

Government of Madras.

EDUCATIONAL DEPARTMENT

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Enclosures

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G.O. No. 724, 3rd July 1916

College of Engineering, Madras

Recording report on the working of the — for 1915-16.

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GOVERNMENT OF MADRAS
EDUCATIONAL DEPARTMENT

Read—the following paper :—

Letter—from the Hon'ble Mr. J. H. STONE, M.A., F.R.H.S., C.I.E., Director of Public Instruction, Madras.

To—the Secretary to Government, Educational Department.

Dated—the 16th June 1916.

No.—R.C. 3245.

I have the honour to submit herewith, for the information of Government, a copy of my Proceedings R.C. No. 3245, dated 8th June 1916, reviewing the report on the working of the College of Engineering, Madras, during the year 1915-16.

ENCLOSURE.

*Proceedings of the Director of Public Instruction, R.C. No. 3245/16, dated
8th June 1916.*

Read—the following paper :—

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

To—the Director of Public Instruction.

Dated—the 15th April 1916.

No.—R.C. 33 of 16.

I have the honour to submit the administration report of the College of Engineering for the academic year 1915-16.

2. *Staff*.—Mr. C. L. T. Griffith resigned his appointment in the Indian Educational Service as Professor of Civil Engineering at this College on the 6th April 1915 and pending the appointment of a successor, the services of M.R.Ry. P. V. Manickam Nayakar Avargal, Executive Engineer, were lent by the Public Works Department from 28th June 1915 and he has continued in the post throughout the session.

A new appointment of Professor of Higher Electrical Engineering in the cadre of the Indian Educational Service, was sanctioned for the College, and Mr. H. B. Matthews, Assistant Professor of Electrical Engineering at the Indian Institute of Science, Bangalore, was appointed to the post, on probation for two years, with effect from the 15th November 1915.

M.R.Ry. K. B. Ramaswami Ayyangar Avargal, sub. *pro tem*, Professor of Mathematics was confirmed in the appointment with retrospective effect from the 27th November 1912.

Mr. J. Webster resumed charge of his duties as Instructor in Mechanical Engineering at this College on the 29th July 1915 on the expiry of his deputation as Inspector of Factories and M.R.Ry. V. Ayyadurai Ayyar Avargal, Assistant Engineer, who was acting in the appointment reverted to the Public Works Department.

Government having sanctioned a new appointment of Laboratory Assistant to the Professor of Higher Electrical Engineering, on a salary of Rs. 200-40-400 outside the cadre of the Provincial Educational Service, Mr. F. N. Mowdwalla, a Parsi gentleman, was appointed to the post on probation for two years and he joined duty on the 3rd January 1916.

Mr. H. G. Landeman was allowed to accept the post of Foreman Instructor of the Civil Engineering College, Sibpur, with effect from 1st June 1915 with a six months' lien on his appointment of Workshop Instructor in this College and he has since been confirmed there.

With the sanction of the Government of India, Mr. A. H. Gilks, a retired Military Artificer, was appointed to act as sub. *pro tem*. Workshop Instructor of this College during the deputation of Mr. H. G. Landeman to the Sibpur Engineering College and he joined duty on 1st August 1915. M.R.Ry. T. V. Sessa Ayyar, Overseer, Second grade, Public Works Department and Assistant Instructor of this College, acted as Workshop Instructor during the interim period of two months—1st June to 31st July 1915.

M.R.Ry. R. Rajagopala Achari, Supervisor, First grade, Public Works Department, temporary rank, and Assistant Instructor of this College, reverted to that department on the 12th July 1915, and M.R.Ry. P. Natesa Ayyar, Overseer, First grade, was posted for duty in his place from that date.

M.R.Ry. L. V. Narayanaswami Ayyar, Overseer, Second grade, Public Works Department, joined duty as an Assistant Instructor of this College on the 5th July 1915 and was transferred back on the 18th December 1915 when the Revenue officers' class was closed for the year.

M.R.Ry. K. C. Subbaya Chetti, Overseer, First grade, and Assistant Instructor of this College, was transferred to the Public Works Department on the 8th April 1915 and M.R.Ry. G. Venkatachella Ayyar, Overseer, First grade, was posted for duty in the College in his place on the 5th July 1915.

Owing to the increase in the number of students in the College and the formation for the first time of the full number of classes under the existing rules, two more temporary additional Assistant Instructors were sanctioned in G.O. No. 688, Educational, dated 25th June 1915, and M.R.Ry. K. Lakshmana Ayyar and M.R.Ry. S. Siva Rao, both Overseers of the First grade, were appointed to the new posts from the Public Works Department and they joined duty in the College on the 9th July 1915 and 2nd July 1915 respectively.

The following members of staff were granted leave during the year under report :—

M.R.Ry. D. Venkatasesha Ayyar, Overseer, First grade, and Assistant Instructor of this College, privilege leave on full pay for fifteen days from the 20th March 1916 on urgent private affairs.

M.R.Ry. V. Sudarsana Achari, Overseer, Second grade, and Assistant Instructor of this College, privilege leave on full pay for thirteen days from the 12th October 1915 on urgent private affairs.

M.R.Ry. T. N. Govindaswami Rao, Foreman Carpenter, College Workshops, privilege leave on half pay for one month and thirteen days from the 5th January 1916 on urgent private affairs.

C. Narayanan Nayar, Gymnastic Instructor, privilege leave on half pay for twenty days from the 12th August 1915 on account of illness and again leave on medical certificate for three months and six days from the 10th January 1916.

M.R.Ry. N. Ramanuja Achari, Accountant, privilege leave on full pay on account of illness for thirteen days from the 9th November 1915.

M.R.Ry. A. Sivasankara Mudaliyar, Head clerk, privilege leave on full pay on account of illness for 25 days from the 9th July 1915.

I. Narayanaswami Ayyar, First Assistant clerk, leave on medical certificate for six months from the 28th July 1915. This clerk was invalided on the 28th January 1916 and recommended for a pension from that date.

T. Vedanta Achari, Second Assistant clerk and Typist, combined leave on account of illness for fifteen months from the 16th March 1915.

During the absence on leave of M.R.Ry. N. Ramanuja Achari, Accountant, M.R.Ry. A. Sivasankara Mudaliyar, Head clerk and M.R.Ry. K. V. Kunhiraman, Librarian and Store-keeper, acted as Accountant and Head clerk respectively.

During the absence on leave of I. Narayanaswami Ayyar, First Assistant clerk, C. Somasundara Mudali, second clerk, Office of the Inspector of European and Training Schools, Madras, acted in the appointment from the 19th August 1915 to the

23rd November 1915 and on the transfer of the latter to the Kumbakonam College H. Y. Harihara Ayyar, clerk, office of the Director of Public Instruction, was appointed to the post with effect from the 25th December 1915.

P. Subrahmanya Ayyar has been acting as Second Assistant clerk and Typist from the date the permanent incumbent T. Vedanta Achari went on leave.

G. R. Venkatarama Ayyar, Gymnastic Instructor, Kellet High School, Triplicane, acted during the absence on leave of C. Narayanan Nayar as Gymnastic Instructor for sixteen days from 16th August 1915 and in the second period of the Instructor's absence B. Srinivasa Ayyar, qualified teacher in drill and gymnastics, has acted in the appointment since 11th February 1916.

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	36	21	25	28	27	101
Upper Subordinate class	..	..	..	33	45	120
Lower do.	..	..	..	..	62	62
Probationary Subordinate class	..	..	..	126	118	244
Total	36	21	25	193	252	527

Excluding the students on practical course the total number actually in the College on the 31st March 1916 was 491.

The corresponding totals for the last five years were—

Year.	Number.
1914-15	429
1913-14	380
1912-13	357
1911-12	308
1910-11	272

The increase in the total for the year under report is due to the larger numbers in some of the classes and the formation for the first time of the fourth year division of the Engineer class under the revised rules.

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 69.7 per cent were Brahmans, 19.4 per cent non-Brahman Hindus, 7.3 per cent Indian Christians, 2.2 per cent Europeans and Anglo-Indians, and 1.4 per cent Muhammadans.

The percentages of Brahmans and Indian Christians have risen slightly this year while that of the non-Brahman Hindus has fallen a little. Those of Europeans and Anglo-Indians and Muhammadans remained almost stationary.

As regards districts, Tanjore was represented by 16.9 per cent, Kistna 8.9 per cent, Godavari 8.5 per cent, Malabar 7.6 per cent, Trichimopoly 6.2 per cent, Madras 5.9 per cent, Tinnevely 5.7 per cent, Travancore 5.3 per cent, Chingleput 4.7 per cent, North Arcot 4.5 per cent, Coimbatore and Salem 2.8 per cent each, Madura and South Canara 2.0 per cent each, Guntur, South Arcot and Mysore 1.8 per cent each of the total number.

4. *Admission of students.*—In all 157 candidates applied for admission to the Engineer class and 468 for the probationary subordinate class, and of these 28 were admitted to the former and 123 to the latter class. One military candidate also was admitted to the probationary class.

5. *Examinations—Engineer class.*—Owing to the re-organization of the courses of instruction there was no final year division.

Second division (third year) Civil.—There were seventeen students in this division. All appeared for the sessional examination and qualified for promotion.

Second division (third year) Mechanical.—Four students constituted this division and all passed the sessional examination.

Third division (second year).—This was a class of 26 students. All appeared for the sessional examination and qualified for promotion to the next higher division.

Fourth division (first year).—All the 28 students of this class passed on in accordance with the rules to the second year of the course.

Upper Subordinate class, senior division.—There were 36 students in this class. All passed the final examination, five with honours, and also qualified in practical surveying. The average percentage of marks obtained was 58.6.

Upper Subordinate class, junior division.—This division contained 42 students. All qualified for promotion with the exception of three students, who continued in the class this session.

Lower Subordinate class.—Forty-five students forming this class appeared for the final examination and all passed on the papers, one with honours. Eighteen students of the class, however failed to reach the higher standard now insisted on in practical surveying and had to attend this year's survey camp for further practice. On being tested at the end of the camp sixteen passed, but the certificates of the remaining two are still being withheld pending their being able to show satisfactory skill in the use of instruments.

The average marks gained were 56.0 per cent of the total.

Probationary Subordinate class, second year division.—In this class there were 114 students, and of these eight failed to qualify for proceeding to higher courses of study. Of those who passed, the 40 at the head of list were selected for the Upper Subordinate class, and the remainder to complete their courses in the Lower Subordinate class. Of the failures one, who was a military student reverted to his regiment, six rejoined the class and one did not return to College.

Probationary Subordinate class, first year division.—This division contained 118 students and in accordance with the rules all passed on to 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.

The principle of competition for promotion to the Upper Subordinate class was introduced with the class admitted in July 1911 and I am satisfied now by close observation of the work done in the classes and the results of the examinations that, apart from its aspect as an incentive to close application in the junior classes, it is the right course to pursue in order to obtain subordinates of the highest possible calibre.

Under the old system, students were selected for admission to the Upper Subordinate class on the University F.A. or Intermediate and to the Lower Subordinate class on the Matriculation results, but these examinations being mainly of a literary nature it was impossible from them to judge of the suitability of candidates for technical work, and there was the further grave objection that no student, if he had ambition to enter higher ranks of the subordinate service, could enter on engineering studies without putting in some years in an Arts College for the F.A. or Intermediate course.

We now admit the probationary students on their School Final certificates, which means with our four years Upper Subordinate course as against the former three years after F.A. a saving of one year, and every student has his chance of showing what latent capabilities he possesses for engineering work and profiting therefrom, if he can, by gaining promotion to the Upper Subordinate class.

It is, I consider, of great advantage that these young men are able to start on their careers a year or more younger and with, I have no hesitation in saying, at least as good qualifications for doing any work with which they may be entrusted, and it must follow as a natural corollary of the system of promotion that the Upper Subordinate grades in the Public Works Department will be filled in the future by men who are instinctively and by training better than those in the Lower Subordinate ranks, whereas it was undeniably the case formerly that for engineering purposes some of the Lower Subordinate students would with equal opportunities have proved more efficient in service than many passing out as Upper Subordinates.

6. *Honours and distinctions.*—No prizes or medals were awarded in the Engineer class for the reason mentioned under Examinations.

The other college medals were awarded as follows:—

Silver medal—Upper Subordinate class, R. Lingam.

Bronze medal—Lower Subordinate class, S. M. Rangaswami.

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

Upper Subordinate class.

The Colonel Rogers' prize went to the silver medalist R. Lingam, who also gained the H. J. Thompson prize for Construction, Building Drawing and Estimating and the Madhava Rao prize for skill in Workshop Practice.

The Colonel Love prize for Hydraulic Engineering was gained by T. R. Viswanathan.

The Madhava Rao prize to a Mahratta Brahman for Workshop Practice was awarded to M. Krishnamurti Rao.

Lower Subordinate class.

The Colonel Love prize was awarded to the senior student S. M. Rangaswami.

8. *University examinations.*—Six Engineer students, who were under practical training, and eight ex-students presented themselves for the B.E. Degree examination and of these five passed, four in the Civil branch and one in the Mechanical branch.

For the F.E. examination 48 students appeared of whom 25 were second-year students, 11 third-year students, 8 were students undergoing practical training and 4 were ex-students. In all 19 were successful—14 second-year students, 3 third-year students, 1 undergoing practical training and 1 ex-student.

The University Rao Bahadur Subbaraya Achariyar's gold medal was awarded to G. Krishnaswami, the J. A. Jones prize for Hydraulic Engineering to P. S. Sundaram.

9. *Practical courses.*—In the absence of a final-year division no postings were made of Engineer students for practical training.

The 36 Upper Subordinate students who passed the final examination in March 1915 were posted as usual to Public Works divisions.

The practical course of an unsuccessful Engineer student of the previous year, who had been permitted as a special case to undergo a practical training to enable him to qualify for the Upper Subordinate diploma, was extended by six months without stipend for unsatisfactory progress.

All these students also passed through the usual courses in equitation at the Body Guard school.

10. *Military students.*—It was not expected there would be any military applications, but one was received and the candidate was selected for admission. The number of military students on the rolls was 8, as compared with our normal total 25, distributed as follows:—

Practical course	...	...	...	...	...	...	...	...	Nil
Upper Subordinate class, second-year division	...	...	...	...	...	...	...	...	Nil
Do. first	...	...	...	...	...	...	...	...	3
Probationary class, second-year division	...	...	...	...	...	...	...	...	4
Do. first	...	...	...	...	...	...	...	...	1
Total	...	...	...	...	...	...	...	...	8

A number of former college military students are doing their share in the war, and of them we have noted among the casualties Sergeant Murphy and Gunner Underwood wounded in France. Sergeant Harvey, as he was here when he left for the front, was awarded the Distinguished Conduct Medal not long ago in France and afterwards granted a Commission in the West Kent Regiment. Of students the college in recent years it is known that two are in France, one in Mesopotamia and one in the Eastern Mediterranean, and within the last few weeks three who

completed their training somewhat more than a year back and were holding appointments in the Public Works Department have volunteered and proceeded to Mesopotamia in the Military Works Service.

11. *Revenue officers class.*—Two batches of officers underwent the usual course of training—the first consisting of nine officers from 1st July to 30th September 1915, and the second of the same number from 1st October to 18th December 1915. The work they did was quite satisfactory considering the short time available and all the officers seemed to make an effort to utilize their time to the best advantage.

12. *Survey camp.*—The camp this year was held at Saidapet, St. Thomas' Mount and Tirunirmalai.

The junior Engineer and Probationary classes, numbering 147 in all, were at Saidapet from 3rd to 22nd January inclusive, whereas in previous years, they had thorough practice in chain, plane-table and compass work in the town of Saidapet, the Teachers' College grounds and over the district round about the Adyar river, Little Mount and Guindy. These young students showed much keenness, being morning and afternoon in the field, and the work they turned out was quite satisfactory.

The other classes in two batches divided their time from 3rd to 25th January between St. Thomas' Mount and Tirunirmalai changing over at about half the period of the camp, and the senior Engineer class stayed out a few days longer for special work. The project on which all classes worked when at Tirunirmalai camp was for a railway from that place to Thambaram on the South Indian Railway, the levelling and plane-table squads of the junior classes in accordance with our practice of the last few years following and being supposed to work in a general way under the control of the senior class squads. The country round about the hills in that neighbourhood is fairly open and good practice was possible in the way of setting out curves.

The senior Engineer class was also engaged during the camp on general theodolite work traversing and triangulation, and they also did some astronomical night work at St. Thomas' Mount. The work of the first and second divisions of the Engineer class was interfered with owing to their being allowed, as referred to elsewhere in this report, to come in to Madras for the town-planning lectures, but on the whole it was fairly satisfactory. The senior Upper Subordinates and Lower Subordinates had theodolite work at both places, the latter class for half the time being also given further levelling practice. The third-year Engineer and first-year Upper Subordinate classes were engaged exclusively on levelling work.

In view of the moderate allotment of funds available for the number attending the camp, and also to ascertain whether an arrangement, that had proved successful with the junior classes last year, was suitable for all classes, it was decided to devote the afternoons as well as the mornings to field work and that no drawing office work of any kind except what was absolutely necessary should be done out at survey camp, and to reduce the time away from Madras by some days, making up the normal camp period with the connected drawing and computation work in the college. This gives on the whole considerably more time for field work practice and allows of the students working at their boards with proper conveniences and under more efficient supervision. Another important consideration is that by having the students out with the instruments both morning and afternoon, they get continuous practice over a period of about three weeks which must go far towards familiarizing them with the use and improving their manipulation of surveying instruments. It is evident that physically they are up to this continuous work in the field—in a way it can be regarded as part of their training for hard out-door work in the future—and the results this session justify our following the same course next year when I have no doubt the change will show even to better advantage.

The new levels and theodolites obtained on the special grant of eighteen months back were brought into use at this camp and made considerable difference in the possibilities of our instructional work. We can now give the students fair all round practice in manipulation, and no want of success either on the part of the staff or the students can be ascribed to inadequate number of instruments.

13. *Engineering laboratories.*—The usual routine testing work and class demonstrations have been carried out with our appliances for testing the strength of materials, and during the year two papers have been published—one on the “Strength and elastic properties of South Indian timbers,” and the other a “Note on the deflection of steel rails.” Some work has also been done in connection with an investigation on surki mortar.

The recently-appointed Professor of Electrical Engineering and his assistant having joined us only late in the year, it has not been feasible to do much this term in the way of putting the laboratory work of the department on a proper footing, but this will be attended to with the start of the new session. In order that our courses of instruction may come up to and keep pace with modern developments and to provide for our larger classes, further additions to the laboratory equipment are very necessary, and I intend applying at an early date for part of the Guindy provision to allow of our purchasing some additional machines and apparatus which we can bring into use here without delay, including in particular single and three-phase commutator motors, a three-phase advance, a double projection oscillograph, a standardising set for continuous current voltages and various instruments for special purposes.

The moderate equipment we possess for electrical engineering rather emphasises the inadequacy of our laboratory facilities for civil and mechanical engineering which, especially now that we have the full number of classes after reorganization, is proving very detrimental to our work. It is impossible to do what we should wish the Engineer classes and laboratory demonstrations eminently desirable for the Upper Subordinate classes are quite out of the question. The building work at Guindy however is proceeding apace and, it is hoped, will make rapid progress so that this drawback will not affect us much longer.

14. *Workshops.*—Our normal arrangement is for all classes to attend for Workshop Practice once a week, except that the Engineer Mechanical divisions have two mornings' attendance, but with our larger classes we were very badly handicapped in the matter of accommodation at the commencement of the session and it was only possible to take the junior probationary class in several batches and for less than the usual number of attendances. In September, however, the Public Works Department authorities completed our temporary workshop and since then, using it chiefly for carpentry classes, we have relieved the congestion in the main workshop to some extent; but even now, with a confusion there of engines, machine tools, benches and laboratory appliances, the state of affairs is anything but what it should be and it is impossible to find space for the additional tools we so badly require.

15. *Visit to works.*—At about the middle of September the students of E (i) Civil and Upper Subordinate class first division accompanied by the instructor in civil engineering and two other assistant instructors proceeded to Coanada in two batches for inspection of the irrigation works in the Gōdāvari and Kistna deltas. The party on arrival at Coanada visited the Coanada river jetty and groynes, the Jaganaikpur bridge, the tidal lock and the Coanada water-works, proceeding afterwards to Samalkota where the double lock under-tunnel and Agricultural Farm were inspected. They then went on to Rajahmundry where they inspected the railway bridge across the Gōdāvari, and from there to Dowlaishwaram for inspection of the ancient, head sluices and undersluices of the Eastern delta. Visits were paid as well to the locks and head sluices at Vijeswaram and Bobberlanka. The party also saw the Gunnavaram aqueduct, the Gopalapuram lock falling shutters and river conservancy works. The party afterwards proceeded to Bezwada by rail and inspected the Bezwada water-works, the railway bridge across the Kistna, the ancient and the head locks and sluices at Bezwada and Sitanagram, and a visit was also made to the Divi pumping installation. From there they went to Duggirala inspecting the locks and canal on their way, returning to Madras on Sunday, the 3rd October. This comprehensive and instructive tour occupied seventeen days.

At about the same time, the Professor of Civil Engineering accompanied by an instructor took a party of students consisting of the third-year students of the Engineer class and the second-year students of the Upper Subordinate class to Tanjore for inspection of the irrigation works in the Cauvery delta. The party saw there

the town water-works, Abraham Pandithar's farm and pumping installation, and after that proceeded to Trichinopoly where the Kodamurti drain, the Cauvery flood-bank drainage sluices, Kodamurti bridge pumping station, stone groynes, Rock fort reservoir, Wyacondan and Puthur weirs were visited. They next went to the Grand Anicut for the inspection of the conservancy works of the right bank, Old Vennar head, Grand Anicut and Cauvery and Vennar regulators, visiting on the way back to Trichinopoly the Srirangam nattuvokai, drainage and surplus works.

From Trichinopoly the party went to Elamanur where the Srirangam nattuvokai head works, calingula, head works, the Iyen and the Peruvilai channels and head works and upper anicut were inspected. From there to Pattavithalai for the Wyacondan head works and afterwards to Erode where some time was devoted to the railway bridge across the Cauvery, the Kalingaroyan aqueduct, the drainage level crossings, the Kalingaroyan head works and the road bridges over the Cauvery and the Bhavani. The party returned to Madras on the 3rd October.

As in previous years another party of Lower Subordinate class students accompanied by two instructors made the same tour, going the opposite way round from Erode and finishing at Tanjore.

A third party consisting of the second-year students of the Engineer and Probationary Subordinate classes and seven military students accompanied by six instructors proceeded to Nellore for inspection of the works in that district. For the sake of convenience, this party also was divided into two groups and they started the tour from different places. The works inspected by these students included the Nellore anicut, head works and railway bridge across the Pennar, Sarvapalli canal up to Kanaparthipad regulator, Nellore tank channel, Uyyalakalva from head to end and its minor and sub-branches, Nellore tank and masonry works on tank-bund and water-works, head works on the left side of the Pennar river, Sangam anicut and head works on the right side of the river, works along Kanigiri main canal, Kanigiri reservoir, Kanigiri tank-bund, Southern channel head sluice, south surplus weir, Eastern channel and head sluice and the Kondayagutta surplus weir.

In September also the Professor of Mechanical Engineering took the students of the Mechanical Engineering classes to Kandalla in the Bombay Presidency on a visit to the important works of the Tata Hydro-Electric Company in that neighbourhood. Starting with the Shiraut lake the party followed the direction of the covered tunnels to the Walwhan lake, where they devoted some time to the embankment and other works. The following day they proceeded along the line of the duct to lake Lonvalva where the forebay was inspected and afterwards on to the Power House at Khopoli. The party was absent from Madras about nine days on this tour and returned to Madras on the 1st October 1915.

The total number of students who took part in these tours was 337 and the expenditure Rs. 2,044.

Local works.—During the course of the session, visits were paid as usual by all classes to local engineering works including the Madras Corporation Water-Supply and Drainage Works, the Law College Pumping Station, the Madras Harbour Works, the Government Brickfields, the Madras Tile Works, Aminjikarai, the South India Industrials, Portland Cement Works, Madras, the Indian Siegwart Beam Company, Royapettah, the South Indian Royal Ice Factory, Egmore, the Madras Electric Tram Car sheds, Vepery, the Power Station of the Madras Electric Supply Corporation, the Public Works Department Workshops, Rayapuram, the Carnatic Mills, the Madras and Southern Mahratta Railway Workshop at Perambur and the Red Hills Tank and head-works.

The students were also taken to buildings under construction such as the Madras and Southern Mahratta Railway Company's new office and new officers' quarters, Sub-Registrar's office, west Madras, the National Bank buildings, the new Stationery Stores, the Presidency Magistrate's Court, Egmore, Monegar Choultry Hospital, European Sub-Inspectors' and Sergeants' quarters near Broadway, the new Government Women's College and Pachayappa's College Students' Hostel at Chetput.

16. *First Aid lectures.*—This year again, arrangements were very kindly made by the Honorary Secretary, St. John Ambulance Association, Southern India to provide three qualified medical lecturers for conducting courses of instruction in first

Aid during November and December for the benefit of the students of second year Engineer and third year Upper Subordinate classes, the majority of whom presented themselves for the certificate examination later on in the session.

17. *Special lectures.*—At the beginning of September last, a course of twelve special University lectures on Architecture was delivered at the College by Rao Bahadur M.R.Ry. K. Krishna Ayyangar Avargal, B.A., L.C.R., Deputy Chief Engineer and Joint Secretary to Government, Mysore, and the students of the final and third year divisions of the Engineer class attended, as part of their course of training.

Town-planning course.—We were able in January, during the absence of the students at survey camp, to provide accommodation for the town-planning courses of instruction held by Mr. H. V. Lanchester, F.R., L.B.A., the South Drawing Office serving the purpose of a lecture hall and the practical classes working in some of the other drawing offices. The lectures being technical in character and constituting a valuable supplement to our ordinary college work, it was considered expedient the two Senior Engineer classes should be afforded the opportunity of attending and they were allowed to make their own arrangements for coming in every afternoon for a fortnight from camp for that purpose.

18. *Hostel.*—The post of Deputy Warden has been filled since July 1915 by M.R.Ry. R. Tirumurti Rao, Assistant Instructor in Science.

The tenancy of the house in Vallabha Agraharam street, Tiruvateeswarenpet, was terminated in November last when we moved to more convenient and better suited premises in Pycroft's Road, the old building of the Raja Eswara Doss school and just then being vacated from occupation as a students' hostel under the control of Mrs. Besant. The building is fairly well suited for the purpose and it is hoped it will be possible to make arrangements with the landlord to effect improvements which will increase and make the members' accommodation more comfortable.

The number of members averaged about 60, of whom half are resident and the other half boarders only. The health of the hostel has been very good and cases of illness rare, although the surroundings even of the new quarters leave a good deal to be desired. The working of the hostel has been attended by the usual difficulties apparently inseparable from the conduct of students' hostels but on the whole has been satisfactory. The rates are slightly higher than most hostels, but close investigations goes to show that this is due to a larger consumption, per member, which in its turn may be ascribed to the more vigorous life with outdoor and practical work that our students lead. During the survey camp period, the hostel staff was taken out to Saidapet where two houses were rented and a temporary hostel organized for the students doing field work in that neighbourhood, and who belonged to the junior classes. The total number was 53, and the reports go to show that the arrangements made were quite satisfactory and the cost to the students very reasonable.

I still hold strongly the opinion I expressed last year that some financial assistance is called for to meet rent charges if students are to be provided with the room space desirable in such hostels, as comparison naturally is made with hostels that are subsidised directly or indirectly in this respect and also with the competitive charges of ordinary boarding house and hotel keepers. It does, however, seem possible to carry on hostels of a kind under existing conditions, and as a trial over a period of nearly two sessions, indicates the necessity for the permanence of the College hostel, I intend applying shortly for a furniture grant to allow of our providing each member with a chair and a table.

19. *Library.*—During the year, 184 new books were added to the library bringing the total up to 5,853 volumes. Owing seemingly to difficulties in connection with shipping we have not yet received the books indented for in November last.

The number of books issued to the staff and students from 1st April 1915 to 31st March 1916 were 800 and 1,980 respectively, while 135 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 95.7. 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.*—The majority of the students have taken advantage of the facilities provided by the club for field games and a fair number attended regularly on the recreation ground. The assistant instructors take it by turn and every afternoon one or other member of the staff is present to exercise some control over what is going on there.

For the purposes of our inter-class tournaments, which were carried out as usual during the course of the year, in order that as many students as possible might take part in the matches we found it advisable to split up some of the larger classes into A and B divisions equalising in this way also the numbers in the groups from which the members of the several teams are selected. Nine teams in all took part in each competition and in the result, the cricket and football cups are now held by the probationary subordinate class 1st division, B teams, the hockey by the lower Subordinate class and the Tennis by the Engineer class fourth division. The usual annual College sports were held in December and were followed this year by the innovation of an entertainment and social evening held in the College.

The College was only moderately successful in the competitions organized by the Madras Collegiate Athletic Association doing best on the whole in football, and although not successful in winning the Wilson cup, we had the satisfaction of being represented, for the first time I believe for any one college in any of the association's competitions, by two teams, the one in the semi-final and the other in the final losing to the College that finally won the cup. In swimming the College representatives came first and second.

The College was very successful in other football tournaments, winning after strenuous efforts for the third time and outright the large cup presented by the Raja Venugopal to the South India Athletic Association for their inter-collegiate football tournament, and we also took the cup offered in another football competition open to colleges by the Young Men's Social Union.

The annual grant from Government serves to maintain the club in a quite satisfactory financial position, and we are able to afford the expense of constructing a new and much-needed tennis court, the work on which is now in hand.

Mr. C. L. Cartwright has kindly continued as honorary secretary of the club, and he desires again this year to repeat his acknowledgment to Mr. Old and M.R.Ry. S. Subrahmanya Ayyar for the assistance they have been to him in the affairs of the club.

22. *College of Engineering Association.*—This Association was started early in the session, chiefly on the initiative of the students themselves, with the object of stimulating interest among its members in general, technical and industrial subjects, and also for promoting social intercourse in the College. Membership is open to all College students and reached a total of 120 for the year.

The opening address was given by the Principal, as president of the association on the subject of "Engineering Education and the prospects of employment of Engineering students in Great Britain," and papers were read during the session by M.R.Ry. P. V. Manickam Nayakkar Avargal, Acting Professor of Civil Engineering, on the Geology of Australia, by Mr. M. S. Narayanan, student of the Engineer class, on "Business Enterprise in India," by Mr. M. K. Ranganathan, student of the Engineer class, on "Cane sugar and the industry in Southern India," and M.R.Ry. P. Natesa Ayyar, Assistant Instructor, on "Rainfall and run off," and an address was also given by Mr. J. W. Madeley, Special Engineer to the Corporation, on "The new Madras water works." The meetings were well attended and considerable interest was taken in the subject-matter of the papers and the discussions. The association closed a quite successful first year of existence with a social function—an exhibition of students' work, refreshments and entertainment.

23. *Employment of passed students.—Engineers.*—Of the 15 Engineer students, who completed their practical courses early in 1915, the senior in the Mechanical Engineering Branch was appointed permanent Assistant Engineer in the Public Works Department and the other students obtained employment as follows:—

	Number.
Assistant District Board Engineers	2
Temporary Upper Subordinates, Public Works Department, Madras	12
Total	14

Upper Subordinates.—Twenty-nine Upper Subordinates satisfactorily completed their courses of practical training at about the end of July, and of these the senior among the civilian students, T. V. Ramaswami Ayyar was appointed a permanent overseer, third-grade, in the Public Works Department. Of the six Military apprentices under training five were taken on by the Public Works Department as first-grade overseers after completing their courses, but one about half way through the period applied and was allowed to proceed to rejoin his regiment at the front. As a special concession, this Non-Commissioned officer was granted the diploma before he left. Twenty-one civil students obtained employment as follows:—

	Number.
Temporary Upper Subordinates, Public Works Department, Madras ...	20
Overseer, Public Works Department, Cochin ...	1
Total ...	21

One student furnished no information.

Lower Subordinates.—Twenty-six Lower Subordinates completed their courses of instruction at the end of April 1915. Of these twenty-four reported employment as under:—

	Number.
Acting Local Fund overseers ...	3
Temporary Local Fund sub-overseers ...	2
Acting sub-overseers, Public Works Department, Madras ...	8
Temporary draftsman, Public Works Department, Madras ...	8
Temporary first-grade section superintendent, Public Works Department, Cochin ...	1
Temporary draftsman, Sanitary Engineering Department ...	1
Temporary special sanitary overseer ...	1
Total ...	24

Two of the students furnished no information.

Particulars of the vacancies notified during the year are given in Appendix F.

24. *Casualties.*—I regret to have to record that three students of the first year probationary subordinate class died during the year.

25. *Financial details.*—This information is given in Appendix G. It will be noted that the receipts for 1915-16 amounted to Rs. 36,142-1-8 and the charges to Rs. 1,33,179-15-3 resulting in a net cost to Government of Rs. 97,037-13-7. The average number of students on the rolls during the year was 493 and the net cost per student Rs. 197. 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.

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

26. 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.	Muhamedans.	Hindus.			Others.	Total.
				Brahmins.	Non-Brahmins.	Panchamas.		
Engineer classes ...	2	7	2	77	13	..	..	101
Upper subordinate classes ...	3	3	..	65	13	..	..	84
Lower subordinate class ...	..	4	..	41	17	..	..	62
Probationary Subordinate classes.	6	22	5	159	52	..	..	244
Total ..	11	36	7	342	95	..	..	491

APPENDIX B.

Districts.	Engineer class.	Upper Subordinate class.	Lower Subordinate class.	Probationary Subordinate class.	Total.
Ganjam ..	1	1	3	1	6
Vizagapatam ..	..	..	..	5	5
Godavari ..	..	..	10	23	42
Kistna ..	..	..	9	7	25
Guntur ..	..	..	1	..	4
Bellary ..	..	..	..	..	3
Anantapur ..	..	..	..	..	..
Karnool ..	..	1	..	2	3
Nellore ..	..	1	1	18	20
Madras ..	..	..	3	13	24
Chingleput ..	..	5	..	3	8
Cuddapah ..	..	..	..	16	22
North Arcot ..	..	1	3	3	7
Chittoor ..	..	..	2	6	8
South Arcot ..	..	16	28	13	57
Tanjore ..	..	6	6	4	30
Trichinopoly ..	..	4	..	2	6
Madurai ..	..	..	..	..	..
Ramanad ..	..	1	2	15	28
Timmevelly ..	..	10	5	1	14
Coimbatore ..	..	..	2	1	7
Salem ..	..	4	..	14	17
Malabar ..	..	7	12	4	23
South Canara ..	..	..	..	..	..
Pudukkottah ..	..	1	..	..	1
Cochin ..	..	3	1	13	26
Travancore ..	..	7	..	1	9
Mysore ..	..	..	..	1	1
Strait Settlements ..	..	..	..	..	..
Bombay ..	..	1	..	..	2
Hyderabad ..	..	..	3	..	3
Military students ..	..	..	..	5	5
Do. probationers ..	..	..	..	..	..
Total ..	101	84	62	244	491

APPENDIX C.

Class.	Wealth.				Occupation.							Total.
	Higher talent.	Middle class.	Poorer class.	Total.	Officiale.	Petty officiale.	Traders.	Labourers.	Artisans.	Mendicants.	Others.	
Engineering class, fourth year ..	1	18	2	21	7	..	1	13	..	..	..	21
Do. third year ..	..	25	..	25	19	..	3	2	..	..	1	25
Do. second year ..	1	26	1	28	19	..	2	7	..	..	..	38
Do. first year ..	2	25	..	27	19	..	3	3	..	..	..	37
Upper Subordinate class, second year.	3	36	..	39	18	1	2	19	..	..	1	39
Upper Subordinate class, first year.	..	35	7	42	16	7	2	15	..	2	..	42
Military students ..	..	..	..	3	..	..	..	..	..	..	..	3
Lower subordinate class ..	4	57	1	62	39	..	1	22	..	..	..	62
Probationary subordinate class, second year.	2	115	5	122	59	3	19	41	..	..	..	122
Military Probationers ..	..	..	..	4	..	..	..	..	..	..	..	4
Probationary subordinate class, first year.	..	108	9	117	50	6	13	43	..	1	4	117
Military Probationers ..	..	..	..	1	..	..	..	..	..	..	..	1
Total ..	13	445	25	491	244	17	45	168	..	3	6	491

APPENDIX D.

RESULTS of examination of March 1915.

Engineering class, third year, Civil branch—	
Branch I—Mathematics and science ..	62.6
Branch II—Engineering ..	56.5
Physical exercises ..	54.7

Average ... 58.5

APPENDIX D—cont.

Results of examination of March 1915—cont.

Engineering class, third year, Mechanical branch—	
Branch I—Mathematics and science	64.0
Branch II—Engineering	63.3
Physical exercises	61.5

Average ... 63.4

Engineering class, second year—	
Branch I—Mathematics and science	58.1
Branch II—Engineering	62.3
Physical exercises	46.2

Average ... 59.8

Engineering class, first year—	
Branch I—Mathematics and science	55.0
Branch II—Engineering	63.4
Physical exercises	48.5

Average ... 59.3

Upper Subordinate class, second year—	
Branch I—Mathematics	61.0
Branch II—Engineering	58.5
Physical exercises	53.4

Average ... 58.6

Upper Subordinate class, first year—	
Branch I—Mathematics	58.3
Branch II—Engineering	59.5
Physical exercises	57.2

Average ... 59.0

Lower Subordinate class—	
Branch I—Mathematics	55.6
Branch II—Engineering	56.6
Physical exercises	50.2

Average ... 56.0

Probationary Subordinate class, second year—	
Branch I—Mathematics	62.4
Branch II—Engineering	60.7
Physical exercises	54.5

Average ... 60.6

Probationary Subordinate class, first year—	
Branch I—Mathematics	58.1
Branch II—Engineering	65.5
Physical exercises	54.3

Average ... 62.9

APPENDIX E.

	Average number on rolls.	Average daily attendance.
Engineering class, fourth year	21.0	20.5
" " third year	25.0	23.5
" " second year	28.0	26.9
" " first year	27.1	26.2
Upper Subordinate class, second year	39.0	37.3
" " first year	45.0	43.1
Lower Subordinate class	62.0	58.9
Probationary Subordinate class, second year	126.0	120.3
" " first year	120.1	115.6
	493.2	472.3

Percentage of numbers present to number on rolls ... 95.7

APPENDIX F.

CLASSIFICATION OF vacancies notified during the year 1915-16.

	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.		
Engineer or Assistant	..	..	..	3	8	..	..	..	..	..	..	1	12	
Supervisor	..	2	..	..	6	..	..	..	..	..	..	..	9	
Overseer	..	25	..	..	..	..	..	..	..	3	..	..	33	
Sub-Overseer	..	..	26	13	..	1	5	..	..	..	..	..	46	
Draftsman	..	1	16	41	..	1	1	..	..	..	..	..	60	
Surveyor	..	2	38	26	..	..	1	31	..	..	..	..	101	
Assistant or Conservancy Superintendent or Estimator.	..	..	1	2	..	..	..	..	..	..	..	1	4	
Total	6	106	82	3	14	7	88	..	1	6	..	1	264	

APPENDIX G.

Financial details for the year 1915-16.

Receipts.

	RS.	A.	P.
(1) Tuition and registration fees	..	..	..
(2) Miscellaneous	..	..	..
Total	35,006	13	0
	1,135	4	8
Total	36,142	1	8

Charges.

(1) Principal	15,000	0	0
(2) Professors and Instructors including Presidency and house-rent allowances	71,649	0	0
(3) Allowance to Deputy Warden, College of Engineering Hostel, Madras	360	0	0
(4) Accountant, Librarian, clerks and servants and compensation allowance	6,319	15	6
(5) Library, prizes, books, maps and medals	1,166	4	7
(6) Travelling allowance of officers, establishment and servants	2,585	15	3
(7) Europe stores and laboratory charges	7,663	3	7
(8) Workshop materials	8,237	14	0
(9) Survey camp and inspection tour charges	5,698	1	3
(10) Printing maps and diagrams at the Survey Office	165	10	1
(11) Petty construction and repairs	87	11	9
(12) Riding and workshop fees	125	0	0
(13) Exchange compensation allowance	1,823	5	0
(14) Office contingencies and games	6,912	5	3
(15) Scholarships and stipends	5,355	9	0
Total	1,33,179	15	8

Net cost to Government 97,037 13 7

Average number of students and rolls NO. 493

Net cost per student RS. 197

Average tuition fee paid by students per annum 66

APPENDIX H.

COMPARATIVE financial details.

	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.
Receipts	RS. 24,098	RS. 25,598	RS. 27,041	RS. 30,269	RS. 36,142
Charges	1,17,162	1,14,402	1,27,230	1,59,985	1,83,172
Net cost to Government	93,064	88,803	1,00,189	1,29,715	1,47,030
Average number of students on rolls	308	357	383	436	493
Net cost per student	RS. 302	RS. 249	RS. 261	RS. 296	RS. 297

R. C. No. 3245, dated 8th June 1916.

Recorded.

2. The report which is, as usual, full and interesting is a record of good and steady work done during the year.

3. Among the noteworthy changes in the staff may be mentioned the resignation of Mr. C. L. T. Griffith, Professor of Civil Engineering, and the appointment in his stead tentatively of M.R.By. P. V. Manikkam Nayakkar Avargal and the appointment of Mr. H. B. Mathews to the newly-created Professorship of Higher Electrical Engineering and of Mr. F. N. Mowdawalla as his Laboratory Assistant.

4. There was a further accession to the strength of the College which is attributed chiefly to the formation for the first time of the fourth year division of the Engineer class under the revised rules. As usual, Brahmans preponderated and of the several districts represented in the College, Tanjore continued to head the list.

5. The results of the College and University examinations were generally satisfactory.

6. The Director has perused with interest the account given by Mr. James of the courses of instruction in First aid given at the College under the auspices of St. John's Ambulance Association, Southern India, of the special university lectures on Architecture delivered by Rao Bahadur K. Krishna Ayyangar Avargal of Mysore, and of the benefit derived by the Senior Engineer class by attendance at the Town Planning course of lectures conducted by Mr. H. V. Lanchester

(True Extract)

J. H. STONE,
Director of Public Instruction.

To the Principal, College of Engineering, with spare copies.

,, Principals of the 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. 724, Educational, dated 3rd July 1916.

Recorded.

(True Extract)

P. RAJAGOPALA ACHARIYAR,
Secretary to Government.

To the Director of Public Instruction.

,, Public Works Department.

Editors' Table.

EDUCATIONAL DEPARTMENT

(Copy)

LETTER to the Under Secretary of State for India

No. 725, dated the 3rd July 1916

FORWARDING a copy of the Proceedings of the Madras Government recording the report on the working of the College of Engineering, Madras, during 1915-16.

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 1915-16.

I have the honour to be,

Sir,

Your most obedient servant,

P. RAJAGOPALA ACHARIYAR,
Secretary to Government.

OOTACAMUND,
3rd July 1916.

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ORDINARY.

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G.O. No. 724, dated 3-7-1916

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Brief subject.....

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