

Government of Madras.

EDUCATIONAL DEPARTMENT.

} 1915. *Enclosures*
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G.O. 1090, 1st October 1915.

Department of Industries.

Recording the administration report of the — for the year 1914-15.

27/10/15

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GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

Letter—from K. T. B. TRESSLER, Esq., Director of Industries.

To—the Secretary to Government, Educational Department.

Dated—Madras, the 17th July 1915.

No.—A-11.

I have the honour to submit herewith the Administration report for the Department of Industries covering the year 1914-15.

2. The department was reconstituted on 1st April 1914. Following on the reconstitution considerable changes were made in the organisation of the establishment. The supervisors of the "Pumping and Boring" Department were incorporated in the Public Works cadre and the scales of pay for mechanics as well as for the general office establishment, were revised and fixed.

As a result of the incorporation with the Public Works Department, M.R.Ry. S. Rajagopalaswami Mudaliyar, Rangaswami Ayyangar and Ramaswami Ayyar reverted to that department. In their place M.R.Ry. Yagnanarayana Sastri and Venkatarama Ayyar, temporary Overseers of the Public Works Department, were appointed.

A certain number of temporary appointments were also made in connection with work arising from the situation created by the European war. Mr. W. R. Wills of the Public Works Workshops was appointed as an assistant during the year.

On the outbreak of hostilities, all the officers in the department who were members of Volunteer Corps, offered to go on active service, but Government found it possible to spare only one of them, Mr. Wills being permitted to accept a commission in the Flying Corps.

During the bombardment of Madras, one of the shells fired by the "Emden" hit the office wall, but fortunately did no further damage.

3. During the year I attended various local exhibitions and shows. In addition I visited the Victoria Technical Institute, Bombay, the Tata Hydro-Electric Scheme, and the Navsari Cotton Seed-factory. I attended the machinery trials held in Mysore in connection with the Dasserah Exhibition and also the Agricultural Conference in Madras. I further read a paper on "Cottage Industries" before the South Indian Association and on "Industries and War" before the Indian Congress on which I was nominated by Government as a delegate.

I was further elected an honorary member of the Madras Chamber of Commerce and the South Indian Chamber of Commerce.

Dr. Marsden was deputed by Government to attend an Indigo Conference at Delhi in February.

Mr. Guthrie contributed a paper on "Indian Tanning Materials" to the Mysore Economic Journal and M.R.Ry. N. Subrahmanyam Ayyar contributed articles to the "Hindu," "Wealth of India" and "Madras Co-operative Bulletin" on shawl and mat-weaving and other allied subjects.

In connection with the question of industrial education two series of conferences were held. In these I was President and Dr. Marsden, Secretary. The first series, representative of educational interests, was held on 8th, 9th and 11th September 1914. The second, representative of commercial interests was held on 10th, 12th September and 27th November 1914.

At Christmas, in collaboration with the Director-General of Commercial Intelligence, an exhibition of German and Austrian imports and of similar goods of indigenous manufacture was held in the Moore pavilion by the courtesy of the South Indian Athletic Association. In conjunction with the Agricultural Department, a small selection of oil-seed products was also shown at the Agri-Horticultural exhibition in Madras.

4. As reorganised, the department now consists of six departments apart from the Direction. In the official accounts these departments are somewhat mixed up, but they are separated in the departmental accounts.

Arranged according to official sub-heads, the year's accounts stand as follows :—

TABLE I.

Serial number.		1913-14.		1914-15.	
		Receipts.	Expenditure.	Receipts.	Expenditure.
		RS.	RS.	RS.	RS.
1	Direction	..	33,678	..	36,331
2	Madras Technical Institute	7,012	23,184	7,043	25,922
3	Dyeing expert	..	14,532	..	11,766
4	Leather expert	..	15,015	70	20,149
5	Peripatetic Weaving Party No. 1	3,156	9,621	2,264	7,618
6	Do do. 2	..	..	83	1,403
7	Sagarcane experiments	2,180	16,122	2,028	12,071
8	War experiments (including cost of oil machinery)	..	..	..	60,473
9	Grants-in-aid and scholarships	..	78,194	..	61,140
10	Pumping and boring	31,238	1,30,075	38,054*	1,56,017
11	Construction of tannery	..	..	..	35,456
	Total	48,686	3,20,321	50,142	4,20,246

* The figure denotes actual receipts. From this amount a sum of Rs. 3,330 has been refunded, the refunds being included under expenditure.

The figures for 1913-14 are compiled from the financial statement for the Pumping and Boring Department and the office of the Superintendent of Industrial Education as during 1913-14 these two departments were separated.

It will be observed that the total nominal cost of maintaining the department amounted to approximately Rs. 3,70,000 as against Rs. 2,76,000 last year. The expenditure on capital of a recoverable character was however only Rs. 42,000 in 1913-14 but was nearly Rs. 1,40,000 during 1914-15. The actual cost to Government was therefore Rs. 2,30,000 in 1914-15 as against Rs. 2,34,000 in 1913-14.

The official accounts do not differentiate between capital and revenue expenditure nor do they show transactions between different sections of this department. Special departmental accounts are therefore maintained in order to determine the relative cost of each section. The abstract of the departmental accounts is as follows :—

TABLE II.

Revenue, 1914-15.

Serial number.		Receipts.	Expenditure (revenue).	Outstandings, + or —.	Net cost.
		RS.	RS.	RS.	RS.
1	Direction	..	41,521	..	41,521
2	Technical education	7,113	1,01,077	224	94,040
3	Bureau of Industrial Information	..	4,244	..	4,244
4	Consulting Engineer Department	12,686	46,696	+ 100	34,209
5	Boring Department	33,449	55,224	+ 599	12,215
6	Workshop	16,607	29,772	+ 1,083	13,848
7	Experiments and demonstrations	4,719	Rev. 20,795 Exp. 14,112	+ 1,507	31,695
8	Construction of tannery	..	..	..	..
	Total	64,466	2,94,340	3,696	2,33,470

In the above table a correction has been made for the outstandings at the beginning and end of the year to arrive at the actual costs for the year.

TABLE III.

Capital.

Serial number.		1913-14.	1914-15.
		RS.	RS.
1	Direction	..	..
2	Technical education	4,500	7,000
3	Bureau of Industrial Information	..	..
4	Consulting Engineer Department	..	..
5	Boring Department	..	..
6	Workshop	27,491	33,270
7	Experiments and Demonstrations (includes expenditure on account of war experiments).	10,430	64,503
8	Construction of tannery	..	35,456
	Total ..	42,421	1,40,229

It will be observed that the cost of having a Department of Industries, that is, the cost of Direction is about Rs. 40,000. Technical education has cost nearly a lakh: the bureau slightly over Rs. 4,000. The net cost of providing engineering advice and assistance (Consulting Engineering Department) is nearly Rs. 35,000 and the cost of the Boring Department is about Rs. 12,000. As a matter of fact, the whole cost of the supervisor's pay has been debited during the present year to the Consulting Engineering Department whereas a certain fraction should have been charged to boring. To arrive at actual costs, it will be more correct to subtract about Rs. 5,000 from the Engineering Department account and add it to the boring account. The workshop has cost nearly Rs. 15,000 to maintain, the apparent loss being partly due to the fact that my system of workshop accounts, which was introduced at the beginning of the year, could not be got into working order until near the end and so the charges levied for a good deal of work done were too low. The loss is no actual loss to Government as most of the work done in the workshop is for one or other of the other sections of the department.

Experiment and demonstrations cost about Rs. 32,000 excluding capital expenditure of a recoverable character.

The capital value of the plant, stores, etc., owned by the department stood as follows on 1st April 1915:—

	RS.
Boring Department plant	1,10,072
Workshop plant and equipment	20,192
Office furniture and instruments	12,138
Experimental Department plant	75,905
Total ..	2,18,307
The stores on hand were as follows—	
Stores	12,332
Spares	2,768
Total ..	15,100

5. *Direction*.—So far as the head office is concerned there have been few changes, beyond a slight increase in staff. The present office accommodation being inadequate, proposals were submitted during the year for an extension. These proposals are at present under the consideration of Government.

6. *Education*.—The Leather Trades school was completed and the plans for the Madura Technical Institute were sanctioned.

The grants to industrial schools were kept practically unchanged during the year, nor were any material changes in the system of working insisted on. As their managers had to be interned two schools were shut down.

7. *The Bureau of Industrial information* is a new departure and it is only during the present year that it has been possible to make any systematic attempt to collect

and furnish information. The bureau has, however, even in the short period of its existence, proved so useful that it seems likely to develop very considerably in the near future.

8. *Consulting Engineer Department*.—The so-called "Pumping and Boring" work done during the year represents merely the development of previous work.

The character of the industrial plant put down during the year is very much the same as in previous years, rice mills being one of the most numerous classes. The year started well and there was every likelihood of last year's record being improved upon until the war intervened. On account of the stringency of the money market following this event, industrial enterprise practically stopped and although there was a slight revival towards the end of the year, the number of installations put down was considerably less than during the previous year. The same remark applies with greater force to pumping installations. A large part of the income of the ryot population is derived from such staple commodities as cotton, ground-nuts, etc., and as the war has affected the value of these crops enormously, there was very little money available for the development of lift irrigation. In the circumstances, the fact that the number of investigations only fell from 181 last year to 152 this year may be regarded with a certain amount of satisfaction.

In the pumping branch several enquiries were received for very much larger installations than those hitherto put down and there appear to be indications that lift irrigation will be taken up on a larger scale in the future than has been the case in the past. Development in this direction is much to be desired. The single installation with a 3" or 4" pump has proved itself to be a remunerative proposition, but it is clearly not so remunerative as a larger scheme and the reduction in the cost of lift irrigation consequent on the use of larger centralised power units is likely to lead to a considerable expansion of lift irrigation.

9. *Experiments and Demonstrations*.—The outstanding feature of the year's work has been the special work connected with the war. The work done by the bureau in this connection is explained at length in a later paragraph. In the experimental section investigations were also started immediately after the declaration of war. Of these investigations the principal ones are those connected with the manufacture of pencils and glass, but a large sum has also been sanctioned by Government for the purchase of oil machinery and some of the plants have been at work for several months. The largest plant is still awaited.

It was further proposed to undertake investigations connected with soap manufacture, but the work in connection with the other experiments proved so heavy, the more so as both my assistants had left me, that I was unable to conduct these investigations myself. By arrangement with the Director of Industries and Commerce in Mysore, this work has now been taken over by him.

As regards experiments unconnected with the war, sanction has been accorded for the purchase of a lime brick plant which is shortly expected. Motor-ploughing experiments could unfortunately not be undertaken as the original plough was found to be unsuitable and the plough subsequently ordered was sunk by the "Emden". The second plough was received only at the end of the year. The sugar-boiling experiments at Singanallur and Hospet were continued in co-operation with those being carried on by the Director of Industries and Commerce in Mysore.

10. Pending the reorganisation of the department, that is, until the beginning of the year under review, experimental work had to be restricted and the limited staff required for such work of this kind as was done during the previous years was drawn from the regular Pumping, Boring or Educational establishment. Under the new conditions of work and especially in view of the extraordinary situation caused by the war, it was no longer found possible to secure the required staff by drawing on other establishments and Government sanction was therefore asked and accorded for a special "Industrial Staff" to deal with experiments and demonstrations.

This staff is for the present temporary and provides for—

Seven supervisors (including two superintendents for the weaving parties).
Four mechanics.

I found myself absolutely unable to get a sufficient number of the class of men required in the open market to fill up the posts. I was therefore compelled to amalgamate some of the divisions so as to set free some of the supervisors and furnish me with a nucleus for the industrial side.

11. The different departments may now be considered in detail.

TECHNICAL EDUCATION.

12. The question of technical education was taken up as soon as orders on the reconstitution of the department were received. As a preliminary measure a draft code was prepared and in order to consider the character of this code as well as to deal with other matters connected with industrial education, two committees were convened. The one, representative of educational interests, met on the 8th, 9th and 11th September 1914. The other, convened in G.O. No. 780, Educational, dated 4th July 1914, and representative of practical interests met on the 10th and 12th September and 27th November 1914.

13. The plans for the reconstruction of the Madura Technical Institute were sanctioned during the year but building work has not yet been begun. The Leather Trades school in Madras has been finished and was ready for occupation in January. As however the school year in all other institutes of a similar character begins in June it has been decided to postpone the regular classes until then. Students, however, who wish to begin at once are permitted to attend the school and do odd work, and one or two of them have availed themselves of this offer.

14. A new feature has been introduced into the policy of industrial education by the attempt to co-ordinate it with the requirements of employers of labour. It was with this end in view that the "Employer's Committee" was convened and though it would be premature to prophesy, the results of the committee furnish reasonable ground for the belief that, in the future industrial education will be much more closely associated with industry than ever before.

15. During the year Government sanctioned the award of six scholarships to students of promise tenable for four years at the Victoria Technical Institute, Bombay. A considerable number of applications were received but in the first batch only two applicants possessed the necessary qualifications. The time limit for application was accordingly extended and a large number of further applications were received of which only four satisfied conditions. Meantime the original applicants had resigned their scholarships. It is a striking commentary on the attitude of the public towards Industry that it should not have been possible to obtain a sufficient number of proper applications for an offer of this kind.

TECHNOLOGICAL INSTITUTIONS.

Leather Trades.—The Leather Expert (Mr. Guthrie) reports as follows:—

16. During the year 1914–15 I continued my work in the temporary laboratory at the Department of Industries spending a very considerable time trying to work out a scheme by which a portion of the tannin now wasted in the spent bark could be utilised in such a manner as would be useful to the ordinary tanner. I was unable to carry the experiments to a satisfactory conclusion as larger scale check experiments were necessary and no accommodation for this kind of work was available. No method that requires extensive apparatus would be any use as the ordinary tanner here would not be able to instal the necessary plant and yet some means by which this waste can be prevented would be a great boon as at present much bark is thrown out that contains from 25–30 per cent. of the original tannin.

A considerable amount of preliminary work on other barks connected with the extraction and concentration of the liquors was also done. This work will prove useful in the future, but here again no immediate results could be obtained as I had no appliances for further experiments.

17. I examined a number of samples of water from different tanneries, as it is not certain as yet exactly what water is best for the methods of tanning in use in this Presidency. This question requires a good deal more investigation, since the data at

present available do not make it possible to decide with any certainty from an analysis the suitability of any given sample of water, nor to determine what differences in the processes should be introduced in order to counteract the effects of the impurities in the water.

Some work on oils and soaps and a few analyses of oils, cake, etc., were done by me in connection with the Anderson Expellers worked by the department.

18. As almost all the leather tanned in this Presidency is exported, the outbreak of war and the prohibition of the exports of tanned hides together with the financial crisis caused an almost complete stoppage of work, except such as was absolutely necessary to keep goods that were in process from being destroyed. There was also practically no market for finished material. The Government was addressed on the matter. The prohibition of the export of tanned hides was shortly afterwards removed, and following a great demand from England for hides for army purposes, prices rose to considerably above normal with the result that large quantities of hides, many of which would in ordinary circumstances have been exported raw from Calcutta were brought to Madras and were tanned here. Owing to shortness of labour, etc., in England the supply has at present overtaken the demand and prices have again fallen considerably. Previous to the removal of the prohibition of export I was asked to make various proposals to Government and in this connection I made a careful study of the position. One of my proposals was that Government should buy a large number of raw hides and tan them, but I pointed out that, provided the prohibition of export was withdrawn, the tanners themselves would be able to tan the necessary quantity and this has proved to be the case.

19. Almost all of the best classes of tanned skins that were exported to London were bought there by German and Austrian buyers and as this trade has entirely stopped the demand for this class of skins has almost disappeared with the result that the tanners in Trichinopoly and elsewhere who were engaged in it have either been compelled to close down, to work on a very much smaller scale or to take up the tanning of some other class of goods. Other classes of skins have not been affected to anything like the same extent and for some classes there is quite a good market.

20. Early in the year the building of the school at Washermanpet was started and I visited the site almost daily to see that the plans were carried out as I wished and explained any difficulty that arose in the course of construction. Building was completed by the end of the year and the machinery was then being fitted up and installed.

One or two students have been attending the school watching the erection of the machines, etc., pending the commencement of the regular course which is to start in June so as to coincide with the terms of similar institutions in India.

Dyeing.—The Tinctorial Expert (Dr. Marsden) reports as follows:—

21. As indicated in the last report, considerable difficulty was experienced in carrying on instructional work during the year, partly on account of the insufficient educational qualification of candidates and more particularly on account of lack of accommodation. The plans for the Madura Technical Institute were finally sanctioned during the year but work has not yet been begun and until suitable accommodation is provided it is impossible to make a proper start.

22. In view of the circumstances explained, I have spent a good deal of my time in touring, my tours including Ellore, Berhampur, Coimbatore, Vellore, Madras and Delhi. The visits to Ellore and Vellore were made in connection with the carpet industry, this being carried on at the former place mainly for a European firm for export and at the latter place as a jail industry. The arrangement of the carpet work at the jail was an improvement upon anything I had seen outside, due to the fact that the work is under the supervision of an officer who is interested and is keen upon the reputation of the production. In the case of Ellore and other places where carpets are made there appears to be a general absence of all that makes for success: there is no evidence of education among the men who control the workers, nothing but rule of thumb methods of dyeing; chicanery by workmen or contractors is rife, and the continued lowering in the quality of the work, and the prices paid, can in time only have one result. The qualities of wool used are unsatisfactory for high

class carpets but the prices obtained are said to preclude the use of anything but the commonest country product and the only real hope for the rehabilitation of the reputation of Madras-made carpets is for the exporting firms to have the work done from start to finish, by workmen in their direct employment under their own supervision.

The Carpet Firms under European management in the north of India are able, I understand, to maintain the reputation of their manufacture and it appears to me to be largely a question of efficient management and control.

23. At Coimbatore I looked into the question of khaki dyeing as carried on in the jail and made certain suggestions whereby the quality of the production might be improved.

I was instructed to attend the Indigo Conference at Delhi on the 22nd February 1915, in which the representatives of the Government of India, indigo planters and commercial interests took part. The question of the relative values of the synthetic and natural indigo was naturally touched upon and it was interesting to note that the idea of there being a radical difference in the nature of the two products has at last disappeared and even the planting representatives agreed that it was purely a question of price and suitability of form which would determine whether natural indigo could maintain its position.

24. On the outbreak of war the supply of dyestuffs practically ceased and I had to deal with many inquiries for substitutes for materials which had up to then been employed. I accordingly proceeded to investigate the possibility of using indigenous materials for dyeing purposes. Inquiries throughout the Presidency showed that the supply of these materials was so small that it could not possibly meet more than a minute fraction of the normal demand. In view of the fact that the methods of dyeing had to be materially changed when utilising these dye-stuffs and in view of the certainty that on the cessation of hostilities the use of synthetic dyes would be re-established, it seemed unnecessary to consider this matter further.

I accordingly proceeded to consider the possibility of obtaining supplies of synthetic dyes from places other than Germany. The critical position of the dyeing industry will be understood when it is explained that 85 per cent. of the world's consumption of dye-ware was supplied from Germany and it is not alone in India and the British dominions that the stress has been felt. From the newspapers one gathers that in America, Italy, Japan, Austria and even in Germany itself the dyeing trade is threatened with a stoppage owing to the inability to obtain the necessary dye-ware. The raw materials for the manufacture of many dyes and military explosives are identical and the demand for the latter must have enormously restricted the quantity available for dye manufacture. Representations have been made to press forward supplies of dyestuffs to India but difficulties have arisen in many directions and although at the present moment the prohibition of export from England does not stand in the way, I gather that supplies are so inadequate and prices are so high as to make it questionable whether, until conditions change, there will be any trade going. Alizarine is the dye-stuff in greatest demand here and stocks in India are selling at eight times the normal price, placing it beyond the means of the ordinary dyer and I hear (though I am inclined to doubt the correctness of this) that even in England the price is some 5-6 times higher than before the war. If such be the case importation from England will not alter the conditions much.

25. In consequence of the stoppage of my regular work, I was placed on special duty in Madras as Secretary of the Committee convened for the purpose of considering the question of Industrial Education. The resolutions of the committee together with the draft code were submitted to Government towards the end of the year.

The Superintendent of the Madura Technical Institute (Mr. Dunhill) reports as follows:—

26. *Staff.*—I was on leave for one month towards the end of the year. Mr. Ranganatha Ayyangar, Supervisor in the Department of Industries, was in charge during that time. One clerk and one draughtsman were transferred to the head office and one master (drawing) resigned during the year. The proposals for the

re-organisation of the staff previously submitted were sanctioned by Government in G.O. No. 1191, Educational, dated 22nd October 1914. Under this order most of the temporary staff was confirmed and three new appointments were made to the vacant posts.

The drawing classes except in machine drawing have been suspended for want of space.

27. *Students.*—The year opened with 53 students on the rolls; during the year there were 38 admissions; two students left on account of ill-health, 15 left before completing their course, and 17 were dismissed for irregular attendance or absence. One student was transferred to the factory section. The year closed with 56 on the rolls. This shows a slight improvement on the preceding year, but is not really so when averages are taken for the twelve months. The average number on the roll for 1913-14 was 55.4, and for the year under report 52.12. The average daily attendance also shows a decrease compared with the preceding year, the figures being 1913-14—43.3; 1914-15—36.72. The number of working days was 270 against 266 in the year 1913-14. The reasons for the small number on the rolls and the low average in attendance are the same as reported last year, *i.e.*, limited and inadequate accommodation in the temporary sheds, hot season, and inconveniences of water-supply, tiffin and re-creation rooms.

I have received many applications for instruction in motor mechanics and driving, weaving, boiler and steam engine management, oil and gas engine driving: the care of rice hulling and oil extracting plants, and electric installations. All of these I have had to refuse for want of the necessary machinery and appliances for instruction.

As reported last year, the want of a hostel still continues to operate as a deterrent, preventing would-be students from the outstations and adjoining districts from joining. It has been my experience, as a result of observation, that almost every student of the Institute who has his food at a "Coffee Hotel" or "Eating house" in Madura invariably develops digestive complaints which usually result in dysentery and consequent incapacity for work. If hostel accommodation is provided, it will not be a difficult matter to arrange for messing.

28. *Examinations.*—Out of 44 candidates who appeared for the Government Technical Examinations, 24 passed or a percentage of 54.5, the percentage of passes last year being 62.8.

The total expenditure was Rs. 25,922-1-6, the total receipts Rs. 7,043-7-1, net cost being Rs. 18,878-10-5: an average cost per student of Rs. 363. A sum of Rs. 2,399-0-4 was spent on plant, etc., and includes the cost of a milling machine and a power drill, the two together costing Rs. 1,150. The need of a steam boiler and engine, a second oil or gas engine, two more lathes and a planing machine is greatly felt.

29. Work is being continued in the temporary buildings put up in 1912; none of the permanent buildings which have been sanctioned were commenced in the year. The conditions under which work is carried on therefore remain unaltered. Repairs and temporary extensions which were urgently required and estimated for were not carried out as plans and estimates for the permanent buildings had been sanctioned and it was thought that the permanent buildings would be ready soon enough to make the proposed expenditure unnecessary. But, when work was about to be started, orders were received to stop expenditure. Owing to the lowness of the land it is essential that the foundations should be put in for the permanent buildings before September if building is not to be postponed for another year.

Since my last annual report the question of accommodation has become more acute. I have had to find suitable storage for several cases of Europe stores received for the Tinctorial Laboratory and also for six cases of weaving machinery received from Madras and to do this, I have had to curtail the already limited working space. For want of space I have been unable to separate the practice and workshop sections and by students having to work wherever space can be found for them, efficient supervision and control cannot be exercised.

30. *Industrial Education*.—Apart from the Government School at Madura there were 35 institutions under the control of the department and 3 unrecognised schools at the end of the year as against 38 and 3 last year. Three schools were temporarily closed during the year under review. The London Mission Industrial School, Salem, was closed "pending consideration of the schemes for the establishment of an institution more in accordance with the separation of factory and school departments." The H.E.L.M. Industrial School, Nayudupet, and the H.E.L.M. Industrial School, Koraput, were temporarily closed as the Managers of these schools were interned as prisoners of war.

The 35 recognised institutions may be roughly classified as follows:—

TABLE IV.

Carpentry schools—where carpentry is the principal subject taught	15
Lace schools—where needle craft is the principal subject taught	14
Printing schools—where printing, book-binding, etc., are the principal subjects taught	2
Agricultural school	1
Blind Boys' school for weaving	1
Weaving school	1
Dyeing school	1
Total	35

In nine of the abovementioned carpentry schools, mechanical engineering is also taught as a subsidiary subject.

31. The Urban Weavers' Union, Conjeevaram, has established a school for the training of practical weavers and has applied for recognition under the new rules. The Chairman, Municipal Council, Parlākimedi, had also made enquiries regarding the establishment of an industrial school there.

Owing to the outbreak of war the finances of many of the foreign missions have been crippled to such an extent that some of the mission schools expressed their inability to accept furniture grants last year inasmuch as they were unable to contribute half the cost of the articles.

Statistical information regarding the schools is given in the Appendix.

BUREAU OF INDUSTRIAL INFORMATION.

32. As long ago as 1908, it was resolved by the Ootacamund Industrial Conference that—

"The Conference considers that under the Department of Industries a bureau of information and industrial museum should be provided from which information could be given and obtainable on points of commercial importance and interest."

Mr. Chatterton when submitting a report on this resolution wrote as follows:—

"I receive enquiries from all parts of India for assistance and advice in regard to a great variety of industrial matters and these I reply to the best of my ability. It adds very considerably to my work, and it would, I think, be unwise to do anything to stimulate enquiries of this nature, as I am afraid I should be overwhelmed with correspondence. In the future when we have a number of experts attached to the department, we shall be able to do more in this direction, but I would deprecate anything like the establishment of a general enquiry bureau, and it would simply mean that the bulk of the replies would be of an unsatisfactory and superficial character."

33. The "Bureau" idea, however, seems to have caught the public fancy and in almost every subsequent Industrial Conference, a similar resolution has been passed. The phalanxes of experts foreshadowed by Mr. Chatterton have still to arrive but on the reconstitution of the department, the general public seem to have taken it for granted that the necessary mechanism for purveying information had been provided and enquiries began to multiply. In the absence of the "Experts" I and one of my clerks have had to deal with these enquiries by ourselves as best we could.

Facilities for personal investigation by enquirers are still wanting owing to lack of accommodation but a very considerable correspondence has developed. Unfortunately it is not possible to discuss in a published report the most interesting of the questions asked as they are of a commercial character and are therefore to be regarded as confidential: the fact that enquiries of this kind are received is however particularly gratifying as showing that the commercial community do attach a certain amount of practical value to the work of this branch.

34. The enquiries are broadly divisible into four classes:

- (1) Enquiries from abroad regarding the standing of individuals, markets for goods, etc.
- (2) Enquiries from up-country merchants regarding markets.
- (3) Enquiries regarding the establishment of large industries.
- (4) Vague enquiries of a general character.

Immediately on the outbreak of war steps were taken in collaboration with the Director of Agriculture to get into touch with the Board of Trade at home and with other organisations, the Director of Agriculture dealing more particularly with produce and this department with wholly or partially manufactured goods. A series of reports was written on the situation and a considerable number of enquiries were received and sent to interested individuals. At one time it appeared as if considerable sales could be made to America but when negotiations were almost through it was discovered that there was a prohibitive import tax on the commodities to be disposed of.

35. A good deal of time was devoted to the collection of statistical information and much material has been collected that can later on—when there is an adequate staff available—be worked up into a practical economic survey: not the usual mixture of census or blue book extracts and romance that goes by this name, but something of practical value.

A small staff was also sanctioned for the purpose of connecting up the levels of boreholes and so laying the foundation of a survey of underground water in the Presidency. So far, only a part of Chingleput has been surveyed, but in time this work should prove of enormous value not only from the scientific but also the practical point of view.

36. With the help of the Director-General of Commercial Intelligence, an exhibition of samples of imported German and Austrian goods and of similar Indian manufactures was held in the Moore Pavilion during the Park Fair in December. The exhibition attracted a very large number of visitors both Indians and Europeans and at the request of several merchants who were absent from Madras during the Christmas holidays, the exhibition had to be extended for a week more. The exhibition resulted in a considerable number of enquiries and the Indian manufacturers who exhibited their articles were able to obtain several orders for their goods, the public having in many cases been unaware before the exhibition, that such articles actually were being manufactured in India.

Attempts were also made to obtain representative samples of the different Indian products and manufactures: unfortunately, owing to lack of accommodation, activity in this direction had to be restricted but some samples were sent home to England with a view to securing a market. On these reports are still awaited.

CONSULTING ENGINEERING DEPARTMENT.

37. This department was previously known as the "Pumping" department but the phrase is now a misnomer. Half the work at least is industrial and the new system of working introduced, has made it practically a Consulting Engineering department. Previously it had been customary to ask for the value of the machinery to be paid in advance and to disburse the sum through the department. As the work of the department developed this arrangement proved somewhat unsatisfactory and applicants were encouraged to take departmental advice regarding design and so forth, but to make their own financial arrangements direct with the machinery agents. This scheme has worked well and materially reduced the deposits lying with the department.

During the year the department was consulted with regard to 152 plants about half of which were industrial and half pumping.

38. This department is at present concerned with the installation of pumping plants and the establishment of *small* industrial concerns which can be managed by the owners rather than with *large* factories that require a commercial organisation. There is no sharp line of demarcation between "small" and "large" factories, but the official definition of a factory: a place where more than 50 persons are employed may be accepted as the lower limit for a regular factory. The department has been consulted in connection with some of these factories but the majority have been developed by unaided private enterprise: on the other hand the majority of the smaller industrial concerns and pumping plants owe their inception mainly to Government aid in one form or another.

In the Bureau of Industrial Information a census of power users was attempted. There are no definite data to work upon and the list has had to be compiled from a number of sources. It can therefore only be regarded as approximately correct but is of interest as being the first comprehensive attempt to record the state of industry in the Presidency. Although factories are rather beyond the scope of the Department of Industries, it has been considered desirable to include them for the sake of completeness and also because the factory list and my departmental list overlap to some extent and to treat them separately would introduce a risk of serious error. Below is given a statement of industries so far as information was available on the 1st of April 1915. Details of the sections are given in the Appendix.

TABLE V.

Trades.		Number of factories.	Horse power.				Total excluding horse power of boiler.
			Steam.		Oil or gas.	Others.	
			Engine.	Boilers.			
Section I.	Agriculture and irrigation	667	..	..	8,200	..	8,200
Do. II.	Mines and quarries	21	252	1,484	149	..	1,885
Do. III.	Iron, steel and engineering trades ..	61	359	4,948	1,249	..	2,108
Do. IV.	Metal trades other than iron and steel) .	3	..	..	137	10	147
Do. V.	Textile trades	240	15,687	18,693	2,293	1,150	19,180
Do. VI.	Clothing trades	1	..	..	3	..	3
Do. VII.	Food, drink and tobacco trades	500	2,872	12,899	6,083	120	9,075
Do. VIII.	Chemical and allied trades	85	297	1,207	299	627	1,123
Do. IX.	Paper printing and allied trades	30	83	222	273	76	432
Do. X.	Leather, canvas and India rubber trades ..	5	41	64	10	..	61
Do. XI.	Timber trades	22	62	60	132	114	368
Do. XII.	Clay, stone building and contracting trades ..	29	1,405	1,869	78	5	1,488
Do. XIII.	Miscellaneous trades	..	..	..	..	..	..
Do. XIV.	Public utility services	31	6,556	1,743	661	16	7,232

39. The "Factories" enumerated under section I are exclusively pumping plants and have (excluding the Divi pumping project) an aggregate discharge of about 750 cusecs. A pumping plant may be expected to run nearly 10 hours a day during the irrigated season and the duty of water obtained by pumping is found to be about 120. The duty for a discharge over 10/24th of a day will therefore be about 50. It follows that these pumps altogether should irrigate about 37,500 acres. They do not do so, for the reason below stated. When, as in gravity irrigation, Government put the water on to the fields for them and charge only by area irrigated, the ryot has no interest in water conservation and accordingly wastes it. When water has to be raised by human or animal power the expense and effort required to lift it are evident to the senses and induce economy in distribution. Unfortunately with oil-engines the capital cost is often forgotten: running charges are light and many ryots instead of working their engines to the best advantage are frequently content with overwatering a small area or running their engine short hours. All they seem to look to is a profit on running charges and such a profit is easily secured, though it means an actual loss when all charges are taken into account.

40. Hitherto Agricultural loans have been dealt with by the Board of Revenue. I have in several previous reports drawn attention to the difficulties connected with the present system and during the year I was called upon by Government to submit proposals for a revised system. A system similar to the one proposed by me was recently introduced by the Director of Commerce and Industries in Mysore and has proved very successful. The gist of the scheme is that loans should be investigated and awarded by the Department of Industries and that provision should be made for a system of hire purchase also. My proposals were submitted to Government towards the end of the year and are now under consideration. If sanctioned, I consider that the loan scheme will prove to be one of the most important steps hitherto taken in the development of lift irrigation.

During the year only 9 loans were sanctioned, of an aggregate value of Rupees 21,000. The previous totals were as follows:—

TABLE VI.

Year.	Number.	Amount.
		RS.
1904-05	1	8,000
1905-06	4	12,500
1906-07	8	23,500
1907-08	6	16,500
1908-09	13	33,000
1909-10	12	30,350
1910-11	8	21,950
1911-12	14	36,500
1912-13	22	52,600
1913-14	17	38,500
1914-15	9	21,000
Total	114	2,94,400

The falling off is mainly attributable to the war.

41. The Engineer establishment provided in this department (excluding the Head-quarter Staff) consists of 11 supervisors and 24 mechanics. Hitherto the supervisors have had no regular head-quarters but during the year arrangements have been made for accommodating them in District offices. The absence of fixed head-quarters has hitherto been a real difficulty. Supervisors have to spend the great part of their time in camp and in their absence enquirers did not know where to go for information and assistance.

42. During the year the system of compounding fees was considerably developed. For a fixed annual fee private individuals can have their plant inspected and overhauled at least three times a year. This work is being carefully checked to see that a due number of inspections are made. Although machinery owners are always advised to stock spares it is very difficult to persuade them to do so and when a breakdown does occur considerable delay ensues in the purchase of new parts. Arrangements have now been made whereby this department arranges for the immediate supply of spares from Madras on receipt of an indent. It is believed that this scheme will prove very popular.

BORING DEPARTMENT.

43. During the year no further sets were added to the boring equipment, which thus remains unchanged and consists of 30 hand drills and two power drills. In addition the department possesses two rack and two magneto exploders for blasting purposes.

Boring work was done in the following taluks, the number of borings being also given:—

TABLE VII.—STATEMENT showing the number of borings put down in several taluks of the Presidency during the year 1914-15.

District.	Taluk.	Number of borings done.	Total.	District.	Taluk.	Number of borings done.	Total.
Vizagapatam ..	Sarvasiddhi ..	46	58	Trichinopoly-- cont.	Namakkal ..	7	34
	Anakapalle ..	1			Karur ..	9	
	Visianagaram ..	4			Kulitlali ..	1	
	Viravilli ..	7			Krishnagiri ..	2	
Godavari ..	Rajahmundry ..	6	13	Salem ..	Sankaranayinarkoyil ..	1	2
	Cholavaram ..	7			Nanguneri ..	3	
Kistna ..	Firvi ..	2	154	Tinnevely ..	Srivaikuntam ..	1	38
	Nuzvid ..	1			Koilkatti ..	4	
	Ellore ..	124			Tinnevely ..	11	
	Beavada ..	16			Tiruchendur ..	13	
	Gulivada ..	5			Tenkasi ..	2	
	Tannuku ..	6			Ambasamudram ..	3	
Guntur ..	Sattenapalle ..	2	48	Rannad ..	Paramagudi ..	2	21
	Ongole ..	8			Srivilliputur ..	2	
	Narasaraopet ..	2			Tiravadanai ..	1	
	Guntur ..	11			Sivaganga ..	9	
	Tentali ..	15			Sattur ..	7	
Nellore ..	Bapatla ..	5	48	Madura ..	Tirumangalam ..	11	23
	Kandukur ..	31			Periyakulam ..	2	
	Nellore ..	4			Palni ..	1	
	Gudur ..	10			Madura ..	5	
Chingleput ..	Kavali ..	3	70	Coimbatore ..	Dindigul ..	4	47
	Tiravallur ..	26			Coimbatore ..	12	
	Saidapet ..	24			Paludan ..	12	
	Chingleput ..	4			Gopichettipalayam ..	9	
South Arcot ..	Conjeevaram ..	16	68	North Arcot ..	Udamalpet ..	2	3
	Chidambaram ..	31			Dharapuram ..	7	
	Vilupuram ..	5			Follani ..	4	
	Vilupuram ..	22			Erode ..	1	
Tanjore ..	Kumbakonam ..	4	58	North Arcot ..	Kalahasti ..	3	6
	Papanasam ..	7			Chittoor ..	..	
	Negapatam ..	4			Belhary ..	..	
	Mannargudi ..	12			Gooty ..	2	
Trichinopoly ..	Masiri ..	11	27	Anantapur ..	Kadiri ..	2	..
	Trichinopoly ..	6			Hindapur ..	2	
				Total ..			646

Total .. 646

44. The total depth bored is 28,078 feet as compared with 18,846 last year: it is worth noting that with the same plant as last year, the output has increased 40 per cent. The percentage of successful borings was about 70 per cent.: approximately the normal figure.

The noteworthy feature this year is the increase of work in the Northern Circars.

45. In the alluvial tracts there is nothing of much interest to record. In these, water in more or less quantity can usually be found within 60 feet of ground level and boring presents few difficulties. In the upcountry tracts where harder rock is met with conditions are more interesting, but unfortunately the hand drills are not suitable for work in hard strata.

For this purpose power drills are required. The use of these drills, however, calls for a certain degree of technical skill that it is difficult to secure. Their working during the year has made it evident that, if they are to render effective service they must—at least to begin with—be placed in the charge of a really skilful engineer.

Government were accordingly addressed with a view to the appointment of a boring expert. This appointment was not made but Mr. Wills was transferred to this department from the Public Works to take charge of the mechanical side of the

work. The pressure of work in connection with the situation created by the war unfortunately necessitated his employment in connection with the industrial experiments and power boring had to stand back for the time being. As soon as the situation becomes easier power drilling will be taken up more energetically and as two more drills are under construction in the workshops a considerable development in this direction may be anticipated.

46. Upto the present about 2,850 bores have been put down, but hitherto the information regarding underground supplies and the flow of underground water that these borings furnish has not been put to any practical use, chiefly for the reason that levels were wanting. Accordingly Government during the year sanctioned the appointment of two surveyors to take levels and in Chingleput a start has been made with connecting up the levels of the different wells. The work is only in its infancy, but I anticipate that it will ultimate yield results of the utmost value: at any rate it represents a scientific investigation of a problem of extreme interest. An approximate estimate can be formed of the quantity of water available for gravity irrigation. The areas that can be irrigated by direct flow are fairly well mapped out, but of the underground resources of water little is known. The total area of the Presidency is about 90 million acres, of which 34 millions are cultivable. The area that can be irrigated by direct flow is of the order of seven million acres. The scope for lift irrigation is much greater than that for gravity irrigation—if we can find the water. On this point the present investigation may be expected to throw some light.

WORKSHOP DEPARTMENT.

47. The amount of work to be done in the workshop has been steadily rising for the last few years. The present plant being inadequate and out of date Government sanctioned a complete new equipment, the greater part of which has already been installed. During the year a regular system of workshop accounts was introduced, partly for purposes of control but more particularly as a practical illustration of modern methods for purposes of demonstration to the managers of Industrial schools. With the old plant considerable difficulty was experienced in keeping abreast of the work and inadequate accommodation detracted considerably from the efficiency of working but these difficulties have now been to a great extent overcome and I anticipate a material reduction in workshop costs in the coming year.

EXPERIMENTS AND DEMONSTRATION SECTION.

48. In this section work is divided into two periods. The preliminary non-remunerative period is termed the experimental stage. During this stage most of the expenditure is of a non-recoverable character and receipts will be small. The net cost of the experimental stage represents the amount of money that has to be sunk in order to discover and test the value of a new process. From the results of experiments it can be determined whether or not the process is likely to be remunerative and when this point is reached it becomes necessary to show that it actually will be. The experimental stage is accordingly stopped and what I term the demonstration stage begins. During the demonstration stage no money is spent on experiments and excluding capital charges, the expenditure should be more than covered by receipts. The relation of receipts to expenditure is a direct measure of the commercial value of any process or operation and it is on this point that the demonstration stage is intended to furnish direct evidence.

During the year under review none of the experiments had passed the experimental stage but in the coming year at least three of them will be transferred to the demonstration stage.

49. The works included in this department are given below together with abstract of the receipts and expenditure.

TABLE VIII.

Experiments and Demonstrations, 1914-1915—Revenue Account.

No.	Name of experiments.	Receipts.	Expenditure.	Outstand- ings, + —	Net Expenditure.
		RS.	RS.	RS.	RS.
1	Peripatetic weaving party No. 1	2,264	7,518	— 96	5,168
2	Do. do. No. 2	83	1,403	+ 89	1,409
3	Gunjana project	*	1,089	..	1,089
4	Motor tractor	1	1,264	..	1,263
5	Singanallur sugarcane station	1,459	Wrkg. 2,594 Expl. 1,973	— 35	3,073
6	Chittavadi do.	568	Wrkg. 546 Expl. 4,527	+ 777	5,282
7	Pencil manufacture	..	Wrkg. 5,429 Expl. 870	+ 45	6,344
8	Glass manufacture	..	Wrkg. 2,434 Expl. 1,179	+ 436	4,049
9	Anderson's expeller	344	Wrkg. 2,563 Expl. 947	+ 291	3,467
10	Paper pulp manufacture	..	83	..	88
11	Soap manufacture	..	158	..	158
12	Miscellaneous	..	335	..	335
13	Oil machinery	..	..	..	..
	Total ..	4,719	34,907	1,507	31,695

* Revenue = Rs. 424-5-0 collected as water-tax.

TABLE IX.

Capital Account.

No.	Name of experiment.	1914-15. RS.
1.	Peripatetic weaving party No. 1	..
2.	Do. do. No. 2	..
3.	Gunjana project	..
4.	Motor tractor	..
5.	Singanallur sugarcane station	931
6.	Hospet	1,499
7.	Pencil manufacture	..
8.	Glass Manufacture	..
9.	Anderson's expeller	12,092
10.	Paper pulp manufacture	..
11.	Soap manufacture	..
12.	Oil machinery	49,981
13.	Miscellaneous	..
	Total ..	64,503

50. *Experiment I—Peripatetic Weaving Party No. I.*—The operations of the party were conducted on the same lines as in the previous year. After leaving Trichinopoly in May 1914, the party visited the districts of Tinnevely and Rāmnād, but only two taluks in the latter district had been finished before the close of the year. In the Tinnevely district, 141 fly-shuttle slays were introduced and in the two taluks of Rāmnād, 35. Of the five Tamil districts visited by the party so far, Tinnevely was found to be far in advance of other districts in the matter of the use of improved weaving appliances, nearly 10 per cent. of the total number of working looms (16,800) being fly-shuttles, a circumstance which is mainly the result, though indirect, of the success of a hand loom factory established at Sērmādēvi about 1905 and conducted by an educated young man who had previously undergone some training under the Superintendent of the party. The improved appliances were however found concentrated in only a small number of weaving centres. A few villages had tried them and given them up as beyond their capacity, while a large number had no knowledge at all of the improved appliances. The work of the party amongst the former villages was not altogether successful as it was not easy to carry conviction to disappointed people. This circumstance together with the fact that owing to financial

stringency consequent upon war, the men could hardly find even the small amount needed to purchase the fly-shuttle slay, accounts for the comparatively small number introduced in the district. The demonstrations seemed to be regarded as satisfactory and to cause a certain amount of enthusiasm, but this soon disappeared with the departure of the party and the Superintendent therefore made every endeavour to see that one or two at least of the improved appliances were introduced into every large weaving centre before the party moved on. One feature of the work of the year was the acceptance of a contract with one of the large Madras mills for the supply of webbing against a War Office order. Work of this kind I regard as of the greatest potential value since in my opinion it is to the large mills and their business organization that hand-loom weaving will in the future have to look very largely for work. This is the way in which the Swiss cottage industries are kept alive, namely, by association with large manufacturers and the introduction of this system into India even though on a small scale seems to me a departure of considerable importance. Both Superintendents have made arrangements to produce the webbing required and the work has aroused good deal of interest. Indeed it is possible that it may give rise to a new kind of cottage industry. The present demand is of course a passing one but in normal times there should be a good demand for webbing for a variety of purposes.

51. The Superintendent has also devoted a good deal of time to devising improvements in mat-making and gunny manufacture and, as in previous years, has collected economic statistics which should prove of considerable value. A number of applications for technical advice were received and dealt with.

In only a few of the centres visited during the year was work of an ornamental character carried on and there has therefore been little demand for either the dobbie or the jacquard. Their working of these appliances has however been demonstrated in select centres and public interest in the demonstrations has been as marked as during the previous year.

52. *Experiment II—Peripatetic Weaving Party No. II.*—The work of this party is practically a reduplication of the work of No. I party. The original party proved so popular that representations were made to Government and a similar party was started to tour the Northern Circars.

This second party was organised early in August and work was begun in the Kistna district. As a result of the demonstration at Masulipatam, about 100 dobbies have been introduced. There are already about 4,600 looms working in the Kistna district mainly for lungbi-weaving. About the end of October, the Superintendent visited Berhampur to study the condition of silk-weaving as carried on there. There were more than 1,000 looms in Berhampur a decade ago but the Superintendent counted only 332 looms. The reason assigned for this decline is unscrupulous control by capitalists. The weavers at Berhampur are also singularly apathetic in the matter of appliances.

Towards the end of the year the party moved to the Gōdāvāri district and is now working at Narasapur.

53. *Experiment III—Ganjana Project.*—This is a project the department has had on its hands for some years. In 1905 Mr. Chatterton proposed the irrigation of some 500 acres by pumping from the Ganjana river. At the time the ryots offered to pay Rs. 10 per acre for irrigation. When the scheme had been carried out, they appealed to the Board of Revenue, who decided that only ordinary rates should be levied. At these rates the scheme cannot pay. The revenue appears as land revenue. The working expenses are borne by this department and amounted to Rs. 1,089 during the past year. The area under irrigation was 107 acres, mostly dry crops, and the water-tax collected amounted to Rs. 424-5-0.

Including an allowance for interest and depreciation, the total cost of pumping was about Rs. 2,500 or Rs. 23 per acre. Had the whole projected area been irrigated, the cost would have been Rs. 4,000 for 500 acres or about Rs. 8 per acre.

54. *Experiment IV—Motor tractor.*—The plough originally supplied with the motor Tractor was found to be unsuitable and on the advice of the Agricultural department, a different kind of plough was ordered. Considerable difficulty was experienced

in finding a firm to supply the type of plough required but at last an order was placed. The plough was shipped by the *Clan Grant* and sunk by the *Emden*. A second plough had therefore to be ordered, but owing to the dislocation of the trade caused by the war, this plough only reached this country towards the end of the financial year. During the interval, the motor tractor was used for haulage purposes and kept fairly busy in moving some of the heavier plant ordered in connection with the war experiments. One instance seems to be worth recording. After the bombardment of Madras, the heavy guns at Kasimode were so carefully entrenched that when the time came for their removal it was found that they were stuck fast in the sand. The departmental tractor was accordingly called upon to render assistance and pulled the guns out with the utmost ease.

On receipt of the plough, arrangements were made to carry out experiments in the neighbourhood of Madras. The season was already far advanced and in proceeding to the work spot the tractor unfortunately dropped through a culvert and several days were spent in extracting it. When at last the site was reached, operations were begun and in a short space of time a considerable area was deeply scarred. I afterwards visited the site with the Director of Agriculture and as he considered that the season was too far advanced work had to be stopped.

An application for the loan of the tractor in connection with the carting of forest produce has been received from the Forest Department and the tractor is to proceed to the West Coast in a couple of months' time.

55. *Experiments V and VI—Singanallur Sugarcane Station and Hospet Sugarcane Station.*—The Singanallur experimental station for the manufacture of jaggery was worked again this year and the new station at Hospet was also opened. These experimental stations are of the same character as those erected by the Director of Commerce and Industries in Mysore and consists of a 12 horse power engine, a 3 roll mill 12 × 8 and furnaces of the improved Chatterton pattern. These were only introduced this year. In previous years considerable trouble had been experienced at Singanallur with the furnaces and a good deal of money was spent on fire-wood. During the present year the Chatterton furnaces were introduced: unfortunately the plans were not received until just before work had to be started and the new furnaces were therefore only brought into use towards the end of the season.

In some respects the season was disappointing chiefly for the reason that the area under sugarcane has decreased considerably. There was therefore considerable difficulty in obtaining adequate supplies of raw material. The plant was worked for 97 days, on 89 of which less than one full shift (9 hours) was worked: on 8 days, double shifts were worked. On the whole 484 pothis of jaggery were made, the charge for manufacture as before being Rs. 3 per pothi (260 lb.). The financial results are shown below; but if the period previous to the introduction of the new furnaces is left out of account, working appears to show a gross profit.

Receipts.	Expenditure.				
	Working.	Experi- mental.	Capital.	Outstand- ing.	Net expendi- ture.
RS. 1,459	RS. 2,594	RS. 1,978	RS. 931	RS. —35	RS. 3,073

56. At Hospet the season comes on much later than at Singanallur, beginning in January. Here also considerable trouble was experienced but this time on account of sickness amongst the staff. Again a very heavy storm did a certain amount of damage to the buildings. This being the first year of working, a good deal of coaxing was necessary to induce the ryots to give the new system a trial but towards the end of the season, the plant seems to have secured popular favour and supplies of cane came in more regularly.

The season is not yet over at the close of the year and up to date (the end of the year) 227 pothis of jaggery have been made, the charge being as at Singanallur Rs. 3

a pothi (260 lb.). At the beginning the plant worked rather irregularly and working costs were proportionately high but the factory shows a margin of gross profit. The accounts are as follows:—

Receipts.	Expenditure.			Outstandings.	Net expenditure.
	Working.	Experiment.	Capital.		
RS. 568	RS. 546	RS. 4,527	RS. 1,499	RS. + 777	RS. 5,282

One private plant of a similar character has been put up during the year and I expect that one or two more will be added during the coming year.

57. As these experiments form part of a general scheme worked conjointly by the Director of Industries and Commerce in Mysore and myself, I enclose a brief report of the working of the plants in Mysore also.

Mr. Chatterton writes:—

"The sugarcane season in Mysore during 1914 was an extremely bad one and in the areas round the Government plants the yield of cane was less than 25 per cent. of the normal. During the year, the three plants at Kunigal, Chickasagere and Haravu manufactured 13,683 maunds of jaggery (of 25 pounds each) and the receipts for manufacturing amounted to Rs. 3,625-14-7. Since the 1st of January a fourth plant has been started at Shikarpur where the crop also proved a great failure and only 2,961 maunds of jaggery were made. The receipts for manufacturing same being Rs. 875-5-2. The work is now proceeding at Kunigal where there is a considerable amount of cane and the results at this station are likely to be satisfactory and to yield a considerable net profit.

"Besides the four Government plants there are five others either at work or in the course of erection and it is probable that more will be started in the course of the year as there is a large amount of sugarcane planting going on at the present time. The prices for jaggery are about 50 per cent. more than they were a year ago and the profit of cane cultivation is consequently very considerable.

"In dry weather with continuous working, the newly designed furnace can be worked with megasse only; but where intermittent working is carried on, it is sometimes necessary to use a certain amount of trash from the cane fields in addition. With hard canes of the chenna type, which contain a large amount of fibre, the whole of the megasse is not used in the furnaces.

"In the beginning, there was much opposition and distrust on the part of the ryots, but that has now been entirely overcome and in all these plants the ryots are only too anxious to get their cane milled."

It is probable that a steam heated plant will secure somewhat better results than those obtained by open pan boiling. It was my intention to purchase one of these steam plants for purposes of further experiment, but as Mr. Chatterton was arranging to undertake the same investigation I thought it unnecessary to reduplicate his work. His plant, which is capable of turning out about 20 pothis of jaggery per day is on its way out and will be worked during the next season.

58. *Experiment VII—Pencil Manufacture.*—On the outbreak of war some pencil making plants—relies of former swadeshi enthusiasm—were taken over by the department and pencil manufacture was resuscitated. For this purpose the services of an expert were secured and in a comparatively short time the plant was got into working order. Reasonably well-finished pencils were prepared within three months but the expert was unable to refine the graphite properly and as sources of supply for wood had not been properly investigated, no attempt was made to place the pencils on the market. These initial experiments furnished what may be called the fundamental data of production, that is, the limiting figures and conditions under which commercial production is possible. These limits appeared to be sufficiently favourable to warrant the continuation of the experiment. Subsequent work until the end of the year consisted chiefly in the investigation of forest supplies and the treatment of graphite.

With regard to the former I have to acknowledge the great assistance rendered me by the Forest Department and in particular the Conservator of Forests, Northern Circle. Although different species are still being experimented with, I have selected eight species that are likely to give satisfactory pencils and am now investigating the probable supply in different districts.

As regards the refining of the graphite, much help was rendered me by Professor Erlam Smith of the Presidency College. The unfortunate illness of that officer and his subsequent departure on medical certificate have rather delayed progress but arrangements have now been made for the continuation of the experiments at the Indian Institute of Science.

59. *Experiment VIII—Glass manufacture.*—Early in October the present owner of the defunct glass factory in Madras placed his premises at my disposal for the purpose of experiments. The furnaces were found to be burnt out and had to be rebuilt. After careful consideration it was also deemed expedient to substitute oil firing for the gas firing previously employed. The cleaning up of the plant, reconstruction of furnaces, installation of oil plant, etc., took a good deal of time, the more so as I was extremely short-handed. An alleged glass expert was given a trial, but as he could produce nothing beyond egg-shaped bodies with a frosted surface and I required utilitarian, not new art goods, his services were dispensed with.

60. The initial difficulties in connection with an undertaking of this kind are considerable. I understand that the mixing of the raw materials during the time of the late company was treated as a secret process and a good deal of chemical work had to be done in order to ascertain the composition required. For this work I am indebted to Professor Erlam Smith of the Presidency College. Unfortunately that officer went sick and has had to go on leave.

61. The problem of glass manufacture is in the main a two-fold one. Glass-making is what I call fuel industry, that is to say, the determining factor in costs is the fuel. At present I am devoting my time mainly to the design of a furnace of high thermal efficiency. The other part of the problem is its chemical side. Regarding this I am mainly depending on the assistance of Professor Erlam Smith and during his absence I do not expect to make very much progress in manufacture.

Indications are however fairly favourable. During a trial made, 90 per cent. of the bottles passed satisfactorily through the annealing furnace and the percentage of subsequent breakages during filling was quite small.

62. *Experiment IX—Anderson Expellers.*—From the special grant sanctioned by Government for the purchase of oil machinery, a portion was set aside for the establishment of a number of small "oil expellers" in different parts of the Presidency. Unfortunately, there was no stock of these machines in India at the time of the outbreak of the war. One expeller which had previously been purchased by the department was erected in Madras and has been fairly busy since. Another one was delivered towards the end of the year and was erected at Cuddalore. When a third one is available, it will be sent to the Ganjam district. Arrangements were also made with one or two private firms to provide public facilities for seed crushing. At present only the ground-nut crop is being dealt with, this being the commodity that has suffered most severely during the present year.

The collective capacity of these plants is of course very small compared with the quantity of nuts to be dealt with, but the arrangements made were the only form of assistance that could possibly have been rendered immediately. Orders were placed early for a much larger mill, but the delivery of this can only be expected in July (*vide* Experiment XII).

63. *Experiment X—Paper pulp.*—It is a well known fact that of late years the increasing demand for pulp for paper manufacturing purposes has made the problem of supply a very serious one and manufacturers have for sometime been looking round for new sources of supply. Last year exhaustive enquiries were made by a British firm but economic conditions prevented their scheme from maturing. Late last year, the proprietors of a defunct paper mill in Punalur applied to me for assistance and this application seemed to me a good opportunity for investigating the whole question. I had made arrangements for taking

over the factory and working it experimentally when unfortunately certain legal disputes arose between the owners and another party and as I considered it undesirable to be involved in quarrels of this kind, I reluctantly had to drop my scheme. Later on in the year the proprietors again approached me and asked me merely lend them the services of supervisor to enable them to start the mill themselves. This assistance has been given, though I doubt if much practical advantage will result.

64. *Experiment XI—Soap Manufacture.*—On the outbreak of war it seemed to me that something might be done on the matter of soap making and I accordingly looked round for a soap plant. Ultimately, obtaining the loan of a second hand plant, I put myself into communication with Government regarding the appointment of a special assistant. I further made arrangements with several individuals for the supply to me of raw material for conversion into soap. Some experiments made by Dr. Marsden proved quite satisfactory but pressure of other work in connection with the war made it impossible to carry on these experiments on a proper scale and I have accordingly arranged with the Director of Commerce and Industries at Bangalore to do the work in conjunction with me. He has now sent me several samples of soap and is on the point of starting manufacture on a large scale.

65. *Experiment XII—Oil machinery.*—In addition to the expellers purchased by the department, orders were placed and sanction was accorded by Government for the purchase of a much larger modern oil crushing plant. The machinery has been ordered and is expected to arrive in July. The plant will consist of a pair of large cage presses, a fullers earth plant and a refrigerating plant for the extraction of stearine.

To deal with cotton seed the Director of Commerce and Industry, Mysore, is also ordering a large plant which is to be erected in the north-west corner of the State.

TABLE X.—STATISTICS REGARDING INDUSTRIAL SCHOOLS.

[illegible]

* Cane-weaving.
† Manager interned.
‡ Expressed inability to submit returns.

TABLE X.—Statistics regarding Industrial schools—*cont.*

[illegible]

5 Returns not received.

* Expressed inability to submit returns.

† Manager interned.

* 22 crotchot lace. 2 pillow lace.

TABLE XI.—Statistics regarding Industrial schools.

District.	Name of institution.	Boys or Girls.	Number on rolls on the 31st March 1915.								Receipts.				Manager's contribution.	Public Funds.	Total receipts (equal to expenditure).			
			Advanced.	Intermediate.	Elementary.	Standard D.	Standard C.	Standard B.	Standard A.	Total.	Miscellaneous receipts including sale proceeds of manufactures.	Fees.	Teaching.					Grants—Provincial Fund.		
													Rs. A. P.	Rs. A. P.				Rs. A. P.	Rs. A. P.	Rs. A. P.
	RECOGNISED SCHOOLS.																			
	First and Second class.																			
Madras ..	Madras Government Technical Institute.	Boys	1	2	13	4	3	7	26	56	7,043 7 1	..	..	..	..	18,878 10 5	..	25,922 1 6	..	
Coimbatore ..	Coimbatore St. Joseph's Industrial School.	"	6	7	7	5	9	24	34	92	40,428 12 0	..	1,000	800 0 0	1,800 0 0	..	..	39,110 3 1	..	
Tiruchinopoly ..	Karaikal Industrial Mission Industrial school.	"	4	13	15	10	4	14	..	60	25,879 12 11	182 9 0	2,800	..	2,800 0 0	..	..	26,701 0 0	..	
Madras ..	Madras Changanacherry Nair's Technical Institute.	"	..	9	14	43	9	18	85	178	9,701 8 4	1,222 2 0	6,000	1,000 0 0	7,000 0 0	..	..	29,084 4 0	..	
North Arcot ..	Kanjikott Mission Industrial School.	"	4	9	11	2	5	8	4	48	10,708 6 4	..	1,820	187 8 0	2,007 8 0	..	..	13,348 3 0	..	
South Arcot ..	Tindivanam St. Joseph's Industrial School.	"	12	18	6	16	18	8	90	10,586 2 0	..	..	700	1,261 10 0	1,961 10 0	..	..	12,542 2 0	..	
Madras ..	Madras Government Technical Institute.	"	3	4	15	9	20	23	28	112	17,255 3 2	..	5,000	..	5,000 0 0	..	..	15,652 5 0	..	
Tinnevely ..	Narasah Art Industrial School for Boys.	"	..	17	12	3	5	9	20	65	5,399 9 7	106 4 0	1,000	1,385 10 0	3,785 10 0	..	..	14,065 10 9	..	
Tanjore ..	Tanjore St. Francis Xavier's Industrial school.	"	1	9	3	6	7	10	19	54	7,408 4 6	..	..	500	125 0 0	625 0 0	..	..	12,779 8 11	..
Tiruchinopoly ..	Pottur All Saints' Boys' Industrial school.	"	..	3	2	4	4	5	5	23	2,653 9 0	248 9 0	700	..	700 0 0	..	..	6,171 9 8	..	
Mellore ..	Vellore Arjunanath Industrial School.	"	..	5	3	6	7	15	45	45	9,355 4 5	..	350	..	350 0 0	..	..	9,705 4 5	..	
Kerala ..	Nayadatt Hermannsburg Evangelical Lutheran Industrial School.	"	..	..	..	..	..	..	..	..	..	..	500	..	500 0 0	..	..	500 0 0	..	
Kerala ..	Mannipattan Aunja Jathanya Industrial school.	"	..	12	30	..	..	..	..	42	6,579 1 6	100 0 0	400	952 0 0	1,352 0 0	..	..	11,641 13 11	..	
Vizagapatnam ..	Vizagapatnam St. Aloysius' Industrial school.	"	..	..	..	..	..	..	..	..	30,839 1 0	..	5,500	..	5,500 0 0	..	..	33,675 15 11	..	
	Total ..	..	31	96	113	137	91	143	274	895	1,83,798 1 10	2,009 8	9,24,220	6,161 12	30,381 12	0	18,878 10 5	7,422 1 11	2,49,490 2 2	

* Manager interned.

TABLE XI.—Statistics regarding Industrial schools—cont.

District.	Name of institution.	Boys or Girls.	Number on rolls on the 31st March 1916.								Receipts.					Manager's contribution.	Public Funds.	Total receipts (expenditure).	
			Advanced.	Intermediate.	Elementary.	Standard D.	Standard C.	Standard B.	Standard A.	Total.	Miscellaneous receipts including sale of manufactures.	Fees.	Teaching.	Grants—Provincial Fund.					
														Furniture and special.	Total.				
RECOGNIZED SCHOOLS.—cont.																			
Chingleput ..	Third class.																		
	Maheswarum United Free Church Mission Agricultural Industrial school.	Boys	..	..	5	..	..	..	..	9	593 0 6	83 0 0	150	..	150 0 0	..	..	749 13 2	1,601 2 10
Madras ..	Madras Government Press Technical school.	"	..	40	167	..	..	..	..	207	73 14 1	..	350	..	350 0 0	..	..	130 12 1	293 2 0
	The Nilgiris ..	"	..	..	1	..	..	..	..	1	8 5 0	..	50	..	50 0 0	..	..	46 5 0	12 0 0
South Arcot ..	Kearl Danish Mission Girls' Industrial school.	Girls	..	13	11	4	5	9	42	4,311 15 9	..	..	350	..	350 0 0	..	..	1,827 10 9	5,989 10 6
	Madras ..	"	..	3	2	8	20	42	77	1,244 1 3	..	..	500	245 0 0	745 0 0	..	..	332 6 11	2,322 8 2
Chingleput ..	Kearl Danish Mission Girls' Industrial school.	"	2	8	5	7	9	10	12	53	832 4 11	..	250	7 10 6	257 10 6	..	..	636 15 7	1,726 14 6
	Chingleput United Free Church Mission Industrial school.	"	..	..	9	11	8	3	5	38	1,609 9 2	31 0 0	200	..	200 0 0	..	..	2,174 9 2	4,006 2 4
North Arcot ..	Banister Women's Industrial School.	"	..	..	8	5	1	1	6	21	832 15 11	..	150	..	150 0 0	..	..	350 0 7	1,354 0 6
	Tiruchinopoly ..	"	..	..	..	..	8	5	18	31	432 13 0	..	100	69 0 0	169 0 0	..	..	1,702 8 6	2,307 0 6
Madras ..	Madras St. Joseph's Convent Industrial school.	"	..	..	..	..	5	2	8	12	11	36	959 8 9	..	300	..	71 8 2	1,324 0 11	
	Tinnevely ..	"	..	..	2	1	6	5	9	22	645 3 10	..	280	..	280 0 0	..	..	124 11 11	800 7 11
Vellore ..	Kandamallur S.P.G. Girls' School.	"	..	..	3	16	17	15	51	483 15 3	..	..	200	..	200 0 0	..	..	70 1 5	759 0 8
	Madras ..	"	..	..	7	1	1	5	8	17	304 0 0	..	150	..	150 0 0	..	..	134 3 0	688 8 0
Tiruchinopoly ..	Kandamallur Mission Lace-making Co.	"	..	..	..	..	..	..	..	42	265 8 10	..	100	..	100 0 0	..	..	3 14 2	359 7 0
	Coimbatore ..	"	..	..	..	..	..	..	..	33	9	42	265 8 10	..	100	..	1,827 11 0	2,091 11 0	
Bellary ..	Ed. Bellary Mission Girls' Industrial school.	"	1	9	25	16	16	23	12	102	304 0 0	10 0 0	450	..	450 0 0	..	..	411 15 4	1,093 12 4
	Madras ..	"	..	11	2	3	2	1	19	581 13 0	..	..	100	..	100 0 0	..	..	553 0 0	653 0 0
Malabar ..	Changanacherry German Mission Girls' Industrial School.	"	..	..	..	..	..	..	..	26	..	..	100	..	100 0 0	..	..	1,131 5 4	2,722 15 10
	Tinnevely ..	"	..	4	4	4	5	4	7	28	1,123 0 0	..	300	198 10 6	498 10 6	..	..	10,975 9 1	30,045 9 0
	Total ..	..	3	75	269	67	94	155	170	833	14,684 11 6	74 0 0	4,090	621 4 6	4,611 4 6	..	..	30,045 9 0	30,045 9 0

TABLE XI.—Statistics regarding Industrial schools—cont.

[illegible]

† Returns not received.

† Expressed inability to submit returns.

Manager interned.

TABLE XII.—LOANS sanctioned during 1914-15.

Num- ber.	Name of applicants.	Place.	District.	Amount.
1	M.R.Ry. Ramaswami Nayudu	Chinnamasakopalayam ..	Coimbatore ..	Rs. 6,000
2	" Narayana Reddi	Topudur village ..	Anantapur ..	2,500
3	Miss B. Chinnammal, wife of Ayyah Nayudu ..	Nallur village. . . .	Chingleput ..	1,600
4	M.R.Ry. Thunkara Goundan and Ramaswami Goundar.	Kannakapalayam	Vinnvelly ..	500
5	M.R.Ry. Krishnaswami Ayyar and Challaappa Goundar.	Vellathinar	Coimbatore ..	2,000
6	M.R.Ry. S. Thimma Reddi	Pangai village	Anantapur ..	2,500
7	" P. Venkata Ayyangar	Perumbakam	South Arcot ..	2,000
8	" Ramadasaiah	Velur factory	Chingleput ..	1,500
9	" Srinivasa Ayyar	Ayankodipalayam ..	Tanjore ..	2,500
				21,000

TABLE XIII.—STATEMENT of compounding fees collected

	Gidavari section.	Kisina section.	Chingirpat section.	South Arcot section.	Nalluru section.	/cinchubara section.	Tadainopoly section.	North Arcot section.	Tanjore section.	Tinnervelly section.	Ceded district section.	Total.
1809-10	..	7	..	..	2	..	3	3	1	2	1	27
1810-11	..	6	..	..	2	..	10	1	1	1	..	36
1811-12	4	3	7	..	2	..	8	12	1	..	..	35
1812-13	7	3	11	6	1	13	9	11	19	10	1	91
1813-14	1	6	7	18	..	16	12	8	31	21	2	117
1814-15	4	7	7	18	..	35	20	10	68	21	10	196

TABLE XIV.—STATEMENT of investigations made

Year.	Number.
1902-03	1
1903-04	10
1904-05	
1905-06	
1906-07	24
1907-08	21
1908-09	40
1909-10	51
1910-11	33
1911-12	41
1912-13	64
1913-14	111
1914-15	134
	152
Total	682

TABLE XV.

Trades.	Number of factories.	Horse power.				Total excluding horse power of boiler.
		Steam.		Oil or gas.	Others.	
		Engine.	Boiler.			
<i>Section I.—Agriculture and irrigation.</i>						
1. Agriculture	..	..	..	..	..	..
2. Flush irrigation	..	..	..	8,200	..	8,200
3. Lift irrigation	657	..	..	..	..	..
<i>Section II.—Mines and quarries.</i>						
4. Gold mines	3	..	820	..	..	820
5. Mica	9	51	..	..	..	51
6. Manganese	2	149	..	..	..	149
7. Magnesite	1	..	487	139	..	626
8. Quarries	2	12	65	..	..	77
9. Salt mines	4	40	52	10	..	102
10. Others	..	..	..	..	..	..
<i>Section III.—Iron, steel and engineering trades.</i>						
11. General engineering trade	45	456	4,948	269	..	5,673
12. Harbour shipbuilding trade	..	..	..	..	..	..
13. Railways (Carriage and Locomotive)	16	373	..	980	..	1,353
14. Tool and implement trade	..	..	..	..	..	..
15. Blacksmith's trade	..	..	..	..	..	..
16. Small arms trade	..	..	..	..	..	..
17. Other iron and steel trades	..	..	..	..	..	..
<i>Section IV.—Metal trades other than iron and steel.</i>						
18. Brass and copper trades	..	..	..	137	..	137
19. Metal trade (other than iron)	2	..	..	..	10	10
20. Precious metals and jewel trade	1	..	..	..	..	..
21. Other trades	..	..	..	..	..	..
<i>Section V.—Textile trades.</i>						
22. Cotton trade (Power)	215	14,105	16,899	2,286	1,150	17,541
23. Do. (Hand Loom)	..	..	..	..	..	..
24. Jute and hemp trade	8	1,356	1,452	..	..	2,808
25. Woollen and worsted trade	..	..	..	..	..	..
26. Silk trade	..	..	..	..	..	..
27. Lace trade	1	35	..	..	..	35
28. Fibre trade	10	189	751	3	..	943
29. Bleaching and dyeing trades	3	..	69	..	..	69
30. Other textile trades	3	3	22	4	..	29
<i>Section VI.—Clothing trades.</i>						
31. Clothing and millinery trade	..	..	..	..	..	..
32. Boot and shoe trade	1	..	..	8	..	8
33. Hat and cap trade	..	..	..	..	..	..
34. Other trades	..	..	..	..	..	..
<i>Section VII.—Food, drink and tobacco trades.</i>						
35. Grain milling trade (Rice Mills)	385	2,160	7,151	5,003	..	14,314
36. Bread and biscuit trade	..	..	..	..	..	..
37. Confectionery and preserve trade	..	..	..	..	..	..
38. Butter and cheese trade	..	..	..	..	..	..
39. Fish-curing trade	1	..	30	..	..	30
40. Tea trade	15	182	..	4	..	197
41. Sugar trade	9	353	3,752	358	..	4,463
42. Brewery and distilling trade	12	19	237	61	..	317
43. Cattle food trade	2	..	65	..	..	65
44. Aerated waters	9	29	199	30	7	266
45. Tobacco trade	3	12	35	11	..	58
46. Coffee do.	48	445	938	249	49	1,681
47. Tea do.	25	38	172	351	64	565
48. Other trades	2	..	207	..	..	207
<i>Section VIII.—Chemical and allied trades.</i>						
49. Chemicals, coal tar products and cordite Trades	3	44	632	37	500	1,173
50. Seed crushing trade (Oil)	22	195	345	202	27	769
51. Soap and Candles	..	12	67	..	..	79
52. Bone Crushing Trade	2	..	..	60	..	60
53. Other trades (Petroleum)	8	46	162	..	..	208
<i>Section IX.—Paper printing and allied trades.</i>						
54. Printing and book-binding trade	29	83	200	273	76	532
55. Other trades (Pencil)	1	..	22	..	..	22

TABLE XV.—cont.

Trades.	Number of factories.	Horse power.				Total excluding horse power of boiler.
		Steam.		Oil or gas.	Others.	
		Engine.	Boiler.			
<i>Section X.—Leather canvas and india-rubber trades.</i>						
56. Leather trade (Tanning and Dressing)	4	29	64	10	..	103
57. Saddlery and harness trade	1	12	..	..	..	12
58. Other trades	..	..	..	..	..	..
<i>Section XI.—Tinker trades.</i>						
59. Timber trades	15	82	15	117	8	212
60. Carriage, cart and waggon trades	7	..	85	15	108	208
61. Brush and basket trade	..	..	..	..	..	..
62. Other trades	..	..	..	..	..	..
<i>Section XII.—Clay, stone, building and contracting trades.</i>						
63. Brick and tile trades	26	498	1,282	68	..	1,848
64. China and earthenware trades (Pottery)	1	7	17	..	..	24
65. Cement trade	2	900	570	10	5	1,485
66. Public Works Department	..	..	..	..	..	..
67. Others	..	..	..	..	..	..
<i>Section XIII.—Miscellaneous trades.</i>						
68. Ivory, bone and fancy articles	..	..	..	..	..	..
69. Musical instruments	..	..	..	..	..	..
70. Others	..	..	..	..	..	..
<i>Section XIV.—Public utility services.</i>						
71. Municipal undertakings	17	1,746	866	409	..	2,155
72. Electric light (Private Company)	13	4,810	1,877	252	..	6,939
73. Canals and docks	..	..	..	..	..	..
74. Post and Telegraph offices	1	..	..	..	15	15
75. Telephones	..	..	..	..	..	..
76. Others	..	..	..	..	..	..
Grand total	1,835	28,114	44,179	19,572	2,017	49,703

TABLE XVI.—STATEMENT showing details of borings made in the different divisions from the beginning of operations.

Divisions.	Fresh wells.			Existing wells.			Total number of borings.	Supply pipes sunk.	Total feet bored through.
	Success.	Failure.	Total.	Success.	Failure.	Total.			
<i>Goddavari.</i>									
From the beginning to 31st March 1914.	19	18	37	14	13	27	64	11	5,982
From April 1914 to 31st March 1915 ..	34	31	65	3	3	6	71	19	5,836
Total ..	53	49	102	17	16	33	135	30	11,818
<i>Kistna.</i>									
From the beginning to 31st March 1914.	17	9	26	47	32	79	105	18	4,079
From April 1914 to 31st March 1915 ..	146	26	172	13	5	18	190	10	7,792
Total ..	163	35	198	60	37	97	295	28	11,871
<i>North Arcot.</i>									
From the beginning to 31st March 1914.	15	21	36	14	72	86	122	6	2,584
From April 1914 to 31st March 1915 ..	3	..	3	..	..	..	3	..	96
Total ..	18	21	39	14	72	86	125	6	2,680
<i>Bellary.</i>									
From the beginning to 31st March 1914.	..	..	..	..	..	..	..	..	..
From April 1914 to 31st March 1915 ..	1	3	4	..	2	2	6	..	148
Total ..	1	3	4	..	2	2	6	..	148

TABLE XVI.—Statement showing details of borings made in the different divisions from the beginning of operations—*cont.*

Divisions.	Fresh wells.			Existing wells.			Total number of borings.	Supply pipes sunk.	Total feet bored through.
	Success.	Failure.	Total.	Success.	Failure.	Total.			
<i>Nellore.</i>									
From the beginning to 31st March 1914.	5	10	15	24	16	40	55	13	2,597
From April 1914 to 31st March 1915 ..	10	6	16	23	16	39	55	..	2,597
Total ..	16	16	31	47	32	79	110	13	4,908
<i>Coimbatore.</i>									
From the beginning to 31st March 1914.	7	9	16	65	62	117	133	2	2,427
From April 1914 to 31st March 1915 ..	..	..	..	30	17	47	47	..	1,093
Total ..	7	9	16	95	69	164	180	2	3,520
<i>South Arcot.</i>									
From the beginning to 31st March 1914.	38	29	67	44	26	70	137	..	7,065
From April 1914 to 31st March 1915 ..	24	17	41	5	11	17	58	2	2,083
Total ..	62	46	108	50	37	87	195	2	9,148
<i>Chingleput.</i>									
From the beginning to 31st March 1914	218	196	414	323	253	576	990	185	48,246
From April 1914 to 31st March 1915 ..	31	5	36	26	8	34	70	19	3,160
Total ..	249	201	450	349	261	610	1,060	201	46,406
<i>Tinnevelly.</i>									
From the beginning to 31st March 1914.	79	25	104	275	54	329	433	..	12,145
From April 1914 to 31st March 1915 ..	28	..	28	51	3	54	82	..	2,799
Total ..	107	25	132	326	57	383	515	..	14,944
<i>Trichinopoly.</i>									
From the beginning to 31st March 1914.	17	7	24	46	40	86	110	5	3,191
From April 1914 to 31st March 1915 ..	3	..	3	11	22	33	36	..	764
Total ..	20	7	27	57	62	119	146	5	3,955
<i>Tanjore.</i>									
From the beginning to 31st March 1914.	24	11	35	5	3	9	44	10	3,731
From April 1914 to 31st March 1915 ..	14	1	15	10	2	12	27	11	2,196
Total ..	38	12	50	15	5	21	71	21	5,927
<i>Abstract.</i>									
Total borings from the beginning of operation to 31st March 1914.	439	335	774	858	561	1,419	2,193	250	87,047
Total borings from 1st April 1914 to 31st March 1915.	294	89	383	173	89	262	645	58	28,078
	733	424	1,157	1,031	650	1,681	2,838	308	115,117

4. The Government have decided that the Gunjana pumping installation should be closed after the harvest of the standing crops.

5. Separate orders have been issued that experiments connected with the manufacture of soap should be carried on by Sir Frederick Nicholson in the Department of Fisheries.

(True Extract.)

C. G. TODHUNTER,
Acting Secretary to Government.

To the Director of Industries.
" Honorary Director of Fisheries.
" Revenue Department.
" Public Works Department.
" Public Works Department (Irrigation).
" Public Department (for Presidency Administration Report).

Order—1090, Educational, dated 1st October 1915.

Recorded.

2. Orders have been issued for the early construction of new buildings for the Madura Technical Institute together with a students' home and superintendent's quarters.

3. The proposals of the Director for the revision of the rules for the grant of loans and for the introduction of a system by which ryots can obtain agricultural machinery from the department by hire purchase are under the consideration of Government. Government are also considering the question of transferring the control of the pumping and boring operations to the Agricultural Department.

NOTES CONNECTED WITH G.O. No. 1090, EDUCATIONAL, DATED
THE 1ST OCTOBER 1915.

[SUBJECT.—Administration report of the Department of Industries for 1914-15.]

From the Director of Industries, Madras, dated the 17th July 1915, No. A. 11.

As personally directed by the Secretary, the note on the report will be divided into two parts—the first indicating the stages, which the proposals submitted by the Director of Industries have reached in their consideration by the Government, and the second examining whether some of the activities of the department are within its scope as laid down by the Secretary of State and how far it is desirable to pursue them.

PART I.

2. (1) Paragraphs 5 and 33.—In these the Director refers to the lack of accommodation for his office and the bureau of industrial information and states that proposals for their extension are under the consideration of the Government. It is submitted that owing to the difficulty anticipated in the proposed acquisition of the ice factory and adjoining premises, it had not been possible to arrive at an early settlement of the question. Finally at the suggestion of the Director, it has been decided to acquire in advance the property belonging to Mr. Unger; and the papers have been forwarded to the Public Works Department for necessary action. A subsequent proposal to acquire the adjoining property belonging to the Friend-in-need Society is under consideration, a reference having been made to Mr. Tressler

I hope it will be found that either the camp-
equipment depot or the Vepery Ordnance lines
will be more suitable than the acquisition and
extension of the present premises.

C.G.T.—22-8-15.

on a connected question. He has been
requested to state whether any of the
Military buildings in Madras, which are
to be shortly made available for sale,
would suit his purpose; and his reply is
awaited.

(2) Paragraph 6.—The Director states that his proposals dealing with technical education, the Madras Trades school and Normal Training school are under the consideration of Government. In connection with the first, Mr. Tressler has submitted a new code of regulations for the approval of the Government. This and the second regarding Trades school have been examined and references were issued to him and to the Director of Public Instruction (for remarks on the portion relating to general education in industrial schools).

The Director of Public Instruction has been
asked to let us have his opinion as early as
possible.

C.G.T.—22-8-15.

The Director of Industries has replied,
but the remarks of the Director of Public
Instruction are awaited.

The file relating to the establishment of a Normal school is, under the orders of the Secretary, to be submitted along with the file relating to the Code.

(3) Paragraphs 27 and 29.—The Superintendent of the Madura Technical institute refers to the want of proper accommodation for the institute and of a hostel for students. It is submitted that in G.O. No. 2380 W., dated the 7th December 1914, the Government have sanctioned the construction of new buildings for the institute including students' home and quarters for the Superintendent. No provision was originally made in the budget estimate for 1915-16 for the work. But on the

G.O. 374 W., 17th May 1915.

C.G.T.—22-8-15.

representation of this department, a sum
of Rs. 50,000 has been sanctioned
recently and it is understood that the

Chief Engineer has issued orders to push on with the work.

PART II.

3. Before dealing with the individual experiments referred to in the report, it appears to be desirable to set out the limitations in regard to development of industries imposed by the Secretary of State.
G.O. 892, Revenue, 21st March 1914.
The chief functions of the Director of Industries are—

- (i) to collect information as to existing industries, their needs, and the possibility of improving them or of introducing new industries;
- (ii) to carry out and direct experiments connected with such enquiries; and
- (iii) to keep in touch with local manufacturers, to bring the results of his experiments to their notice and to obtain their co-operation in the conduct of operations on a commercial scale.

In his Despatch No. 24, Revenue, dated 15th March 1912, the Secretary of State, while deprecating the extension of the activities of the department "to trading on commercial lines," stated that he was prepared to recognize that instruction in industrial schools might require to be supplemented by practical training in workshops where the application of new processes might be demonstrated and that "experimental plant for the purpose of demonstrating the advantages of improved machinery or new processes and for ascertaining the data of production" might be purchased and maintained.

4. (i) *Paragraph 34—The Bureau.*—The question of appointing an Assistant to the Director to be in charge of the bureau is under consideration separately. When this is sanctioned, the difficulty of an inadequate staff to cope with increased work referred to by Mr. Tressler may not then exist.

This paragraph further indicates the nature of the enquiries which were received in the bureau. From these it appears that the Director was approached for information as to the "standing of individuals" and "markets for goods" and that he also helped in carrying on negotiations with merchants and traders in other countries for the sale of goods manufactured in India.

The establishment of a bureau was recognized by the Secretary of State himself; and in the words of Dr. Travers
Paragraph (i) of Dr. Traver's letter on page 24 of G.O. 3851, Revenue, 30th December 1912.
"The Department of Industries should be a bureau of industrial and technical information." Under this definition it seems

doubtful whether the bureau can undertake enquiries connected with markets for goods and other matters which concern trade more than industries. Mr. Tressler's idea has, however, been to develop the bureau into three separate sections, viz., the industrial, commercial and scientific. The lines on which it should be organized were described by him in his letter regarding the organization of the department, printed with G.O. No. 983, Educational, dated the 18th August 1914. The commercial section was intended to be constituted as "an intermediary between the producer and the buyer"; the object was to establish wholesale relations between the small Indian producer, who did not know where to sell, and the wholesale purchaser. It was thought that by maintaining a register of *bona fide* producers and purchasers, trade in the less known products and manufactures of India could be considerably stimulated.

A similar line of development was also advocated by the Hon'ble Mr. K. R. V. Krishna Rao who moved a resolution at the meeting of the Legislative Council held in November last urging that the bureau should be organized on the lines of the Board of Trade in other countries. This resolution was accepted in principle by the Government.

Further, in connection with the reorganization of the Commercial Intelligence Department, the Government of India enquired last year whether the duty of collecting commercial information and of conveying information on important commercial

questions to the commercial public might be entrusted to Provincial agencies, such as Directors of Industries. In reply that Government was informed that it had already been decided to create a bureau of industrial information under the control of the Director of Industries and that it would not be difficult to develop it into an agency for the collection and supply of information required by the Director-General of Commercial Intelligence.

It will thus be seen that questions relating to "markets for goods" may come within the scope of the department when developed to the extent contemplated, though not strictly under the definition of Dr. Travers. The anticipation of these developments by the Director may, however, be justified in the extraordinary circumstances created by the war. From the summary given in paragraph 70 of the report, it will be seen that the Government have themselves undertaken such enquiries.

I am entirely in favour of a bureau on Board of Trade lines, but I am very much mistaken if the Board of Trade advise on the solvency of traders or circularize merchants offering to find them markets for their goods. The commercial side of Mr. Tressler's bureau should be confined, for the present at any rate, to such matters as the Director-General of Commercial Intelligence desires him to undertake.

C.G.T.—22-8-15.

It is not, however, clear what was meant by the enquiries as to "the standing of individuals." If thereby the Director was asked to give his opinion about the solvency and honesty of individual traders, it may perhaps be better to ask Mr. Tressler not to commit himself to opinions on such matters and thereby interfere with trade directly.

(ii) *Paragraph 35—Offer to find sale for export commodities.*—In this paragraph Mr. Tressler states that he circularized all districts offering to find a sale for all articles of export which could not easily be sold owing to the cessation of trade with hostile countries and complains that several stock-holders did not readily avail themselves of the offers for purchase secured for them through the agency of the bureau. This fact was already brought to the notice of Government in the special report regarding the position of the ground-nut trade. In that connection the Secretary observed that "Mr. Tressler's circular to Collectors asking them to tell ryots he could sell their produce for them at half the previous year's prices was ill-advised and might be the subject of unfavourable criticism." This was agreed to and the portion in the special report was accordingly omitted in the editions printed for publication. The circular referred to in the report seems to have been of wider scope; and it is not unlikely that the above remarks will apply to it also.

This seems to me an instance of functions the bureau should not undertake. Moreover the produce in question was mainly, if not purely, agricultural.

C.G.T.—22-8-15.

(iii) *Paragraph 36—Labour Bureau.*—The Director states that a beginning has also been made with a labour bureau. He has not explained what the nature of this bureau is and what its functions are. The Government have not authorized the Director to organize any such bureau. Nor one seems to have been contemplated in the original scheme submitted by Mr. Tressler to the Government.

Attention is invited to the report of a sub-committee of the Friend-in-Need Society, appointed in 1909 to consider the question of the distribution of charitable relief to European and Eurasian paupers in Madras, in which a suggestion was made to institute a regular labour bureau in Madras, either for Europeans and Eurasians or for all classes under the control of the Director of Industries. It was therein pointed out that unless the bureau was a thoroughly efficient concern managed on the lines laid down in the Poor Law Commission Report, it would not be useful. The Government in paragraph 9 of G.O. No. 208, Public, dated 16th March 1910, disapproved of the proposal as being premature and stated that any action in that direction "must await the results of the measures recently initiated in England."

It is not clear whether Mr. Tressler's

A labour bureau would be a heavy task in itself. Mr. Tressler has had no instructions to start one and should not have saddled himself with this addition to his work.

C.G.T.—22-8-15.

(iv) *Paragraph 41—Loans for lift irrigation plant and introduction of hire purchase system.*—Mr. Tressler's proposals in these regards are being dealt with in the Revenue Department as they primarily relate to the purchase of plant by ryots for pumping installations. If the Pumping and Boring section is transferred to the Agricultural Department entirely or only partially as separately proposed by the Director there may not be any necessity to consider the question of empowering him to grant loans. There seems to be no case for extending the power to other industrial concerns.

I sincerely hope not. Loans cannot be granted without the help of the Revenue authorities and matters are not expedited by the intervention of an officer who is not acquainted with the Revenue rules and procedure and has no authority over the Revenue staff.

C.G.T.—22-8-15.

(v) *Paragraph 42—Scope of demonstration.*—Here Mr. Tressler describes how industrial operations are carried on by the department and how work is divided into two stages, viz., "experiment" and "demonstration." Under the former it will be determined whether or not a new process is likely to be remunerative and in the latter it will be shown whether it actually will be, and thus furnish direct evidence of the commercial value of the operation.

With regard to this, it is submitted that though doubts had been originally entertained whether a demonstration such as that contemplated would be covered by the Secretary of State's orders from the speech delivered by the Hon'ble Sir William Clark at the Viceroy's Council in February last, it appeared that it was a legitimate function of the department.

Extract from the Honourable Member's speech typed on page 34 of notes to G.O. 735, Educational, 5th July 1915.

In speaking on the resolution moved by the Hon'ble Raja Kusalpal Singh regarding the promotion of industries, the Honourable Member stated—

" If you can show by the actual working of an industry that an industry can be worked at a profit, then the State has gone so far as it can reasonably be expected to go. If you can show that a thing can be worked at a profit, it should not be difficult for private enterprise then to step in and take advantage of the knowledge it has thus acquired "

G.O. 52, Educational, 16th January 1915.

" 354, " 26th March "

" 739, " 5th July "

I am not at all sure that we are on safe ground here. A speech has by no means the same authority as a despatch.

C.G.T.—22-8-15.

This part of the report does not therefore seem to contravene the accepted policy in the matter.

(vi) *Paragraph 52—Gunny manufacture.*—In this paragraph the Director states that the Superintendent of the first peripatetic weaving party has devoted a good deal of time to devising improvements in gunny manufacture. No direction seems to have been issued to the Director by the Government to investigate this. Nor any report was submitted to Government till now on this point. It is doubtful if the department should divert its energies to this subject. Gunny bags are being manufactured in extensive scale by mills in Bengal; and it is pointed out by Sir George Watt in his book on "The Commercial Products of India" that handloom

bureau is on the lines proposed by the Friend-in-Need Society's Committee. In any case it is doubtful whether this will fall within the legitimate duties of the Director. It is for orders whether any further information should be called for from him on this point.

gunnies had practically disappeared from the markets of the world, their place having

C.G.T.—22-8-15.

been taken by powerloom gunnies. In these circumstances, it is for consideration whether the Department of Industries in this Presidency should be allowed to proceed any further with these experiments.

(vii) *Paragraph 54—Ganjana project.*—The Director points out that the Ganjama pumping station continued to work at a loss. It is submitted that the Revenue Department have since issued orders directing that the project should be abandoned.

G.O. 1735, Revenue, 24th July 1915.

For a history of the scheme, please see pages 1 to 6 of the notes with G.O. No. 1315, Revenue, dated 16th October 1914. From this it will be seen that the scheme was initiated by Mr. Handcock, the then Superintending Engineer, III Circle. He consulted Mr. Chatterton who appears to have recommended the scheme. Mr. Handcock then wrote to the Government that ryots were willing to pay Rs. 10 per acre for water and that this rate might gradually be increased. The Collector estimated that an area of 500 acres would be irrigated by the project. The Chief Engineer for Irrigation agreed to the proposal; and plans and estimates were prepared by the Public Works Department in consultation with Mr. Chatterton. The Superintending Engineer forwarded the estimates to the Collector for his opinion on the revenue forecast. At the revenue enquiry the ryots stated that they could not pay a higher rate than Rs. 3 an acre for water. Mr. Chatterton, through whom the papers were forwarded, expressed doubts as to the adequacy of the duty for water which the ryots would pay and of the working expenses. The Board was of opinion that the water-rate should not exceed Rs. 2-5-0 per acre and concluded its remarks by saying that the scheme might be dropped. The Government in the Revenue Department approved the scheme, as it was thought that it would serve to encourage the ryots "to adopt similar installations when feasible and at the same time afford a good opportunity for the determination of the duty of water requisite for irrigated dry crops" and announced their intention of charging the difference between the wet and dry rates as the water-rate. From the reports on the working of the scheme since received, it will be seen that the maximum area irrigated was only 106 acres and had therefore fallen far short of the original estimate of 500 acres.

Paragraph 2 of Board's Proceedings page 9 of G.O. 1735, Revenue, 24th July 1915.

Please see the Irrigation Chief Engineer's note on page 11 of Notes to G.O. 3015, Revenue, 16th October 1914.

The water-rate actually charged, which on the average amounted to less than Rs. 5 per acre, was also far below the actual cost to Government. The scheme proved therefore to be a failure.

(viii) *Paragraphs 60 to 62—Glass manufacture.*—Here Mr. Tressler describes the attempt made by the department in glass manufacture. It is pointed out that at present endeavours are devoted in designing a furnace of high thermal efficiency and that for chemical side the assistance of the Professor of Chemistry in the Presidency College is being looked to. In this connection, attention is solicited to the note by Sir Frederick Nicholson on the feasibility of undertaking glass manufacture in this country on pages 2 to 8 of G.O. No. 76, Educational, dated the

25th January 1915. Sir Frederick observed that glass manufacture could only succeed where coal, alkali and materials were at their cheapest and best and where there was an expert staff to instruct and guide the workmen under conditions physically endurable and that not one of these conditions was found or ever would be found in

C.G.T.—22-8-15.

this Presidency. The Department has not now got the necessary expert staff for this industry and it is therefore doubtful if the experiments undertaken without the guidance of an expert would prove successful.

5. The following two further points seem to deserve notice:—

(a) *Paragraph 10.*—It is stated that the difficulties in recruiting subordinates for industrial experiments was largely due to the amalgamation of the Pumping and Boring staff with the Public Works Department. Whatever might have been the effect of this step on the recruiting referred to, the amalgamation was sanctioned by Paragraph 9, page 3 of G.O. 988, Educational, the Government only at the instance of 18th August 1914.

(b) *Paragraph 14.*—The reference here to the construction and opening of a Normal Training school in Madras may be mistaken for a definite committal to the scheme. The proposal of the Director in this regard is only under the consideration of Government. It cannot be said whether it would eventually be approved.

6. The report does not refer to the experiments on soap manufacture and edible fats entrusted to Sir Frederick Nicholson.
G.O. 354, 26th March 1915. A special report from him is due in November next.
G.O. 733, 5th July 1915.

7. A draft order on the portion dealt with in Educational is submitted for approval. Any orders that may be passed on the clauses in paragraph 4 *supra* may be embodied in separate memorandum or demi-official to the Director.

8. The file may, it is submitted, be sent to the Revenue Department with reference to the portion of the report dealing with the pumping and boring work and the orders that may be passed by them may be embodied in the draft order afterwards.

S.K.—20-8-15.

C.R.—20-8-15.

I hope I may be pardoned if my notes above go somewhat further than my short experience of the office would seem to justify. I fully recognize that an officer in the position of the Director of Industries must be given a very free hand, and that Mr. Tressler is putting a great deal of ability and unbounded energy into his work, but I cannot help feeling that he is in serious danger of spoiling good work and perhaps of embarrassing the Government by attempting too much. Mr. Chatterton in all his years of industrial development has initiated not more than half a dozen schemes, one at a time, and has made successes of them all. Mr. Tressler has as many in hand at once, none of them certainly progressing so that they can be left to themselves, he has a large amount of educational work also in hand, and yet he wishes to launch out in addition into a buying and selling agency, a labour bureau, a lender of Government money and in other directions. The South India Chamber of Commerce have recently ridiculed his efforts and will doubtless return to the attack upon publication of this report. Their criticisms are difficult to meet. I should be disposed to restrict the order to the briefest possible as in the draft put up by the office, and to advise Mr. Tressler demi-officially that Government looks to him to "make good" on his main schemes such as lime bricks, oil expression, the leather school and industrial education generally, and does not wish him to embark on any more new departures such as the labour bureau or gunny manufacture until these major schemes have been fully established and are on a fair way to success.

C. G. TODD HUNTER—23-8-15.

To the Revenue Department.

REVENUE DEPARTMENT.

The paragraphs in the report that relate to this department are 8, 33—47 and 54.

For last year's report please see G.O. 1030, Educational, 1st September 1914.

No special remarks seem, it is submitted, to be called for so far as the Pumping and Boring branch of the department is

* Supplemental account rules sent to Accountant-General u.o. on 16th August 1915.

† Referred to the Director of Agriculture and the Board of Revenue for remarks.

decided to abandon the Gunjana project—

G.O. 1735, Revenue, 24th July 1915.

concerned. Mr. Tressler's proposals for the revision of the loans* rules and for the hire-purchase† of machinery from the department are still under the consideration of Government. It has been paragraph 54 of the report—immediately after the harvest of the standing crops. These facts may perhaps be mentioned in the order.

K.A.M.—31-8-15.

N.P.A.—1-9-15.

T.S.R.—1-9-15.

W.A.K.—1-9-15.

I think a reference to the fact that the loans rules and the question of hire purchase of machinery are under consideration is all that is needed in Revenue. The deace of the Gunjana project may also be mentioned.

A. H. A. TODD—3-9-15.

Mention should perhaps also be made of the possibility that the control of the pumping and boring operations may be transferred to the Agricultural department. This also is under consideration.

Will Educational kindly circulate the case to the Honourable Member (Revenue)

L. DAVIDSON—4-9-15.

To the Educational Department.

EDUCATIONAL DEPARTMENT.

With reference to the Revenue Department note on the previous page, paragraphs 3 and 4 have been added to the draft order which is for approval.

S.K.—6-9-15.

C.R.—6-9-15.

C. G. TODD HUNTER—7-9-15.

P[ENTLAND]—8-9-15.

A. G. C[ARDEW]—9-9-15.

Submitted that the draft order may now issue.

2. A draft demi-official to Mr. Tressler with reference to the Secretary's note at page 6 *supra* is submitted for approval. The draft also embodies the Secretary's instructions in the margin of page 3.

Taken by the Secretary personally to His Excellency the Governor and left with him.

3. It is for orders whether the whole report may, as usual, be placed on the Editors' Table. Perhaps paragraphs 10 and 14 may be slightly modified.

S.K.—13-9-15.

C.R.—13-9-15.

His Excellency has marked on this administration report two passages which he thinks should be omitted and also one or two queries for information. He considers also that paragraphs 11 to 14 require to be so modified as to include only such portions as record what has been actually sanctioned.

H. G. STOKES—15-9-15.

EDUCATIONAL DEPARTMENT.

With reference first to His Excellency the Governor's *queries* in the report, it is submitted as follows (the omissions and modifications will be dealt with later in the note):—

(i) *Paragraph 9 (sub-paragraph 1)*.—Attention is solicited to G.O. No. 52, Educational, dated the 16th January 1915, in which the Government directed the Director of Industries to undertake experiments in the production of oil for export and also to make a practical trial of the apparatus considered suitable for adoption in substitution for country mills. They accordingly sanctioned the purchase of one large and two small oil mills by the Director—please see G.O. No. 158, Educational, dated the 13th February 1915. With the large mill the Director hopes to produce oils on a commercial scale for the European market. It is also likely that the oil produced may be refined, but it may be better not to raise hopes which may not be fulfilled. In this view perhaps, the words “and with this plant it is hoped to make a bid for the refined oil market” may be omitted: similarly the last sentence of the first sub-paragraph of paragraph 66.

(ii) *Paragraph 9 (sub-paragraph 3)*.—The Director's reference here to the Gunjana project, details of which are given in paragraph 54 and a short history on page 5 *supra*, may also be omitted, as it is not in proper form. It is stated in the draft order that it has since been decided to close the installation.

(iii) *Paragraph 13 (sub-paragraph 1)*.—Attention is solicited to paragraph 2 (3) of note on page 1 *supra*, from which it will be seen that funds have since been provided for the construction of the Madura Technical Institute building and orders issued to push on with the work.

(iv) *Paragraph 13 (sub-paragraph 3)*.—The scheme referred to by Mr. Tressler is apparently that contemplated by him in connection with his draft Technical Education Code. There is at present a Government Technical Institute at Madura and proposals are under consideration for the establishment of a trades school at Madras. As regards the other centres mentioned in the report, it is submitted that a proposal regarding the development of the St. Aloysius' Industrial school, Vizagapatam, which has been under consideration, has been ordered by His Excellency the Governor to lie over till orders are passed on Mr. Tressler's new Code. The Government have decided to establish a mechanical engineering school at Cocanada. But Mr. Tressler has recently stated that private agencies are likely to open industrial schools in the town. A reference on the matter has been made to the Collector of Gōdāvari. Mr. Tressler's reference here to the development of a private school at Cocanada seems somewhat ambiguous. There is now no private school there. The Government school is to be newly started. Perhaps “Cocanada” may be omitted here and added to “Madras and Madura” in the line above.

The Government have under contemplation the development of the Mission Industrial school at Coimbatore. A large grant of Rs. 15,345 has been made for the equipment of this school. No further scheme has yet been put forward before Government in regard to it.

Mr. Tressler states that two or three other centres are also under contemplation. It is submitted that there is a proposal before the Government to develop the Mission Industrial school at Tanjore. A site has been acquired, but further progress has been postponed pending the issue of orders on Mr. Tressler's Code. A large grant has also been made to the Bellary St. Joseph's Girls' Industrial school. The Director of Industries apparently has other schools also in view for development with special State aid.

(v) *Paragraph 14 (sub-paragraph 1)*.—The Government have not yet sanctioned any scheme for the opening of a normal training school for industrial teachers. Mr. Tressler has submitted a scheme for the establishment of such a school and it is now under the consideration of Government. The whole paragraph may perhaps be omitted as it deals with proposals in the Code which have yet to be approved.

2. *Omissions and modifications of certain paragraphs of the report*—(i) *Paragraph 9 (sub-paragraph 1) of the report*.—His Excellency the Governor has directed that a portion of paragraph 9 should be omitted.

(ii) *Paragraph 9 (sub-paragraph 2)*.—From a recent report about the Punalur paper mills, it is observed that nothing more than cleaning the plant had been done by the supervisor who had been deputed for the work. The details given in paragraph 64 of the report do not also warrant the statement that “experiments are also in progress with regard to the manufacture of wood-pulp.” This sentence may therefore be omitted.

The reference in this sub-paragraph about the soap experiments conducted by the Director in Mysore seems also unnecessary, as this Government have separately asked Sir F. Nicholson to conduct soap experiments. The latter fact is referred to in the draft review.

The whole of this sub-paragraph may perhaps go out; and similarly the portion enclosed in brackets in paragraph 65.

(iii) *Paragraph 10 (sub-paragraph 2)*.—It has already been proposed to omit the second sentence of this sub-paragraph. In view of His Excellency's orders on page 24 *supra*, the whole of this sub-paragraph may also be omitted. It may not be to the interest of the public to know that the pumping and boring establishment has been incorporated with the Public Works Department.

(iv) *Paragraph 11 of the report*.—His Excellency has directed that the first sub-paragraph of this paragraph should be omitted. Perhaps the second sub-paragraph also may be omitted.

(v) *Paragraph 12 of the report*.—This paragraph states what all schemes in regard to industrial education have been submitted to Government. If, as directed by His Excellency on page 8 *supra*, only such portions as record what has actually been sanctioned should be retained, the portion of the paragraph within brackets may, it is submitted, be omitted. If this is approved, the portion shown in brackets in paragraph 6 of the report may also be omitted.

(vi) *Paragraph 13 of the report*.—Sub-paragraph 2 of this paragraph may be omitted. Mr. Tressler's scheme of education and the Code are still under consideration.

(vii) *Paragraph 31 of the report*.—The first sentence of this paragraph may be omitted. Apparently, private agencies are contemplating the establishment of schools in the three places mentioned. The whole of the second sub-paragraph may, perhaps, also be omitted.

(viii) *Paragraph 41 of the report*.—The reference here to the loan rules and the hire-purchase system may stand since the Revenue Department have suggested the addition of a paragraph to the draft order to the effect that the proposals are under the consideration of the Government.

(ix) *Paragraph 52 of the report*.—It is for orders whether the words “and gunny manufacture” may be omitted here.

(x) *Paragraph 53 of the report*.—The portion enclosed within brackets may, perhaps, be omitted.

S.K.—20-9-15.

C.R.—21-9-15.

Under instructions from His Excellency the Governor I have cut out the passages that relate to schemes which have not yet been approved or are likely to invite unfavourable comment and some that have no concern with industries. I have left standing the portion about loans as Revenue have drafted on it. The paragraphs should be renumbered.

C. G. TONHUNTER—29-9-15.

Done.

C.R.—29-9-15.

[G.O. No. 1090, Educational, dated the 1st October 1915.]

C.No.2500, from the Director of Industries, No. A.11, dated 17--7-1915.

ORDER:
P.S.

M. 10908 1-10-15

Recorded.

2. Orders have been issued for the early construction of new buildings for the Madura Technical Institute together with a students' home and superintendent's quarters.

3. The proposals of the Director for the revision of the rules for the grant of loans and for the introduction of a system by which ryots can obtain agricultural machinery from the department by hire purchase are under the consideration of Government. ^{Government} They are also considering the question of the possibility of transferring the control of the pumping and boring operations to the Agricultural Department.

4. The Government have decided that

para 27 + 29, page 9 + 10 of the report
Sp. No. 2380 W (A)
7.12.14
Sp. No. 274 W (B)
17.5.15

para 41, page 13 of the report

Rev. Secy note on page 22 of R.P.

Sp. No. 1735 Rev (5)
24.7.15

para 56, page 11 of the report

the Gunjana pumping installation should be closed after the harvest of the standing crops.

5. ~~The Government have issued~~
~~have been issued~~
 Separate orders that experiments connected with the manufacture of soap ~~and~~
~~lets~~ should be carried on by Sir Frederick Nicholson in the Department of Fisheries.

SK
 6.9.15. CA
 6.9.15

85
 7.5.15

Brief

42. No 354 Est
 26.3.15 (19)

CA
 11/1/15

Signed & sealed
 as
 29/1/15

- To the Director of Industries. ✓
 " Honorary Director of Fisheries. ✓
 " Revenue Department. ✓
 " Public Works Department. ✓
 " Public Works Department (Irrigation) ✓
 " Public Department (for Presidency Administration Report). ✓

ORDINARY.

PRESS SLIP.

PREFERENCE.

URGENT (a) 1915

Scott. II-39-2-15.

DEPARTMENT.

Current No. dated 191
 G.O. No. 1090 dated 1-10-1915

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 { Notes
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Brie

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Notes.

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Total		35	20

FOR ISSUE.†

	Letter only.	Complete G.O.	Special issue copies of G.O.		Notes.
			No.	Papers.	
Signature copies		6			
India Office					
Govt. of India	Dept.				
Revenue Department		4			
Public Works Department		4			
Local and Municipal Department					
Educational Department					
Public Dept.	Dept.	4			
Judicial Dept.					
Political					
Financial Dept.	Total				
Marine Dept.					
Ecclesiastical Dept.					
Total					

Spare copies

The	6		
The			
The			
The			
The			
The			
The			
The			
The			
The			
The			
The			
The			
The			
The			
Total		34	

INSTRUCTIONS FOR THE SECRETARIAT.

(a) If a paper is marked to be printed urgently, the Superintendent of the section concerned should sign the Press slip. The Superintendent should exercise a careful discretion in the matter.

(b) Each letter, memorandum, or order, or set of orders, in the file of correspondence should be headed in succession with the Roman numeral I, II, III, etc., the number being written in red ink or blue chalk above the item. The particular papers to be printed in the special issue-copies should be indicated by the Roman numeral (I, II, etc.) by which that item has been headed in the correspondence file. All matter, including marginal remarks or references, to be printed should be written in ink and matter which should not be printed should be encircled. Initials and signatures that are not quite legible should be re-written distinctly.

(b¹) For rules regarding printing of notes, see rule 315 of the office Manual.

(c) The number of copies and the details of distribution should be filled in by the Superintendent or Referencer concerned.

(d) In the absence of special instructions to the Press to keep matter standing for a specified period, ordinary papers of 8 pages and under will be kept standing for one week, and larger papers for two weeks only. The type of notes and of all confidential papers to be distributed immediately after striking.

(e) This slip, properly and completely filled in, should accompany every paper sent to Press; it will be returned by the Press when proofs are furnished; it should be sent to the Press when a call is made for revised proofs or when a corrected proof is sent for striking. When finally returned by Press it should be filed with the original order or letter.

INSTRUCTIONS FOR THE PRESS.

(a) If, in the opinion of the Superintendent of the Press, a paper has been marked urgent unnecessarily, he should send the Press slip to the Registrar with a remark to that effect.

(b) Unless a note to the contrary is made against the matter, pencil entries should not be printed. The Superintendent of the Press may bring to the notice of the Registrar any instance of incomplete or careless editing.

(c) Signature copies of letters to the Secretary of State or to the Government of India should be printed on hand-made paper.

(d) This slip should be returned by the Press to the Secretariat when proofs are furnished; it will be sent back to the Press when proofs are returned corrected and should be finally returned to the Secretariat when struck-off copies are supplied.

(e) The names of the Secretary and Members should be printed in full when they occur on the right hand side, only the first time when they appear on the left side, the initials alone being printed later.

* Copies distributed on ‡ (Press Clerk).

† Copies distributed on ‡ (Press Despatcher).

‡ To be initialled and dated.

[P.T.O.]

TO PRESS, MADRAS OOTY.

A	B	C
Please send proof in duplicate. The papers have been carefully edited.	Proof returned corrected. Please strike off and send number of copies as indicated.	As the matter is clear manuscript has been carefully edited, (b) proof not be sent. Please print and supply number of copies as indicated.
Type may be released after usual interval at once.	Type may be released after usual interval at once.	Type may be released after usual interval at once.
Referencer. Clerk.	Referencer. Clerk.	Referencer. Clerk.
Supdt.	Supdt.	Supdt.

SPECIAL INSTRUCTIONS.

Department of Industries.

Recording the administration
report of the ——— for the year 1914—

TO BE FILLED IN BY THE PRESS.

Diary.	Initials of Press official.
Received in Press on.....	6/10/15
First proof furnished on.....	12/10/15
Call for revised proof received on.....	
Revised proof furnished on.....	
Corrected proof received for striking on.....	21/10/15
Final copies supplied on.....	22/10/15

Account of copies.	Complete copies.	Notes.	Issue copies.	Special E.T. edition
Supplied to Secretariat for Record.....	35			
" " " Issue.....	35			
" " " for Extra E.T. copies to supply requisitions for sale to the public.				4
For Volumes.....	16			
For supply to newspapers and institutions admitted to the privileges of the E.T.				
Total ...	86			