                     | ..                            | ..                | ..            | ..                | ..              |
| 395            | 147         | ..              | 38           | 4                   | 14           | ..                                   | 27                 | ..          | 39             | ..                                | ..               | ..                   | ..         | 126                                    | 19                            | ..                | ..            | ..                | 58              |
| 395            | 147         | ..              | 38           | 4                   | 14           | 45                                   | 28                 | ..          | 39             | 42                                | 60               | 100                  | 71         | 126                                    | 19                            | 13                | 41            | 17                | 58              |

## APPENDIX

## Statistics relating to Industrial

| District.                              | Name of the institution.                                      | Boys or girls.  | Number on rolls on 31st March 1922. |
|----------------------------------------|---------------------------------------------------------------|-----------------|-------------------------------------|
| <i>Recognized schools— Government.</i> |                                                               |                 |                                     |
| Madras ..                              | Government Trades School, Madras (including Perambur Branch). | Boys ..         | 245                                 |
|                                        | School of Arts, Madras .. .. .                                | Boys and girls. | 234                                 |
|                                        | Leather Trades Institute, Madras ..                           | Boys ..         | 42                                  |
| Madura ..                              | Government Industrial Institute, Madura ..                    | Do. ..          | 42                                  |
|                                        | Total ..                                                      |                 | 563                                 |
| <i>Aided schools.</i>                  |                                                               |                 |                                     |
| North Arcot ..                         | A.A.M. Industrial School, Katpadi ..                          | Boys ..         | 51                                  |
|                                        | Anjuman-i-Isba-A-Thul Hassanath, Vellore ..                   | Do. ..          | 47                                  |
|                                        | Anjuman-i-Mufidul Muhammadan Orphanage, Melvisharam.          | Do. ..          | 16                                  |
| Tinnevely ..                           | S.P.G. Art Industrial School for Boys, Nazareth.              | Do. ..          | 64                                  |
| Trichinopoly.                          | All Saints' Industrial School, Pothur ..                      | Do. ..          | 12                                  |
| Guntur ..                              | Raja's Industrial School, Parlakimedi ..                      | Do. ..          | 38                                  |
| Tanjore ..                             | St. Francis Xavier's Industrial School, Tanjore ..            | Do. ..          | 65                                  |
| South Arcot ..                         | St. Joseph's Industrial School, 'Indivavum ..                 | Do. ..          | 55                                  |
| Trichinopoly.                          | Wesleyan Mission Industrial School, Karur ..                  | Do. ..          | 69                                  |
| Visagapatam.                           | St. Aloysius' Industrial School, Vizagapatam ..               | Do. ..          | 16                                  |
| Tanjore ..                             | St. Mary's Industrial School, Kumbakonam ..                   | Do. ..          | 56                                  |
| Chingleput ..                          | U.F.C.M. Agricultural School, Melrosapuram ..                 | Do. ..          | 38                                  |
| Trichinopoly.                          | St. Joseph's Industrial School, Trichinopoly ..               | Do. ..          | 57                                  |
| Chingleput ..                          | A.A.M. Industrial School, Velacheri ..                        | Do. ..          | 32                                  |
| Tinnevely ..                           | C.M.S. Industrial School for Blind, Palamcottah.              | Boys and girls. | 60                                  |
| Coimbatore ..                          | St. Joseph's Industrial School, Coimbatore ..                 | Boys ..         | 81                                  |
| Tinnevely ..                           | Weaving Institute, Alwartirunagari ..                         | Do. ..          | 22                                  |
| South Arcot ..                         | D.M. Industrial School, Panruti ..                            | Do. ..          | 47                                  |
|                                        | C.N.T. Institute, Vepery ..                                   | Do. ..          | 187                                 |
| Madras ..                              | Anjuman-i-Mufid-i-Alla-i-Islam, Madras ..                     | Do. ..          | 130                                 |
|                                        | Orr Assisted Industries School, Madras ..                     | Do. ..          | 19                                  |
| Kurnool ..                             | S.P.G. Weaving School, Nandyal ..                             | Do. ..          | 1                                   |
| Guntur ..                              | Municipal Industrial School, Guntur ..                        | Do. ..          | 5                                   |
| Trichinopoly.                          | Wesleyan Mission Lace School, Karur ..                        | Girls ..        | 11                                  |
| Coimbatore ..                          | L.M. Girls Industrial School, Erode ..                        | Do. ..          | 39                                  |
| Guntur ..                              | A.B.M. Girls Industrial School, Ongole ..                     | Do. ..          | 15                                  |
| South Arcot ..                         | D.M. Girls Industrial School, Keelar ..                       | Do. ..          | 20                                  |
|                                        | R.C. Girls Industrial School, Vedakangulam ..                 | Do. ..          | 73                                  |
| Tinnevely ..                           | S.P.G. Girls Lace School, Edayangudi ..                       | Do. ..          | 34                                  |
|                                        | Do. Kudankulam ..                                             | Do. ..          | 25                                  |
| Madras ..                              | C.S.M. Girls Industrial School, Kilpauk ..                    | Do. ..          | 77                                  |
| Madura ..                              | St. Joseph's Convent Girls Industrial School, Madura.         | Do. ..          | 64                                  |
| Trichinopoly.                          | C.S.M. Girls Industrial School, Kempatowm ..                  | Do. ..          | 22                                  |
| Chingleput ..                          | U.F.C.M. Lace School, Chingleput ..                           | Do. ..          | 58                                  |
| Bellary ..                             | St. Joseph's Industrial School, Bellary ..                    | Do. ..          | 72                                  |
| Onddappah ..                           | O.E.L.M. Lace making School, Koduru ..                        | Do. ..          | 19                                  |
| North Arcot ..                         | A.A.M. Women's Industrial Home, Ranipet ..                    | Do. ..          | 40                                  |
| Tinnevely ..                           | S.P.G. Art Industrial School for Girls, Nazareth.             | Do. ..          | 12                                  |
|                                        | Total ..                                                      | ....            | 1,748                               |
|                                        | Grand total ..                                                | ....            | 2,311                               |

\* Includes receipts and expenditure on account

## DIX VIII.

## Schools for 1921-22.

| Receipts—Grants—Provincial funds.                                        |            |           |                                  | Public funds. | Managers' contribution. | Total receipt (equal expenditure). |
|--------------------------------------------------------------------------|------------|-----------|----------------------------------|---------------|-------------------------|------------------------------------|
| Miscellaneous receipts including sale-proceeds of manufactured articles. | Fees.      | Teaching. | Building equipment special, etc. |               |                         |                                    |
| RS. A. P.                                                                | RS. A. P.  | RS. A. P. | RS. A. P.                        | RS. A. P.     | RS. A. P.               | RS. A. P.                          |
| 272 2 0                                                                  | 792 0 0    | ..        | ..                               | 35,673 0 0    | ..                      | 36,737 2 0                         |
| 7,956 4 0                                                                | 18 0 0     | ..        | ..                               | 74,729 12 9   | ..                      | 82,699 0 9                         |
| 2,231 8 9                                                                | 3,360 0 0  | ..        | ..                               | 63,222 14 6   | ..                      | 68,814 2 3                         |
| 24,804 4 7                                                               | 120 0 0    | ..        | ..                               | 69,909 9 5    | ..                      | 94,833 14 0                        |
| 35,263 14 4                                                              | 4,285 0 0  | ..        | ..                               | 2,43,535 4 8  | ..                      | 2,83,084 3 0                       |
| 91,542 3 11                                                              | ..         | 2,300     | 14,821                           | ..            | 25,358 11 7             | 1,34,091 15 6                      |
| 28,095 15 3                                                              | ..         | 1,000     | 192                              | ..            | 2,653 0 7               | 31,940 15 10                       |
| 1,774 11 0                                                               | ..         | 750       | ..                               | ..            | 617 12 7                | 3,142 7 7                          |
| 12,284 5 2                                                               | ..         | 3,000     | 368                              | ..            | 4,578 7 5               | 20,230 12 7                        |
| 5,430 12 9                                                               | ..         | 1,200     | ..                               | ..            | 312 11 5                | 6,943 8 2                          |
| 3,840 1 10                                                               | ..         | 400       | ..                               | ..            | 8,251 15 9              | 8,372 1 7                          |
| 29,813 4 11                                                              | ..         | 2,500     | 9,080                            | ..            | 3,199 7 7               | 35,512 12 6                        |
| 7,308 4 0                                                                | ..         | 4,000     | ..                               | ..            | ..                      | 20,386 4 0                         |
| 46,319 8 5                                                               | 592 8 0    | 3,500     | 604                              | ..            | ..                      | 65,705 0 5                         |
| 63,045 0 5                                                               | ..         | 2,000     | 660                              | ..            | 4,300 0 0               | 31,153 11 9                        |
| 23,963 11 9                                                              | ..         | 2,000     | 1,000                            | ..            | 2,234 14 11             | 8,744 11 4                         |
| 2,234 12 5                                                               | ..         | 700       | 3,575                            | ..            | 7,813 8 9               | 58,237 3 7                         |
| 47,804 10 10                                                             | ..         | 2,000     | 619                              | ..            | 1,194 8 3               | 1,794 8 3                          |
| ..                                                                       | ..         | 600       | ..                               | ..            | 1,563 0 0               | 9,050 8 0                          |
| 5,987 8 0                                                                | 323 8 0    | 1,500     | 125                              | ..            | 3,300 0 0               | 78,733 14 11                       |
| 72,985 6 11                                                              | ..         | 2,000     | 997                              | ..            | 4,548 10 7              | 11,706 11 2                        |
| 5,561 0 7                                                                | ..         | 600       | ..                               | ..            | 5,672 0 5               | 11,781 0 2                         |
| 5,308 15 9                                                               | ..         | 800       | ..                               | ..            | 8,309 13 6              | 38,207 9 5                         |
| 18,834 5 11                                                              | 7,063 6 0  | 9,000     | 410                              | ..            | 7,288 2 3               | 14,506 14 3                        |
| 1,408 12 0                                                               | ..         | 5,000     | ..                               | ..            | 4,867 0 0               | 8,734 0 0                          |
| ..                                                                       | ..         | 4,367     | ..                               | ..            | 130 5 4                 | 2,555 9 6                          |
| 2,112 4 2                                                                | ..         | 250       | 63                               | ..            | 1,765 9 11              | 1,765 9 11                         |
| ..                                                                       | ..         | 150       | ..                               | ..            | ..                      | 784 10 6                           |
| 582 10 6                                                                 | ..         | 100       | ..                               | ..            | ..                      | 270 5 6                            |
| 170 5 6                                                                  | ..         | 100       | 57                               | ..            | 239 0 0                 | 396 0 0                            |
| 7,335 8 8                                                                | ..         | 350       | ..                               | ..            | 2,132 0 6               | 7,685 8 3                          |
| ..                                                                       | ..         | 500       | ..                               | ..            | 151 3 6                 | 2,632 0 6                          |
| 1,011 6 0                                                                | ..         | 250       | ..                               | ..            | 253 4 5                 | 1,412 9 6                          |
| 748 12 0                                                                 | ..         | 500       | ..                               | ..            | 1,031 6 11              | 1,252 0 4                          |
| 1,892 15 3                                                               | ..         | 500       | ..                               | ..            | 1,220 0 6               | 3,424 6 2                          |
| 2,538 13 0                                                               | ..         | 100       | ..                               | ..            | 692 0 0                 | 4,259 3 6                          |
| ..                                                                       | ..         | 250       | ..                               | ..            | 1,359 14 11             | 792 0 0                            |
| 1,458 0 7                                                                | ..         | 450       | ..                               | ..            | 1,332 8 0               | 3,087 15 6                         |
| 412 8 0                                                                  | ..         | 150       | ..                               | ..            | ..                      | 2,195 0 0                          |
| 1,519 15 10                                                              | ..         | 200       | ..                               | ..            | 2,480 0 0               | 1,649 15 10                        |
| ..                                                                       | ..         | 150       | ..                               | ..            | ..                      | 2,680 0 0                          |
| ..                                                                       | ..         | ..        | ..                               | ..            | ..                      | 150 0 0                            |
| 4,88,714 11 4                                                            | 7,979 6 0  | 53,467    | 33,451                           | 2,43,535 4 8  | 1,06,878 11 2           | 6,90,490 12 6                      |
| 3,39,978 9 8                                                             | 12,364 6 0 | 53,467    | 33,451                           | ..            | 1,06,878 11 2           | 9,73,574 15 6                      |

of girls school also shown separately below.  
† See remarks against boys school above.

## APPENDIX IX

Statement of receipts and charges of the Department of Industries  
for the year 1921-22.

(March final.)

| Receipts.                                                                                                |           |    |    | Charges.                                                                           |           |    |    |
|----------------------------------------------------------------------------------------------------------|-----------|----|----|------------------------------------------------------------------------------------|-----------|----|----|
|                                                                                                          | Rs.       | A. | P. |                                                                                    | Rs.       | A. | P. |
| 1. Pumping and Boring branch                                                                             | 13,022    | 3  | 7  | 1. Director of Industries including District Industrial staff.                     | 3,83,117  | 3  | 8  |
| 2. Industrial Schools (Madura Industrial Institute, Leather Trades Institute, and Madras Trades School). | 19,572    | 2  | 7  | 2. Weaving Branch                                                                  | 74,657    | 11 | 3  |
| 3. Weaving Branch                                                                                        | 9,233     | 6  | 7  | 3. Madras Industrial Institute and Industrial Chemist.                             | 1,06,189  | 0  | 9  |
| 4. School of Arts                                                                                        | 8,077     | 7  | 0  | 4. Madras Technical Institute (Madras Trades School and Leather Trades Institute). | 1,47,761  | 1  | 4  |
| 5. Other receipts                                                                                        | 59,653    | 2  | 6  | 5. Kerala Soap Institute                                                           | 2,04,908  | 1  | 3  |
| 6. Kerala Soap Institute                                                                                 | 2,32,924  | 7  | 4  | 6. School of Arts                                                                  | 82,788    | 10 | 1  |
| Total                                                                                                    | 3,42,482  | 13 | 7  | 7. Grants-in-aid to Industrial Schools.                                            | 90,382    | 4  | 9  |
| Net cost of the department                                                                               | 8,23,358  | 6  | 2  | 8. Scholarships                                                                    | 25,698    | 6  | 6  |
|                                                                                                          |           |    |    | 9. Miscellaneous experiments.                                                      | 50,388    | 12 | 2  |
|                                                                                                          |           |    |    | Total charges                                                                      | 11,65,841 | 3  | 9  |
| Grand total                                                                                              | 11,65,841 | 3  | 9  |                                                                                    |           |    |    |

Order—No. 1525, Development, dated 13th November 1922.

Recorded.

2. The department continued throughout the year under review to be under the charge of Mr. C. W. E. Cotton, C.I.E. Changes of personnel were somewhat numerous owing to the organization which will presently be referred to; but the year was further marked by the resignation of Sir Frederick Nicholson of his appointment as Honorary Superintendent of Minor Industries Laboratory, Coonoor; this terminated his official connexion with the department and the Government cordially endorse the acknowledgment which the Director of Industries has recorded in paragraph 12 of the report of the great obligation, under which the department and the Government lie, to Sir Frederick Nicholson for his valuable advice and his assistance.

3. The year 1921-22, like the preceding one, witnessed experimental changes of organization which were dictated, partly, by experience which has shown that a less elaborate organization was required than that which had been previously adopted, and partly, by considerations of economy which, in the present financial situation of the Presidency, had become pressing. Instead of an Industrial Engineer on Rs. 1,500 and five Assistant Directors on pay varying from Rs. 600—50—650 to 800—50—850 it has been

decided as a result of further careful consideration to substitute an Industrial Engineer on Rs. 750—25—1,000 only and three Assistant Industrial Engineers on Rs. 300—15—450, whose activities are mainly confined to the Pumping and Boring Department and to carrying out any special enquiries entrusted to them by the Director, while the general activities of the department are in future to be organized from headquarters by the Director without local Assistant Directors in charge of districts but with the aid of his headquarter staff, the Industrial Engineer just mentioned, the Industrial Chemist, the Inspector of Industrial Schools and the Textile Expert. Partial effect was given to these changes during the year under review, and the revised scheme as a whole, which has since been sanctioned results in an economy of Rs. 40,404 a year in the cost of the department.

4. One of the recommendations of the Industrial Commission, namely, that the Department of Industries should organize and take part in exhibitions, has been followed up during the year under review; and the Government note with satisfaction that the department took part in such exhibitions at Tiruppur, Bezwada and Patna and obtained numerous prizes for their exhibits. The department also organized an industrial school exhibition at Madras with the object, partly, of advertising the products of these institutions and, partly also, to afford an opportunity to the managing authorities of the schools to meet and compare experiences. It is satisfactory that these objects were fully achieved.

5. The Board of Industries constituted by G.O. No. 1954, dated 8th November 1920, continued to sit during the year under review and the Director reports that it continued to give great assistance, not only at its formal meetings but also individually. The Government have pleasure in cordially acknowledging the services rendered by the gentlemen who constituted the Board.

6. The number of new companies floated during the year was 108 with an authorized capital of Rs. 264 lakhs as compared with 110 in the preceding year with an authorized capital of Rs. 618 lakhs. The majority of these companies are banking and other concerns and the list includes very few purely industrial undertakings. The flotation, however, of five concerns with an authorized capital of Rs. 101 lakhs, for spinning and weaving cotton gives a satisfactory indication of growing interest in this direction. The disparity, which attracted comment in last year's review, between the paid-up capital and the authorized capital of these undertakings continues to be noticeable.

7. There appears to be satisfactory evidence that the general interest in the mineral possibilities of the Presidency continues to

increase; about forty prospecting licences for minerals covering a very varied range having been applied for and granted during the year.

8. In paragraphs 29 to 43 a summary is given of the activities of the department in respect of commercial enquiries which the Government have read with interest. The results of the operations of Messrs. Best & Co. in the Beddadanole coal fields have still to be reported and it is to be hoped that, now that the requisite boring machinery has been obtained, definite results will be available in the current year. The Government desire to commend to the notice of any traders or industrialists who may be interested the remarks of the Director regarding the unwisdom of failing to execute orders in accordance with sample, and of dangers of embarking upon overseas trade with insufficient capital and insufficient information as to the stability or standing of the firms dealt with.

9. It is to be regretted that the facilities which the Government had offered in preceding years for the issue of official certificates respecting the standard of purity of coconut and castor oils have failed to attract the attention of manufacturing firms dealing in these commodities, and that the scheme for carrying out the analysis through the agency of the Chemical Examiner free of fee has had to be dropped.

10. Apart from commercial enquiries, the department also undertakes of its own motion investigations into the possibility of starting new industries, or new branches or improvement of existing industries, either as Government undertakings or for the benefit of private promoters. It is to be regretted that the experiments regarding the value of phosphatic nodules, in the Trichinopoly district, for the purpose of manure have not been sufficiently encouraging to justify the starting of a Government factory for this product. But it has since been decided that the area in question should be thrown open to private enterprise and the Co-operative Agricultural and Industrial Society, Shiyali, amongst others, is contemplating further experiments in this direction.

11. The investigation carried out during the year into the utility of limes and tamarind as sources of citric and tartaric acid are referred to in paragraph 57 of the report. So far the results do not appear very hopeful but Government have directed further experiment as to their possibilities. The Government have read with interest the account which is given in paragraph 58 of the investigation of Dr. Marsden into the process of coir retting which appears to indicate that the process is bacterial and not chemical. His report on the further progress of these investigations during the year will be awaited with interest, since they may be of considerable importance in the development of the industry.

12. The manufacture of matches is another direction in which the Government believe there are considerable possibilities and they have been therefore the more interested to learn, from the report under review, of the promising process which has been evolved for working with *eeta* (*ochlandra travancorica*). The Director reports that, "if the machine which has been devised for obtaining both boxes and splints proves suitable for driving by power, the problem of match manufacture would appear to be solved; for the growth of *eeta* is so rapid that after twelve months a felled area is ready for felling again." This is a matter in which close co-operation is desirable between the Department of Industries and that of Forests. And when the Forest Department is equipped as it is hoped may be the case from 1923-24 with a special utilization staff, such co-operation will be materially facilitated. The Government desire that a special report may be submitted to them at an early date regarding the investigations into this subject which are mentioned in paragraph 63 of the report.

13. The Kerala Soap Institute is one of the principal manufacturing undertakings directly controlled by the department, and it is satisfactory to note that in the year under review the Institute realised a substantial profit of Rs. 16,152 as compared with a loss of Rs. 14,268 in the preceding year. The profits of the concern since its inception have amounted to Rs. 93,910, and are sufficient to cover the cost of the new buildings now under construction. With the completion of the new buildings it will be possible to extend the manufacture to the full capacity of the plant, which is now impossible owing to want of room in the rented premises in which it is now situated. The Institute is not merely a manufacturing undertaking, but includes as one of its objects the training of students in the manufacture of soap. Several applications for training were received during the year from various places and eight pupils were selected for instruction. This side of the activity of the Institute will also expand when permanent and more ample accommodation is ready for it.

14. The Government Minor Industries Laboratory was started in 1919 under the initiative of Sir Frederick Nicholson. It is not primarily a commercial undertaking, but, as its title indicates, an experimental one whose activities are directed further to investigating the possibility of manufacturing various commodities on a commercial scale. So far its principal efforts have been directed to the manufacture of ink, which has been continued with considerable success, although in the year under report the laboratory was handicapped in the disposal of its stock by the difficulty in obtaining suitable containers. This difficulty, the Director reports, has now been overcome and an increased sale may be expected. The vinegar

made in the laboratory on an experimental scale is reported to be excellent in colour, aroma and purity, but manufacture on a commercial scale will not be possible until greater laboratory facilities are available. The construction of a building for the Fruit Preserving Institute has been completed, and manufacture on a commercial scale will be commenced as soon as certain necessary internal fittings have been provided. The Glue Factory is still in an experimental stage, regular work having been commenced only in January 1922. The glue turned out appears to be of fine quality, but it appears to be necessary to take more energetic steps for pushing the sales. The Government observe with satisfaction that the Pallapalayam sugarcane crushing factory has more than covered its expenses in the year under review and, as the Director observes, the result is creditable to the Industrial Engineer and the mechanic in charge.

15. An important part of the department's work is connected with the Textile Industries and is in charge of the Textile Expert on the staff of the Director. An important division of his work consists in the organization and supervision of peripatetic weaving parties consisting of trained weavers under a maistri whose business it is to tour in selected areas and to introduce and demonstrate to the local weavers the advantages of improved methods of work and of improved appliances. It is to be regretted that, owing mainly to the difficulty of obtaining trained maistris for the charge of these parties, particularly for those which were intended to work in the Telugu districts, it has not been possible to organize in the year under review more than ten out of eighteen parties which were sanctioned in 1920-21. Paragraph 80 of the report gives a summary of the work done by each of these parties; it is probably too early to judge as yet of their utility but useful work has been done and, with the further extension of this demonstration agency coupled with close supervision over its working, the Government trust that valuable results will be obtained. The proposal of the Director submitted during the year under review that the control of these parties should rest with the Textile Expert has since been approved by Government in G.O. No. 1250, Development, dated 19th September 1922. The Government have also sanctioned, since the close of the year under review, the establishment and staff of the Textile Institute which has since been opened in a rented building. The provision for its permanent building for its accommodation must depend upon financial considerations.

Other cottage industries have not been neglected. Paragraphs 89-92 of the report refer to the work done in this direction.

16. By the reorganization scheme already referred to, the supervision of the operations connected with pumping and boring is now entrusted to the Industrial Engineer. There has been a

considerable increase in the amount of loans sanctioned for the installation of machinery for agricultural purposes, Rs. 33,000 having been given against Rs. 12,000 in the preceding year. The Director repeats the complaints which he made in the preceding years as to the delay which occurs in the granting of these loans and the Government desire a further report from him on the subject of improving the procedure. It is to be regretted that the present financial situation does not admit of a larger allocation of funds to meet the demand to which the Director draws attention in paragraph 118 for more power drills. It is hoped, however, to make an allotment for this purpose in the budget of 1923-24.

17. Under the head of Industrial Education it may be noted that the State Technical Scholarships hitherto awarded by the Government of India have now been provincialized and this Government is now responsible for eight scholarships tenable abroad. In addition to these, scholarships are awarded tenable at the Indian Institute of Science, Bangalore, and at the Victoria Jubilee Technical Institute, Bombay. The value of the latter was raised from Rs. 30 to Rs. 60 per mensem during the year under review.

18. The Industrial Institutions directly managed by the department are the Madras Trades School, the Leather Trades Institute, and the Madura Industrial Institute. The Trades School which was started in 1916 has opened since 1919-20 a branch at Perambur attached to the Railway Workshops, and both the school and its branch have been doing valuable work. But, here again, financial considerations have prevented the Government from providing the school as yet with its own buildings and permanent staff. The same difficulty has been felt in providing the additional laboratory accommodation so much needed for the Leather Trades Institute. The number of students who attended it continued to grow and the Institute appears to be attracting attention, not only in this Presidency, but in other provinces of India. Madura Industrial Institute, which has a long and chequered history, was entirely reorganized only in 1920-21 and the reorganization scheme may be said to have taken effect fully only from 1921-22. It is stated to have been working well so far but it is still too early to judge completely of the results. It is regrettable to note that the delay in completing the building programme should have seriously hampered the working of the Institute.

19. The Government have read with much interest the account, which is given by the Director in paragraphs 161 to 171, of the share which has been taken by the various aided Industrial Schools in the work of Industrial education. These schools, as the Director observes, fill a real need and accomplish work which cannot be accomplished by purely Government institutions except at a very

high cost to the State. If the Government are unable to meet adequately the requests for assistance from various Industrial institutions of this character, it is not because they fail to realize their value but because their resources under existing conditions are unfortunately limited.

20. The year 1921-22 was the first through the whole of which the School of Arts came under the administration of the Department of Industries. The school during the year shows a satisfactory increase in average attendance as compared with the preceding year and the Government have noted with satisfaction the remark of the Director, that the whole of the work carried out reflects credit on the Superintendent and the staff. The question of reorganizing the school was examined during the year under review by a Special Committee appointed in pursuance of a resolution moved in June 1921 in the Legislative Council. The Committee's report is now under the consideration of Government.

(By order of the Government, Ministry of Development)

J. M. TURING,  
*Secretary to Government.*

To the Director of Industries.  
 „ the Public Department.  
 „ Sir Frederick Nicholson, K.C.I.E.  
 „ the Government of India, Department of Industries (with C.L.).  
 „ the Publicity Officer (with a copy of the report).  
 Editors' Table.

777