

Government of Madras.

EDUCATIONAL DEPARTMENT.

Recd.

Regd.

} 1915.

Enclosures

Spare copies

706 *13*
G.O. No. 705, 30th June 1915.

College of Engineering, Madras.

Recording the report on the working of the — during 1914-15.

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GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

Letter—from the Hon'ble Mr. H. S. DUNCAN, M.A., Acting Director of Public Instruction.

To—the Secretary to Government, Educational Department.

Dated—Madras, the 14th June 1915.

No.—Ref. on Our. 2983.

I have the honour to submit herewith, for the information of Government, a copy of my Proceedings R.C. No 2983, dated 1st June 1915, reviewing the report on the working of the College of Engineering, Madras, during the year 1914-15.

ENCLOSURE.

Proceedings of the Director of Public Instruction, dated 1st June 1915,
R.C. No. 2983.

READ—the following papers :—

Letter—from W. H. JAMES, Esq., B.Sc., Principal, College of Engineering, Madras.

To—the Director of Public Instruction.

Dated—the 12th April 1915.

No.—Dis. 206.

I have the honour to submit the administration report of the College of Engineering for the academic year 1914-1915.

2. Staff.—Mr. C. L. T. Griffith, Professor of Civil Engineering, was on leave on medical certificate out of India from the 29th June 1914 in continuation of the summer vacation to the 18th December 1914 and in the vacancy caused by his absence, M.R.Ry P. V. Manickam Nayakar Avargal, B.E., Executive Engineer, Public Works Department, acted as professor.

Mr. J. Webster, Instructor in Mechanical Engineering, was appointed to act as Inspector of Factories and he was relieved from his duties in this college on the 11th June 1914. M.R.Ry. V. Ayyadurai Ayyar Avargal, Assistant Engineer, Public Works Department, succeeded Mr. Webster as Instructor in Mechanical Engineering and he joined for duty on the 23rd July 1914. He continued to act till the end of the year, Mr. Webster's acting tenure of office having been extended up to the 11th August 1915.

Conductor R. S. Sheridan, Supervisor, first grade, Public Works Department and Assistant Instructor in Civil Engineering at this college, was granted furlough for 15 months from the 25th September 1914 and M.R.Ry. P. V. Krishna Ayyar, Overseer, second grade, Public Works Department, was posted for duty in his place from that date.

Owing to the increase in the number of students admitted into the college, a temporary assistant instructor was added to the staff and M.R.Ry. P. V. Sessa Ayyar, Overseer, second grade, Public Works Department, was appointed to the post and he joined for duty on the 10th July 1914.

M.R.Ry. T. Ponnambala Nayakar was appointed, with effect from the 12th August 1914, foreman-fitter of the college workshops on probation for six months in place of Ramaswami Nayakar deceased.

C. Narayanan Nayar was confirmed as gymnastic instructor of the college in place of Ghouse Khan who retired from service, with retrospective effect from 3rd January 1914.

M.R.Ry. M. S. Narayanaswami Ayyar, Overseer, 1st grade, Public Works Department, worked as instructor in connection with the Revenue officers' class from the 6th July 1914 to the 19th December 1914, when the class was closed for the year.

M.R.Ry. C. N. Srinivasa Rao, who had been acting as head clerk during the absence on leave of M.R.Ry. A. Sivasankara Mudaliyar, himself proceeded on leave from the 18th April 1914 and M.R.Ry. K. V. Kunhiraman, librarian and storekeeper of the college, was posted as acting head clerk from the above date till the 24th August 1914 when the permanent incumbent returned to duty.

I. Narayanaswami Ayyar, first assistant clerk, took combined leave for one year from the 16th March 1914 and P. V. Seshagiri Rao, head clerk, Assistant Inspector's office, Kistna district, acted for him from the 18th April 1914 to the 23rd August 1914 and T. Vedanta Achari, second assistant clerk of this college, from the 24th August 1914 to the 15th March 1915.

During the absence of Kunhiraman as acting head clerk, T. Vedanta Achari acted as librarian and storekeeper from the 18th April 1914 to 23rd August 1914.

T. V. Kuppuswami Mudali who was appointed to act as workshop clerk on Rs. 20 was given the full pay of the appointment (*i.e.*), Rs. 25 from 1st January 1915 as sub. *pro tem.* workshop clerk.

3. The number of students on the rolls at the end of the academic year was—

Class.	Practical course.	In college.				
		Fourth year.	Third year.	Second year.	First year.	Total.
Engineer class	18	..	21	25	28	92
Upper subordinate class ..	29	..	..	36	42	107
Lower subordinate class ..	..	..	..	..	45	45
Probationary subordinate class ..	..	..	..	114	118	232
Total ..	47	..	21	175	233	476

Excluding the students under practical training the total number of students actually in the college on the 31st March 1915 was 429.

The corresponding totals for the previous five years were—

Year.	
1913-14	380
1912-13	357
1911-12	308
1910-11	272
1909	213

The increase in the total for the year under report is due to the larger numbers in the upper subordinate and probationary subordinate classes.

The distribution of the students by classes of community, districts, wealth and occupation of parents is given in appendices A, B and C.

Of the total number 68.0 per cent. were Brahmans; 20.9 per cent. non-Brahman Hindus; 2.7 per cent. Europeans and Eurasians; 6.5 per cent. Indian Christians and 1.4 per cent. Muhammadans.

The percentages of Brahmans and Europeans have fallen a little this year, while those of other classes of the community have risen slightly.

The reversion of some of the military students to their regiments for military duty and the withdrawal of a Eurasian student from the college account for the drop in the percentage of Europeans and Eurasians.

As regards district 19.5 per cent. of the total numbers belonged to Tanjore, 11.2 per cent. to Kistna, 8.5 per cent. to Gōdāvari, 7.3 per cent. to Malabar, 6.8 per cent. to Madras, 5.5 per cent. to Trichinopoly, 5.2 per cent. to Tinnevely, 4.6 per cent. to Travancore, 4.3 per cent. to Chingleput, 3.2 per cent. to North Arcot, 2.3 per cent. each to Salem and Madura and 1.8 per cent. each to Guntūr and Mysore.

4. Admission of students.—One hundred and twenty-four candidates applied for admission to the Engineer class and of these 29 were enrolled.

There were 13 military and 441 civil candidates for the probationary subordinate class and from these five military and 120 civil candidates were selected for admission.

5. *Examinations—Engineer class, senior division.*—The civil branch contained 16 students, and of these one failed to pass the final examination. In the exceptional circumstances due to the change in the Engineer courses, sanction of Government was obtained for the posting to practical training of the student who failed, to enable him to qualify for the diploma of an upper subordinate.

The average percentage of marks gained was 55.6.

The mechanical branch consisted of three students. All passed the examination, one with honours, gaining 62.2 per cent. of the total marks.

Second year division.—Twenty-four students constituted this class. All except three qualified for promotion. Of the three failed students one joined the junior division of the upper subordinate class and two severed their connection with the college.

First year division.—All the 27 students forming the class went on with the second year of the course in accordance with the rules.

Upper subordinate class, senior division.—This class consisted of 29 students. All passed the final examination, four with honours. The average percentage of marks gained was 60.7.

Junior division.—This division was represented by 38 students. All appeared for the examination and qualified for promotion to the senior division except one who remained in the same class.

Lower subordinate class.—Three of the 34 students in this class failed to pass the final examination and of these two rejoined the class in order to appear again, but the third did not return to the college. The percentage of marks gained by this class was 53.9.

Probationary subordinate class, second year division.—This was a class of 94 students and 83 qualified to pass on to the higher courses. Owing to the demand for upper subordinates sanction was obtained for the promotion of 40, in place of the normal 30, to constitute with three military probationers the upper subordinate class of this session. The remaining 40 went on for a third year's course of training as lower subordinates.

Of the 11 unsuccessful students nine rejoined the probationary subordinate class and two left the college.

First year division.—In this division there were 108 students and in accordance with the college rules all entered on the second year of study. Particulars of the marks obtained by all classes in the several branches of the examinations are given in appendix D.

6. *Honours and distinctions.*—The college medals for the session were awarded to the undernamed final year students:—

Gold medal—N. Govindarajan—Engineer class.

Silver medal—Sergeant T. Bertram—Upper Subordinate class.

Bronze medal—P. Ananthanathan—Lower Subordinate class.

The Harris gold medal for proficiency in electrical engineering was awarded to S. Suryanarayana and the DeWinton gold medal for proficiency in hydraulic engineering to P. S. Sundaram of the Engineer class.

The University Rao Bahadur Subbaraya Achariyar gold medal was gained by N. Govindarajan.

7. *Prizes.*—The special college prizes were awarded as follows:—

Engineer class.—The Colonel Love Prize for proficiency in applied mechanics to G. Krishnaswami.

The University J. A. Jones' prize for hydraulic engineering to N. Keshava Rao and N. Durairajan.

Upper Subordinate class.—The Colonel Rogers' prize went with the medal to Sergeant T. Bertram, who also gained the Colonel Love prize for hydraulic engineering and the H. J. Thompson prize for construction, building-drawing and estimating.

The Madhava Rao prize for skill in workshop practice was awarded to Corporal W. H. Donald.

Lower Subordinate class.—The Colonel Love prize to the senior student P. Ananthanathan.

8. *University examinations.*—Six final year students of the Engineer class, six students under practical training and nine ex-students appeared for the B.E. Degree examination held in April 1914, and of these six passed, five in the civil branch and one in the mechanical branch.

For the F.E. examination 36 candidates presented themselves, of whom 12 were third year students, 17 second year students, 4 students under practical training and 3 ex-students. Eleven were successful in all—3 third year students and 8 second year students.

In view of remarks made in previous years on University results referred to in these reports, it should be made clear that a comparison of the percentages of passes year by year in University examinations can afford little reliable information for any purpose and particularly in these years when the courses of instruction and the examination are non-currently undergoing modification. The satisfactory completion of the college course of training gives the qualification demanded for employment and the B.E. Degree is practically now a higher mark of distinction which only the best students of the year can hope to obtain.

9. *Practical courses.*—Eighteen Engineer (15 civil and three mechanical) and 29 Upper Subordinate students proceeded on courses of practical training in June 1914.

Thirteen of the Civil Engineer students and all the Upper Subordinate students were posted as usual to Public Works divisions.

The other two students of the Civil Engineer class took up appointments in the service of the Government of Mysore immediately on the termination of their theoretical courses.

Of the three Mechanical Engineer students, the senior was selected apprentice Engineer and posted to the Public Works Department Workshops, Madras. Another joined the Madras and Southern Mahratta Railway Workshops at Perambore and the third elected to undergo training in the Power Station of the Madras Electric Supply Corporation, but had joined only a few days when he was granted a Government of India architectural scholarship which necessitated his proceeding at once to Bombay for the prosecution of his studies in that line.

Owing to the pressing demand for subordinates last year Government decided to offer appointments to the Engineer and upper subordinate students before the termination of the full period of practical training, allowing service in the Public Works Department to count as qualifying for the College diplomas. The period of training of these students was reduced on this account to from ten to eleven months on the average.

The practical courses of two upper subordinate students were extended by the period they were away from the divisions in which they were undergoing training.

All the students under practical training attended the Body Guard riding school for equitation course.

10. *Military students.*—The number of military students on the rolls of the college at the end of the academic year was sixteen distributed as follows:—

Practical course	...	...	...	...	...	6
Upper subordinate class (senior division)	...	...	...	...	...	Nil.
Do. (junior division)	...	...	...	...	...	1
Probationary subordinate class, second year division	...	...	...	...	...	4
Do. first year division	...	...	...	...	...	5
Total	...	...	...	...	...	16

At the commencement of the session there were 19 military students attached to the college but soon afterwards three voluntarily applied to be allowed to return to their units which have since proceeded to the front.

In the list of killed after the battle of Mons in the early days of the war I regret to say appeared the name of Corporal Herridge, Dorset Regiment, who completed the college course very creditably about two years ago.

11. *Revenue officers' classes.*—We were only able this year to provide accommodation for these classes by taking over the students' reading room for the purpose. Two batches were under training—the first consisting of thirteen officers from July 1914 to September 1914 and the second of ten officers from September 1914 to December 1914.

The extension of the period of deputation here from two to three months unquestionably has a more than proportionate effect in the way of making the training effective, for the end of the course is not now on the class before they have settled down to their studies. From observation of the work down in the classes it is very clear that there is appreciable inequality between batches in the desire shown to make the best of their opportunity for gaining technical knowledge, and apparently a great deal depends on the example set by the senior officer among them.

12. *Survey camp.*—The camp of January 1915 was held at Saidapet, St. Thomas' Mount and Pallāvaram, from January 4th to January 30th, with a total of 427 students in attendance.

The junior classes E-IV and P.S.-II were at Saidapet from January 4th to 23rd where they were employed on surveys of the town, river, Teachers' College and Guindy Institute compounds, by plane-table, chain and compass, and by chain only. The work turned out by these students was creditable in quantity and well done as regards neatness and accuracy of the finished plans.

The other classes divided their time between St. Thomas' Mount and Pallāvaram—the Professor of Civil Engineering—taking one section consisting of Engineer class, second division, Engineer class, third division, lower subordinate class and half probationary subordinate class, first division, to start with at Pallāvaram and changing over after half the period with the instructor in surveying, who had upper subordinate class, first division, upper subordinate class, second division and half probationary subordinate class, first division.

The plane-table work of Engineer class, third division and probationary subordinate class, first division, was well done, and the chief credit for this is due to the preliminary training carried out by the Instructor in surveying and the Assistants during term time. The levelling work done by the Engineer class, second division, Engineer class, third division, upper subordinate class, second division and lower subordinate class consisted of running fly levels for practice in quickness and accuracy, contouring of hills, taking cross sections along the line of a proposed water-supply channel, and a special feature was made of cross sectioning tank bunds for estimates of quantities of cost for repairs and enlargements. The levelling naturally was variable in quality, but the accuracy on the whole was satisfactory, and some improvement was shown in speed.

The upper subordinate class, first division, was engaged on traversing work of various kinds, simple triangulation, and on the measuring of heights and distances, and the lower subordinate class also did some simple traversing and measurement work with the theodolite.

The project survey taken up was for a tank to store water at Anakaputtur, on the Adyar river, with a connected supply main to St. Thomas' Mount, partly a channel skirting the contours and partly an underground pipe. The investigational work afforded good practice as the line had to be carried across varied country and the incidence of cultivated areas necessitating detours did not make matters any easier for the working parties. In accordance with our practice of recent years, the plane-table and levelling squads were attached to and nominally put under the orders of the senior class theodolite squads. We find this work very well as far as the distributing of work is concerned, and what is of some importance, it gives the senior students a little experience in managing a survey party and in using their own initiative.

The outstanding feature of the month was the excessive and unseasonal rainfall. This naturally caused some interference, but there was little or no shirking among the students: they worked in the rain if it was at all possible and the general health of the camps was in no way affected.

The discipline of all three camps was good, and the members of the staff did everything they could to make the training interesting and instructive.

The total cost of the camp to Government was Rs. 3,405.

13. *Engineering laboratories.*—The necessary alterations to the rooms on the ground floor of our main building to accommodate the Electrical Engineering laboratory were completed by the Public Works Department authorities towards the end of the summer vacation, and an overhead connection was made about the same time to the mains of the Madras Electric Supply Corporation for the supply of current. All the machines and other equipment or indent fortunately reached us just before the outbreak of the war, and the work of erection was at once taken in hand by the workshop staff under the direction of the Professor of Mechanical Engineering.

The new equipment includes a special testing set manufactured by the Lancashire Dynamo and Motor Company of Manchester, for supplying power to the several machines in the laboratory and which is capable of producing direct current at different voltages, and alternating current of varying voltages, and frequencies. It consists of three machines mounted on one bedplate, the rotors being coupled together by flange couplings and arranged so that either machine can be uncoupled at will. The centre machine is a shunt-wound direct current motor of 45 brake horse-power receiving current from the mains and capable of running at any speed between 375 and 900 revolutions per minute. On one side of this machine is an alternator with rotating field. The windings of the stator are brought out to a special terminal board fitted to the machine, so that the coils can be arranged either in series, parallel or series parallel. One, two or three phase current can be generated, the maximum output of machines being 50 K.V.A. at 25 periods, 375 revolutions per minute, and 100 K.V.A. at 60 periods, 900 revolutions per minute. On the other side of the motor is a compound wound direct current generator giving an output of 25 K.W. at 250 volts, 900 revolutions per minute. This is connected with a switch board so that it can be used as an ordinary generator or can be made to boost up or down the pressure of the main supply, giving direct current varying in pressure from practically zero up to 700 volts. The operation of the plant is controlled by a suitable four panel switch board.

Another experimental testing set, supplied by the British Thomson Houston Company of Rugby, consists of six machines coupled up in three two-unit sets, each set being mounted on a separate bed plate and arranged so that any one set can be coupled to any other by a flexible coupling. The first is a motor-generator set consisting of a 10 K.W. 220 volt, direct current machine, which can be used either as a shunt or compound wound generator or motor, coupled to a $7\frac{1}{2}$ K.V.A., 220 volt, three phase generator. The second set is similar to the first except that the stator of the alternator can be rotated by means of a rack and worm gear, and special arrangements are provided on both alternator and direct current machines for obtaining the wave form of the current. The third set consists of two six phase 7 K.V.A. rotary convertors. In conjunction with this testing set is a seven panel switch board, which although not permanently connected to the machines can be so connected as to give the students experience like that met with in the running of a power plant, and in the parallel operation of both alternating and direct current machinery.

Another testing set also supplied by the British Thomson Houston Company consists of a $7\frac{1}{2}$ K.W., 60 cycle, 220 volt, belt driven polyphase generator provided with three separate rotors so that the machine can be operated either as a polyphase generator, a synchronous motor, an induction motor with squirrel cage rotor, an induction motor with wire wound armature and internal starting resistance, or as an induction motor with wire wound armature and slip rings started by means of an external resistance and controller.

The other machines in the laboratories include a belt driven 3 K.W. alternating current generator by the Lancashire Dynamo and Motor Company a belt driven 3 K.W. direct current shunt wound generator by Lawrence Scott & Co., 2 horse-power

shunt wound motor by Lawrence Scott & Co., a $5\frac{1}{2}$ horse-power series wound motor by electro-motors, and a set of three small machines mounted on one bed plate consisting of a two phase induction motor, a 500 volt, $3\frac{1}{2}$ ampere generator and a 25 volt, 60 ampere generator.

The transformers installed are two-one K.W. transformer by the British Electric Transformer Company, and four 4 K.W. single phase transformers by the British Westinghouse Company, which are provided with various tappings and are intended for use with rotary convertors referred to above.

The storage battery equipment consists of a battery of 60 chloride cells having a normal discharge rate of ten amperes, a battery of 6 D.P. cells for calibrating instruments and having a discharge rate of 150 amperes for short periods, and a battery of 350 small cells also for that purpose.

With other miscellaneous apparatus and appliances, including an electro-magnetic rectifier, a small electro-plating plant, photometers standard measuring instruments, etc., we are now able to provide, as far as laboratory equipment is concerned, thoroughly satisfactory courses in electrical engineering. The laboratory has been in working order for the last few months, and it is to be hoped that next session we shall have the necessary staff to allow of our making fair and efficient use of the facilities we have now available.

A good deal of general work, chiefly for purposes of class demonstration, was carried out with our various materials testing and other machines, and we have also brought into use a small tank with its fittings and accessories which has been obtained for hydraulic demonstration work.

14. *Workshops.*—The students of all classes attended as usual for regular workshop practice. With our larger numbers we have now had to fall back on verandahs away from the shop in order to get space for additional benches—a most unsatisfactory expedient, particularly for teaching work. In the last report our urgent need of more accommodation was emphasized to the utmost extent possible, and I will only add now that with our anticipated increase next session in the total number of students from 429 to over 500, if recent proposals for an additional temporary structure do not materialize before June next, it will be impossible to carry on our instructional work even up to the present very moderate standard.

15. *Visit to works.*—The annual tours of inspection were undertaken as usual at about the end of the first term.

On the 18th September 1914 the students of the senior division of the upper subordinate class together with nine military students and thirteen students of lower subordinate and probationary subordinate classes, first year division, accompanied by the instructor in civil engineering and two other assistant instructors proceeded to Rajahmundry as the starting point for visits to works in the Godāvāri delta. The party on arrival at their destination inspected the railway bridge across the Godāvāri, the Public Works Department Workshop at Dowlaishweram, and afterwards the head works at Dowlaishweram and Vijeshwaram and the new lock under construction at the latter place. They then proceeded to Gunnavaram, where the aqueduct, the Mundipurlanka Lock and weir and a dredger at work in a lower lock channel were inspected. A visit was also on the way paid to the head works of the central delta at Bobberlanka. Returning to Rajahmundry they proceeded by rail to Cocanada where the Jagannaikpur road girder bridge under construction, the harbour groynes, jetty and dockyard and the water-works including head works storage and service reservoirs, filter-beds, etc., were seen.

The party then left for Samalkota where they visited the double lock under-tunnel and the agricultural farm, and from there went on to Bezwada for the inspection of works in the Kistna delta, including the anicut and head works at Bezwada the scene of the damage done there by the floods just previously, the head works at Sitanagram, the railway bridge and the Public Works Department Workshop at Bezwada, Ryves' canal, head regulator and lock.

At the same time the students of the Engineer III, Upper Subordinate II and Lower Subordinate classes made a tour of part of the Cauvery basin. As was the case last year, for convenience of supervision and in view of the limited accommodation available, they were divided into two parties. The professor of civil engineering

accompanied by one assistant instructor with the one party consisting of 59 students started from Erode. The river-bed and the bridge at the railway-crossing in the near neighbourhood were visited and the journey made to Bhavani for the inspection of the Kalingaroyan anicut and connected works, and the Cauvery and Bhavani river bridges at that place. The aqueduct, weirs, sluices, crossings, etc., on the Kalingaroyan channel were considered in detail with particular reference to the hydraulic problems involved, and the changes in the geological aspect of the basin and other conditions were noted on the way down the river to the Upper Coleroon anicut and the Cauvery dam, where some time was devoted to a study of the works at that point. Then followed the inspection of the Wyacondan channel works, the Puthur weirs and Kodamurti bridge, drainage sluices, stone groynes, and other river conservancy works. Some time was next spent at the Trichinopoly pumping station and the Rock Fort reservoir before proceeding further along the river to the Grand anicut where the head works and the system under the Cauvery-Vennar regulators received attention.

The other party accompanied by the instructor in mechanical engineering and one assistant instructor worked in the opposite direction finishing up at Erode. Three tours extended over thirteen days.

Another party comprising the second year divisions of the Engineer and probationary subordinate classes accompanied the instructor in surveying and drawing and three assistant instructors to the Nellore district. This party was also divided into two batches which traversed the same route but took the places in slightly different order. The following works were inspected by them:—

The Nellore anicut and head works, the railway bridge across the Pennar, Sarvepalli canal, Nellore tank channel, Nellore water-works and Nellore tank, Sangam anicut and head works, Devvur canal head sluice, Devvur branch channel. Head sluice and the regulator across the channel, Kanigiri main channel, Syphon culverts across K.R.M. canal, Kanigiri reservoir, Maldevi surplus works, southern and central channel regulator, eastern channel and masonry works in the channel for the first three miles.

The Mechanical Engineer students with the professor of mechanical engineering made a tour by way of Sivasamudram and Bangalore to the Kolar Gold Fields. Some time was devoted to a study of the works on the river, and the hydraulic and electrical plant in the Power station at Sivasamudram. At Bangalore visits were made to the electric supply sub-station, etc., and also the railway locomotive shops. Some days were spent in the neighbourhood of Kolar which were devoted to inspection of the pumping plant at Bathamangalam and the machinery installations on the gold field. By the courtesy of the Superintendent of the gold mines the students were also allowed to descend that shaft and see a little of the underground workings.

The total cost of the tours in which 345 students took part was Rs. 1,838.

Local Works.—From the end of July 1914 visits of inspection were paid as usual by all the classes to local works including the Madras Corporation water-supply and drainage works, the Law College pumping station, the Madras harbour works, the Government brickfields, the South India Industrials Cement Works, Madras, the South Indian Royal Ice Factory, the Electric Tram sheds, the Power Station of the Madras Electric Supply Corporation, the Public Works Department workshops at Royapuram, the Carnatic Mills, the Madras and Southern Mahratta Railway workshops at Perambore, the Red Hills Tank and Head works, the Cooum and the Adyar locks and also to the buildings in course of construction under the Public Works Department such as improvements to the Presidency Magistrate's Court, Georgetown, the new Hospital, Monegar Choultry, the Medical School, Royapuram, the compound wall to the hostel, the new Stationery stores, extension to the Sculpture gallery in the Government Central Museum and the Police lines at Washermanpet.

16. *First aid lectures.*—The importance to Engineers and subordinates, who in remote districts have concern frequently with accidents of a serious kind, of some knowledge of first aid to the injured is so obvious, that over five years ago arrangements were made with the then Honorary Secretary, St. John's Ambulance Association to provide regular courses of instruction for the senior students before their passing out of the college. The proposals received the sanction of Government but when it was a question of actually starting the classes the Honorary Secretary unfortunately was not able to get qualified persons who would do the work without

honorarium. Since then the matter had been in abeyance but in the changed circumstances of this year the Association has been able to find lecturers, and three separate classes were formed from 55 students of the senior Engineer and Upper Subordinate divisions and 19 members of the staff, who were desirous of taking advantage of the opportunity of gaining this useful knowledge. The majority of the students appeared for the examinations of the Association, but owing to the incidence of the survey camp we were not able to send in a team for the competitions. It is hoped these lectures will continue to be a regular feature of college work in future years.

17. *Special lectures.*—The special University lectures on drainage works delivered by Mr. J. W. Madeley, Special Engineer to the Madras Corporation, were attended as part of their course by the Senior Engineer class, and it is much to be regretted that the arrangements for Dr. Rosenhain's University lectures on Metallurgy fell through.

For Professor Geddes work in connection with town-planning, owing to the absence of the students during those weeks at survey camp, it was possible to place our large drawing office at his disposal for the purpose of a lecture room and some of our other drawing offices for the demonstration work, in which latter he also had the assistance of one of the members of the college staff, Mr. S. Subrahmanya Ayyar, Assistant Instructor in Mechanical Engineering. The senior students were back in time to attend Professor Geddes special course of University lectures.

18. *Hostels.*—A scheme for the provision of hostel accommodation to serve our needs with the college at Chepauk was drafted some time ago but with the project for the new residential college at Guindy under consideration it was not proceeded with. Matters in connection with the living quarters of students however showing no sign of improvement I felt impelled early in the session to put forward proposals for providing hostel accommodation for at least some of our students, and Government accepted the main suggestion that a temporary hostel might be opened in a locality conveniently situated to the college. Premises were accordingly rented in Tiruvatiswaranpet and the hostel was opened in working order on October 1st. The house is not very large and our endeavour to provide for the largest possible number naturally results in the floor area for the 50 members in residence being somewhat limited.

Government could not see their way to bear any portion of the rent charge, but made a grant of Rs. 300 to meet the cost of furniture and utensils, and also undertook to pay the salary of the part time Deputy Warden, who is a member of the college staff. It is the question of rent and establishment charges that will always be a difficulty in arrangements of this kind and it will not be easy to make such temporary hostels a real success unless some source of financial assistance can be made available for bringing down these charges to at least the corresponding expenses incurred when students are residing in ordinary lodging houses.

The staff of the hostel during the period of survey camp was utilized to good purpose for service with a temporary hostel run at Saidapet for the convenience of some of the junior students working at that place.

19. *Library.*—During the year 163 new books were added to the library bringing the total up to 5,669 volumes.

The number of books issued to the staff and students from 1st April 1914 to 31st March 1915 were 760 and 1,350, respectively, while 100 references were made to books in the reference library.

20. *Attendance and conduct.*—The percentage of the attendance to numbers on the rolls of the college was 96.0. Detailed particulars for the several classes are given in Appendix E. The conduct of the students during the year was quite satisfactory.

21. *Athletic club.*—Mr. C. L. Cartwright continued to carry out the responsible secretarial work and the club had quite a successful season.

In the inter-collegiate tournaments of the Madras Collegiate Athletic Association the college secured the Wilson Challenge cup for football and came second for Hockey and Swimming. At the annual sports the college finished first and holds the Travancore Shield for Athletics.

The Presidency College Football Tournament, confined to barefooted players, was won by the college, and our representatives also came second on total points at the sports of the South Indian Athletic Association open to all colleges. No tournament for the Rajah Venugopaul cup having been held during the year we continue to hold that cup.

The usual college sports were held in December and a considerable amount of enthusiasm was shown thereat by the competitors. The best athlete proved to be P. Murugayyan of the Probationary Subordinate class, second division, and the quarter mile flat race, the open event, was won by the representative of Pachiappa's College.

The financial condition of the club is good, and we have been able to add to the number of papers taken for the reading room.

Mr. Cartwright expresses his thanks to those members of the staff who have assisted with the affairs of the club, and mentions in particular Mr. W. C. Old and M.R.Ry. S. Subrahmanya Ayyar.

22. *Employment of passed students—Engineers.*—Of the 16 Engineers who completed their practical courses early in 1914 the senior N. Keshava Rao, Civil Engineer qualification was appointed Assistant Engineer in the Provincial service of the Public Works Department and the other 15 students obtained the following appointments:—

Temporary Upper Subordinate, Public Works Department, Madras	10
Junior Assistant Engineer, Special Works Department, Corporation of Madras	2
Probationary Assistant Engineer, Public Works Department, Ceylon	1
Supervisor, Tinnevely Municipality	1
Supervisor, Drawing Branch, Chief Engineer's office, Trivandrum	1
Total	15

Upper subordinates.—Twenty-nine upper subordinates satisfactorily completed their courses of practical training at about the end of July. Of these the senior, A. Chidambaram Pillai, was appointed a permanent upper subordinate, third grade, and the two military apprentices as overseers, first-grade, in the Public Works Department, Madras. One of these left the department subsequently and rejoined his battery, which was proceeding to the front. The remaining 26 students secured appointments as temporary upper subordinates in the Public Works Department, Madras.

Lower subordinates.—Twenty-eight lower subordinates completed their courses of instruction at the end of March 1914. Of these 26 secured employments as—

Acting Lower Subordinate, Public Works Department, Madras	1
Temporary Sub-overseers do. do.	4
Local Fund Overseers	3
Do. Special Overseers	2
Do. Sub-overseers	3
Irrigation Overseer, Native State	1
Temporary Draftsmen, Public Works Department, Madras	9
Do. Sanitary Engineer's office	2
Acting Draftsman, District Board Engineer's office	1
Total	26

The remaining two students furnished no information in spite of repeated reminders.

23. *Casualties.*—I regret to have to record that one student of the second year Engineer class and one student of the first year Probationary Subordinate class died during the year.

24. *Financial details.*—This information is given in Appendix G. It will be noted that the receipts for 1914-15 amounted to Rs. 30,269-14-11 and the charges to Rs. 1,59,385-9-0, resulting in a net cost to Government of Rs. 1,29,115-10-1. The average number of students on the rolls during the year was 436 and the net cost per student Rs. 296. The above figures are subject to modification after full

particulars of all adjustments, such as payments on account of Europe stores, etc., are communicated to this office. It has not been possible to completely verify the statement of accounts of the college for March 1915 with the Accountant-General's figures, but if there are any variations, the necessary alterations will be reported in due course to your office. The increase under charges of over Rs. 30,000 in the year under report is due to the adjustment made by the Accountant-General on account of the cost of machinery, etc., for the new Electrical Engineering laboratory supplied to the college in 1913-14 and payment of arrears of rates and taxes to the extent of nearly Rs. 9,000.

An abstract of receipts and charges for the last five years is given in Appendix H.

I desire in conclusion to acknowledge the loyal co-operation of all members of the staff in carrying on the work of the college.

APPENDIX A.

Class.	Europeans and Eurasians.	Indian Christians.	Muhammadans.	Hindus.			Others.	Total.
				Brahmans.	Non-Brahmans.	Panchams.		
Engineer classes	1	5	2	57	9	..	..	74
Upper subordinate classes	1	5	1	55	16	..	..	78
Lower subordinate class	..	1	..	37	7	..	..	45
Probationary subordinate classes	10	17	3	143	58	..	1	232
Total	12	28	6	292	90	..	1	429

APPENDIX B.

Districts.	Engineer class.	Upper subordinate class.	Lower subordinate class.	Probationary subordinate class.	Grand total.
Ganjam	1	..	1	5	7
Vizagapatam	..	..	1	3	4
Godavari	3	7	5	19	34
Kistna	2	10	9	27	48
Guntur	..	3	..	5	8
Bellary	..	..	..	2	2
Anantapur	..	1	..	..	1
Kurnool	1	..	..	1	2
Nellore	..	1	..	2	3
Madras	5	3	1	20	29
Chingleput	4	2	1	12	19
Cuddapah	..	..	1	1	2
North Arcot	1	1	..	12	14
Chittoor	..	..	..	1	1
South Arcot	1	3	1	2	7
Tanjore	13	16	16	39	84
Trichinopoly	5	6	1	12	24
Madura	3	1	1	5	10
Ramnad	..	1	..	1	2
Tinnevely	6	1	2	14	23
Coimbatore	3	4	..	4	11
Salem	3	2	..	5	10
Malabar	7	8	3	14	32
South Canara	3	..	..	2	5
Pudukottah	..	2	..	1	3
Cochin	1	..	2	..	3
Travancore	5	5	..	10	20
Mysore	7	..	..	1	8
Strait Settlements	..	..	..	1	1
Bombay	..	..	..	1	1
Hyderabad	..	..	..	1	1
Military students	..	..	..	9	9
Do. probationers	..	..	..	..	..
Total	74	78	45	232	429

APPENDIX C.

Class.	Wealth.				Occupation.						
	Richer class.	Middle class.	Poorer class.	Total.	Officials.	Petty officials.	Traders.	Land holders.	Artisans.	Mendicants.	Others.
Engineer class, third year	1	18	2	21	7	..	1	13	..	..	..
Do. second year	..	25	..	25	19	..	3	2	..	..	1
Do. first year	1	26	1	28	19	..	2	7	..	..	..
Upper subordinate class, second year	1	32	3	36	12	3	..	19	..	1	1
Military students	..	..	..	..	..	..	..	..	..	..	..
Upper subordinate class, first year	3	38	..	41	16	2	2	20	..	..	1
Military students	..	..	..	1	..	..	..	..	..	..	..
Lower subordinate class	2	43	..	45	24	..	..	21	..	..	1
Probationary subordinate class, second year	5	96	9	110	61	7	3	37	..	2	..
Military probationers	..	..	..	4	..	..	..	..	..	..	..
Probationary subordinate class, first year	1	109	3	113	55	1	18	39	..	..	..
Military probationers	..	..	..	5	..	..	..	..	..	..	..
Total	14	387	18	429	213	13	29	158	..	3	3

APPENDIX D.

Results of Examination of April 1914.

Engineer class, third year, Civil Branch—	
Branch I, Mathematics and Science	55.0
Branch II, Engineering	56.2
Physical Exercises	48.8
Average	55.6
Engineer class, third year, Mechanical Branch—	
Branch I, Mathematics and Science	55.1
Branch II, Engineering	64.0
Physical Exercises	53.2
Average	62.2
Engineer class, second year—	
Branch I, Mathematics and Science	61.9
Branch II, Engineering	59.9
Physical Exercises	52.8
Average	60.3
Engineer class, first year—	
Branch I, Mathematics and Science	58.0
Branch II, Engineering	62.6
Physical Exercises	51.7
Average	60.1
Upper subordinate class, second year—	
Branch I, Mathematics	66.7
Branch II, Engineering	59.9
Physical Exercises	57.3
Average	60.7
Upper subordinate class, first year—	
Branch I, Mathematics	59.5
Branch II, Engineering	60.2
Physical Exercises	52.2
Average	59.6

Results of Examination of April 1914—cont.

Lower subordinate class—						
Branch I, Mathematics	...	...	...	...	...	60.3
Branch II, Engineering	...	...	...	...	...	54.4
Physical Exercises	...	...	...	...	...	51.4
Average						54.9
Probationary subordinate class, second year—						
Branch I, Mathematics	...	...	...	...	...	61.3
Branch II, Engineering	...	...	...	...	...	58.9
Physical Exercises	...	...	...	...	...	54.0
Average						59.0
Probationary subordinate class, first year—						
Branch I, Mathematics	...	...	...	...	...	69.7
Branch II, Engineering	...	...	...	...	...	61.2
Physical Exercises	...	...	...	...	...	56.9
Average						64.5

APPENDIX E.

	Average strength.	Average daily attendance.
Engineer class, second division	21.0	19.8
Do. third	26.4	25.8
Do. fourth	28.3	27.1
Upper subordinate class, first division	36.3	35.1
Do. second division	43.4	41.9
Lower subordinate class	45.8	43.2
Probationary subordinate class, first division	116.0	110.7
Do. second division	119.1	115.4
	436.3	419.0
Percentage of numbers present to numbers on rolls	...	96.0

APPENDIX F.—Classification of vacancies notified during 1914-15.

	Government.				Local Boards and Municipalities.				Railways.				Native States.				Private Employers.				Total.
	Above Rs. 200.	Rs. 100 to 200.	Rs. 50 to 100.	Under Rs. 50.	Above Rs. 200.	Rs. 100 to 200.	Rs. 50 to 100.	Under Rs. 50.	Above Rs. 200.	Rs. 100 to 200.	Rs. 50 to 100.	Under Rs. 50.	Above Rs. 200.	Rs. 100 to 200.	Rs. 50 to 100.	Under Rs. 50.	Above Rs. 200.	Rs. 100 to 200.	Rs. 50 to 100.	Under Rs. 50.	
Engineer or Assistant.	1	..	..	..	1	6	..	..	..	..	..	..	..	..	..	..	1	..	..	..	9
Supervisor	..	5	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	2	..	..	11
Overseer	..	15	..	..	..	14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31
Sub-Overseer	..	14	83	..	..	9	15	..	..	..	..	..	10	7	..	..	..	..	..	..	138
Draftsman	..	1	16	65	..	3	1	..	..	6	3	..	..	..	..	..	..	1	1	1	100
Surveyor	..	39	47	..	..	22	15	..	..	..	..	..	..	..	..	..	..	1	2	..	126
Assistant or Conservancy Superintendent or estimator.	..	1	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
Total	1	6	88	199	1	10	48	31	..	..	6	3	..	..	12	7	1	3	3	1	420

APPENDIX G.—Financial details for the year 1914-15.

Receipts.				RS.	A.	P.
(1) Tuition and registration fees	...	...	...	29,479	1	0
(2) Miscellaneous	...	...	...	790	13	11
Total	...	...	...	30,269	14	11
Charges.				RS.	A.	P.
(1) Principal	...	...	...	15,000	0	0
(2) Professors and instructors including presidency and house-rent allowances	...	...	...	67,733	15	0
(3) Accountant, librarian, clerks and servants and grain compensation allowance	...	...	...	6,142	11	2
(4) Library, prizes, books, maps and medals	...	...	...	1,315	1	6
(5) Travelling allowance of officers, establishment and servants	...	...	...	2,101	6	0
(6) Europe stores and laboratory charges	...	...	...	34,627	4	5
(7) Workshop materials	...	...	...	6,548	12	7
(8) Survey camp and inspection tour charges	...	...	...	5,237	13	0
(9) Office contingencies	...	...	...	13,357	14	8
(10) Scholarships and stipends	...	...	...	5,173	5	0
(11) Exchange compensation allowance	...	...	...	1,925	6	0
(12) Riding and workshop fees	...	...	...	86	11	0
(13) Printing maps and diagrams at the Survey office	...	...	...	135	4	8
Total	...	...	...	1,59,385	9	0
Net cost to Government	...	...	...	1,29,115	10	1
Average number of students on rolls	...	...	...	...	NO.	436
Net cost per student	...	...	...	...	RS.	296
Average tuition fee paid by students per annum	...	...	...	...	...	64

APPENDIX H.—Comparative financial details.

	January 1910 to March 1911 inclusive.	1911-12.	1912-13.	1913-14.	1914-15.
Receipts	RS. 24,814	RS. 24,098	RS. 25,598	RS. 27,041	RS. 30,269
Charges	1,47,795	1,17,162	1,14,442	1,27,230	1,59,385
Net cost to Government	1,22,981	93,064	88,843	1,00,189	1,29,115
Average number of students on rolls	NO. 255	NO. 308	NO. 357	NO. 383	NO. 436
Net cost per student	RS. 482	RS. 302	RS. 249	RS. 261	RS. 296

R.C. No. 2983, dated 1st June 1915.

Recorded.

2. Tentative arrangements for the appointment of a Professor of Electrical Engineering and an Assistant are under consideration pending the sanction of the Secretary of State to the creation of a permanent professorship of Electrical Engineering.

3. The acting Director has perused with satisfaction the Principal's exhaustive report on the working of the college during the past year.

4. The college had a further accession to its strength, all the classes except the Engineering class having contributed to the increase. The average attendance of the students continued to be satisfactory.

5. Among the salient features of the year may be mentioned the equipment of the Electrical Engineering laboratory, the opening of a hostel in connection with the college in a rented building under the supervision of one of the members of the college staff whose salary as Deputy Warden is paid from Provincial funds, and the organization for the benefit of the students of a course of lectures on First Aid to the injured under the auspices of the St. John's Ambulance Association.

6. Administrative approval has recently been accorded to an estimate for extensions and improvements to the college workshop including the construction of a temporary structure. It is hoped that the work will be completed before the re-opening of the college after the present summer vacation.

7. The satisfactory working of the college during the year was creditable to the Principal and the staff of Professors and their assistants.

H. S. DUNCAN,
Ag. Director of Public Instruction.

To the Principal, College of Engineering, with a spare copy.
" Principals of other Government Colleges.
" Inspectors of Schools.
" Superintendent, School of Arts.

Copy to the Director of Industries, for information.
" Chief Engineer, Public Works Department, for information, with C.L.
" Government, for information, with C.L.

Order—No. 705, Educational, dated 30th June 1915.

Recorded.

(True Extract.)

P. RAJAGOPALA ACHARIYAR,
Secretary to Government.

To the Director of Public Instruction.
" Public Works Department.
Editors' Table.

OOTACAMUND.

EDUCATIONAL DEPARTMENT.

(Copy.)

LETTER to the Under Secretary of State for India.

No. 706, dated 30th June 1915.

FORWARDING a copy of the Proceedings of the Madras Government recording the report on the working of the College of Engineering, Madras, during 1914-15.

No. 706, EDUCATIONAL, 30TH JUNE 1915.

EDUCATIONAL DEPARTMENT.

LETTER—to

THE UNDER SECRETARY OF STATE FOR INDIA.

SIR,

With reference to the instructions conveyed in Lord Hartington's Despatch No. 9 (Public Works), dated the 18th May 1882, I am directed to forward a copy of the Proceedings of the Madras Government recording the report on the working of the College of Engineering, Madras, during the academic year 1914-15.

I have the honour to be,

Sir,

Your most obedient servant,

P. RAJAGOPALA ACHARIYAR,
Secretary to Government.

OOTACAMUND,
30th June 1915.

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[Letter

1840 at Louisville, Ark.

boil deep with 20 mass of honey & salt

Miss
Cotton

bebena D

21.5.16