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College of Engineering

Recording the report on the working
of the C. during 1900.
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Government {1901} of Madras.

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ORIGINAL

G.O., &c., Nos. 301, 302, 3rd June 1901.

JUNE.

College of Engineering.

Recording the report on the working of the — during 1900.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

Read—the following paper :—

From the Hon'ble Mr. G. H. STUART, M.A., *Barrister-at-Law*, Director of Public Instruction, to the Secretary to Government, Educational Department, dated Madras, 16th May 1901, C. No. 4145.

I have the honour to submit, for the information of Government, a copy of my Proceedings, Dis. No. 2875, dated 14th instant, reviewing the report on the working of the College of Engineering during 1900.

Enclosure.

Proceedings of the Director of Public Instruction, Dis. No. 2875, dated 14th May 1901.

Read the following letter from Lieutenant-Colonel H. D. LOVE, R.E., Principal, College of Engineering, Madras, to the Director of Public Instruction, dated 11th February 1901, No. 2470-C. :—

I have the honour to submit the Administration Report of the College of Engineering for the year 1900.

2. *Changes in Establishment.*—M.R.Ry. P. G. Vanchi Aiyar, Second Assistant Instructor in Drawing, sub. *pro tem*, was appointed a Sub-Assistant Inspector of Schools. He was relieved by M.R.Ry. M. R. Ramaswami Sivan on the 2nd January from the College of Agriculture.

M.R.Ry. S. Gaurisankara Sarma, Vernacular Assistant, reverted to the Public Works Department in the same month, and was succeeded by M.R.Ry. V. S. Pranatartihara Aiyar from that department on the 12th February.

M.R.Ry. S. Venkatachalam Pantulu, Second Assistant Instructor in Surveying, reverted to the Public Works Department in March. His appointment, which remained vacant for three months, was filled by M.R.Ry. V. S. Pranatartihara Aiyar. The latter was succeeded on 1st August by M.R.Ry. K. C. Subbayya Chetti from the Public Works Department.

There were numerous changes in the clerical establishment, no less than five different persons having officiated as head clerk during the year.

3. *Staff.*—The sanction of the Secretary of State was conveyed in July to the proposals for the creation of a second Professorship of Engineering and of an Instructorship in Mechanical Engineering. The existing Engineering Chair, which is occupied by Mr. Chatterton, will in future be designated that in Mechanical Engineering, while the new professorship will be of Civil Engineering. The Professor of Civil Engineering will ordinarily be a first-grade Assistant Engineer or third-grade Executive Engineer of the Public Works Department, whose services will be lent for a period of three years at a time. The Instructor in Mechanical Engineering is to be selected by the Secretary of State. Neither of the two new appointments was filled during the year.

In April Government approved of the deputation of Mr. Chatterton to special duty for three years. As no officer was available locally to relieve him, the Secretary of State was asked to select a qualified person. Mr. Chatterton continued during the year in charge of the Aluminium department of the School of Arts in addition to his other duties. In my opinion this arrangement is not advantageous to the College.

In consequence of the representations made in my report for 1897 and elsewhere, the clerical establishment of the College was in 1899 placed on a proper footing. The advantage gained was, however, vitiated to some extent in the year under review. In July the head clerk, whose salary is fixed at Rs. 40—60, was transferred at a day's notice, and a junior clerk on Rs. 25 from the Director's office was appointed in his place. In October, at the busiest time of the year, this clerk was transferred with equally short warning, and my office was left short-handed until December. A copyist was engaged on daily pay to assist in disposing of the work, but his salary was disallowed on the ground that the previous sanction of Government had not been

obtained. These changes in the clerical establishment caused considerable inconvenience. The trouble was remedied just before the close of the year, when a head clerk of standing and experience was appointed.

The position of the menial establishment calls for consideration. Owing to the increase of the teaching staff and to the general development of the work of the College, the numbers of peons, lascars, etc., are insufficient; while, consequent on the smallness of the initial salaries, the difficulty of obtaining suitable men, and the increased cost of living, the scale of pay calls for augmentation. A scheme has accordingly been submitted which provides for a numerical increase of three peons, one toty, two night-watchmen, and one gardener, and for an advancement of average salary from Rs. 7·2 to Rs. 8·1.

4. *Numbers.*—The numbers on the rolls at the end of the year were—

Class.	Practical course.	In College. Third year.	Second year.	First year.	Total.
Engineer class	* 8	11	12	13	44
Engineer Subordinate class	† 26	29	29	34	118
Sub-Overseer and Surveyor class	..	..	34	33	67
Draftsman class	..	..	35	28	63
Artisan class	..	..	..	48	48
Total	34	40	110	156	340

* Includes 2 who passed as independent candidates. † Includes 9 who passed as independent candidates.

Excluding the students engaged in the practical course, the total number actually in the College on the 31st December 1900 was 306. The corresponding totals for the four previous years were—

	Nos.
1899	277
1898	286
1897	260
1896	225

The distribution of the students by classes of the community, by districts, and by occupation of parents is given in Appendices A, B and C. Of the total number, 63 per cent. were Brahmans as against 69 per cent. in 1899, 27 per cent. other caste Hindus, 6 per cent. Native Christians, 3 per cent. Europeans and Eurasians, and 1 per cent. Muhammadans. As regards districts, Tanjore is represented by 32 per cent. against 34 per cent. in 1899; Madras furnishes 12 per cent., Trichinopoly and Tinnevelly 8 per cent. each, Gódávari 5 per cent., and North Arcot and Coimbatore 4 per cent. apiece.

The numbers offering for admission were—

Class.	Registered.	Qualified.	Admitted.
Engineer class	‡ 94	20	15
Engineer Subordinate class	§ 179	148	‖ 34
Sub-Overseer and Surveyor class	¶ 237	77	40
Draftsman class	78	25	** 35
Artisan class	148	†† 50	50

‡ Of these, 13 had passed or appeared for the B.A. degree examination.
§ Of these, 32 were F.A.'s. ‖ Of these, 3 were military candidates.
¶ Of these, 43 had passed the Matriculation examination.
** This number is partly made up of candidates who qualified for the Sub-Overseer and Surveyor class.
†† Selected candidates.

5. *Board of Examiners.*—The term of office of the President and Members of the Board of Examiners expired on the completion of their work in connection with the examinations of December 1899. In consequence of a reduction in the rates of remuneration, these gentlemen declined to serve again, and difficulty was experienced in constituting a fresh Board. Eventually appointments were made in November; but it was then too late to complete arrangements for examination in December, and it became necessary to postpone the final and term examinations, which should have been held in that month, to the following February. The need for postponement is matter

for regret, as the change of date will result in considerable inconvenience to both staff and students. The examinations must be held after the new batches of students have joined the College, and the capacity of the buildings will be severely tried. The commencement of the practical courses of the senior classes will be delayed, and, unless those courses are cut short, the Public Works Department will be saddled with double batches during the early part of 190 . The students passing out of the other classes cannot obtain employment earlier than April instead of having a prospect of securing it in February. There is, moreover, a grave disadvantage attaching to the appointment of a new Board, especially when the field of selection is limited, in that an abrupt change is likely to occur in the style and standard of the examinations. Sufficient variety in style would be introduced by requiring one member only to retire annually in rotation.

The rates of remuneration, which were lower than the University rates, were originally fixed in 1892. Shortly afterwards the cost of the Board was reduced by transferring part of its work, viz, the entrance examinations, to the College staff, without remuneration. The fees paid by the entrance examinees were credited to examinations generally, and thus became available for the payment of the Board. In 1898 it was decided that the examinations should be self-supporting. There were doubtless good reasons for this decision, notwithstanding that neither the College itself nor any department of it is self-supporting. As the cost of the Board was about Rs. 4,700, and the examination fees only Rs. 4,300, a reduction of the rates payable to the Board was ordered In 1899, however, the fees rose to about Rs. 6,700, and in 1900 to nearly Rs. 8,600. It appears then that the receipts are now ample not only to permit of reversion to the old rates, but also to remunerate to a moderate extent that part of the examination work which the staff has been called upon to perform. The examination receipts in 1900, viz., Rs. 8,590, represented Rs. 6,660 paid in on account of work done by the staff without extra payment and Rs. 1,930 on account of the final examinations.

6. *Examinations.*—As no examinations have been held by the Board during the year, the usual details regarding the progress and success of the students cannot be given in the present administration report. The entrance examinations, for which more than 500 candidates presented themselves and which involved considerable labour, were conducted by the College staff, and marks for Practical Surveying, for Gymnastics and Drill, and for Workshop, Laboratory and other work were assigned.

7. *Practical Courses.*—Eight Engineer and 26 Engineer Subordinate students were under practical instruction during 1900. Of the Engineer students, 3 who desired to become Civil Engineers spent the period in Public Works divisions, and 5 who wished to become Mechanical Engineers worked in shops, viz., one at the Madras Railway workshops and 4 in the Public Works factory. The Engineer Subordinate students spent the whole of the period on works. The reports received from Public Works officers were generally favourable, but in three cases an extension of the course was recommended.

Owing to the limited accommodation in the Body Guard Riding school, the students were divided into three sections, but only two sections received training during the time available, viz., between May and September.

8. *Military Students.*—The total number of Military students at the close of the year was nine, distributed as follows :—

Practical course	... ...	1
Engineer Subordinate class,	senior division	3
Do.	intermediate division	2
Do.	junior division	3

The student on works will be appointed, at the end of his apprenticeship, to the Public Works Department. The three men in the senior division have not yet been examined. Two men in the intermediate division, which consisted at the beginning of the year of four students, were remanded to their corps for insufficient progress in studies. One of the men in the junior division became seriously ill with hepatic disease immediately after joining the College in July. He remained in hospital during the rest of the year.

9. *Surveying.*—The usual survey camps were formed at Pallávaram in April and July, and good work was done under Mr. Goddard's management. Advance was made in respect of accuracy of work, keeping of field books, and care of instruments. The

cost of the camps was Rs. 2,803. Thanks are due to the Commandant, Major Welman, for facilities offered. More theodolites, levelling staves and chains are required, and a supply will be indented for in 1901.

During the year, practical surveying was constituted an obligatory subject for the final examinations.

10. *Inspections.*—In September the second and third year students of the Engineer class accompanied the Professor of Engineering on a tour of inspection, occupying ten days, to the Kistna Head Works, the Singareni Collieries, the Gódávari Bridge and the Gódávari Head Works. Thanks are due to the Engineer-in-Chief of the Gódávári Bridge, to the Agent and General Manager of the Hyderabad Company, and to the Executive Engineers of the Kistna and Gódávari Eastern divisions for the facilities kindly extended to the students.

In October the students of the junior division of the Engineer class, of the intermediate and junior divisions of the Engineer Subordinate class, of both divisions of the Sub-Overseer and Surveyor class and of both divisions of the Draftsman class proceeded in two batches, each in charge of three assistant instructors, to the Pálár anicut system in North Arcot for the inspection of irrigation works. The tour occupied three days.

11. *Workshops.*—The Professor of Engineering reports as follows :—

" As in previous years it was possible to provide for the instruction of only the Engineer and Engineer Subordinate classes, the numbers in each year being as follows :—

Engineer class—		
Third year	... ...	11
Second ,,	... ...	12
First ,,	... ...	13
	Total ...	36
Engineer Subordinate class—		
Third year	... ...	29
Second ,,	... ...	29
First ,,	... ...	34
	Total ...	92

" The time students can spend in the workshops without prejudice to their other work is comparatively limited, and whilst in the early mornings the workshops are crowded to excess, during the greater part of the day except on Saturdays they are practically not used by the ordinary college student. Two apprentices have been under training all the year, and one left, having obtained employment as Workshop Assistant to the Professor of Physics in the Presidency College.

" Throughout the whole year I have made use of the workshops in connection with the Metal Work department of the School of Arts, and much work has been done with the aid of the machine tools which would otherwise have been impossible. On general theoretical grounds the utilization of the College workshops for industrial work is distinctly objectionable, but in practice I find the objections lie more on the industrial side than on the other. An inspection of the work turned out by the students during the year and a comparison with the productions of previous years would convince any one that associating them with a number of workmen and training them in a workshop, where time and cost of production are matters of great importance, has had a most distinctly beneficial effect. From the industrial point of view I find that the College workshops are an expensive place to get work done in owing to the constant interruption of work by students. The whole cost of the extra establishment employed on work for the School of Arts has been met from the funds at my disposal at that institution, and I am of opinion that the college students have benefited rather than the reverse by the temporary association with the industrial work of the School of Arts.

" The efficiency of the workshops has been greatly increased during the year by the installation of a small but fairly complete electric plant and by the opening of the Presidency College gas works from which we are able to obtain a supply of gas for driving the gas engine. The electric installation consists of a continuous current

dynamo with an output of 120 *ampères* at 55 volts, which supplies current to a 4-horse power motor and two electric fans to illustrate the methods of transmitting power and to 4 arc lamps and 60 incandescent lamps as an example of electric lighting. The motor is regularly used to drive the line of shafting which supplies power to all the machine tools, and occasionally the workshops are run in the evening from 6 to 7 P.M., so that students may gain some practical experience of electric lighting. The machines and lamps were obtained from England, but the switch board and all the fittings were made in the workshops. A very large amount of work has been done with the testing machine, and at the end of the year all the results which have been obtained on the tests of building materials have been tabulated and published as the first of a series of Professional papers which it is proposed to issue from the college.

"The principal feature of the work of the year is the distinctly increased interest shown by the students in the practical work of the workshops and engineering laboratory, and though I have no hope that this will conduce to their greater success in answering examination papers, yet I am pretty certain that it will tend to make them more practical engineers and more useful subordinates in the Public Works Department when they have finished their courses of instruction."

12. *Chemistry.*—This subject, which was formerly dealt with by the Professor of Engineering, was taught during the year by M.R Ry. Ramaswami Sivan, one of the Assistant Instructors. A separate report will be submitted when further experience of the present system has been gained.

13. *Physical Training and Recreation.*—Instructions in Gymnastics and Drill was given as usual, and an examination was conducted by me at the end of the year. As compared with last year's results, there was an improvement in the Drill, but the degree of proficiency in Gymnastic continues to be low. The Gymnastic Instructor has been warned to display greater energy and to exercise more control over the students.

The Recreation Club has thriven under the vigorous management of Mr. Goddard, assisted by M.R.Rys. S. Subramania Aiyar and Ramaswami Sivan. The average daily attendance during the season was about 80. The inter-class matches for the Cricket, Football and Hockey trophies were keenly contested. All three were ultimately won by the Engineer class; but the junior Sub-overseer and Surveyor class made a good fight for the cricket trophy, and the senior Engineer Subordinate class for the Football and Hockey cups. The college entered for the inter-collegiate contest for the Professors' trophy for Cricket, and took a mid position on the list, the number of games won and lost being equal. The finances of the club are in a satisfactory condition. An extension of the recreation ground is badly needed. The addition of a piece of land at the south-west end has been granted, and an estimate for clearing and levelling it has been sanctioned; but the work was not carried out by the Consulting Architect for want of funds.

14. *Library.*—During the year 92 books were added to the library which now contains 3,745 volumes. The books issued to students numbered 3,800, and to the staff 510 against 2,622 and 499 respectively in the previous year, while 1,975 references were made to the consulting library.

The reading room, which constitutes a branch of the recreation club, was made good use of.

15. *Attendance and Conduct.*—The percentage of numbers present to numbers on the rolls was 95·9 for the college department, and 96·0 for the school department. The attendance by class divisions is given in Appendix D. The year was not a healthy one in Madras. Cases of fever among the students were numerous, and there was more absence supported by medical certificate than usual. I regret to have to report one fatal case of illness in the Engineer class.

The conduct of the students was generally satisfactory throughout the year.

16. *University Examinations.*—Four students of the senior division of the Engineer class appeared for the B.E. degree examination of 1900, and three were successful, viz., one in the Civil branch and two in the Mechanical branch. Three ex students also presented themselves but failed to pass.

Twelve candidates offered themselves for the F.E. examination, of whom ten were second year and two third year students, and four were successful. One ex-student appeared for the examination but failed.

17. *Buildings.*—The extension to the westward of that portion of the building which was formerly the palace of the Nawab of the Carnatic, alluded to in last year's report, was practically completed in November. At the expense of a portion of three class rooms, the clerks' office and some stores, additional accommodation comprising two large drawing offices, each 100 feet by 24 feet, and four lecture rooms has been obtained. It was originally intended that one of the two drawing offices should be reserved for the library and reading room but it has been found necessary to allot it to students. The library remains on the upper floor, and a staircase will have to be made between it and the stationery room, which is immediately beneath it on the ground floor.

A few minor alterations, necessitated by the new structure, were made in the old building, but the usual annual repairs were not carried out. The Consulting Architect proposed early in the year to defer the repairs until the new structure approached completion; later he explained that funds were not available. Consequently the old building is now in an unsatisfactory state of repair; no painting has been done for many years, plaster has decomposed, the walls are dirty, cornices are falling, and considerable expenditure will be necessary in 1901.

The estimate for the extension buildings made no provision for furniture. An estimate, amounting to about Rs. 5,000, was submitted in April, but no orders had been passed by the end of the year. Until suitable furniture is supplied, full advantage cannot be taken of the new buildings.

The question of further workshop accommodation, which was referred to in your review of the Administration report for 1899, is still under the consideration of the Professor of Engineering.

18. *Government Technical Examinations.*—Seventeen candidates, of whom 15 were students and two ex-students, presented themselves voluntarily for these examinations. One belonged to the Engineer Subordinate class, seven to the Draftsman class and nine to the Artisan class. Eight different subjects were taken up and there were 33 papers in all. The results of four papers have not been declared, but 11 out of the remaining 29 satisfied the examiners. Particulars are given in Appendix E.

19. *Employment of passed Students of* 1899.—Of the four Engineers who completed their practical training about December 1899, the senior, U. S. Ramaswami Aiyar, B.A., B.E., was appointed Assistant Engineer, Public Works Department, Provincial Service, on Rs. 250. The next two became Overseers on Rs. 80 each, while the fourth joined the temporary Upper Subordinate establishment on a similar salary.

Of 21 Engineer Subordinates who completed their practical course at the end of 1899 or beginning of 1900, three were appointed to the permanent and 17 to the temporary Upper Subordinate establishment of the Public Works Department. The remaining man obtained employment in the Revenue Department as a Minor Irrigation Overseer. Salaries averaged Rs. 60.

Of 24 Sub-Overseers and Surveyors of 1899, 18 were employed as under: Overseers or Sub-Overseers, one in the Public Works Department, one in the Revenue Department, one in a Native State and two in municipalities; surveyors, four in the Public Works Department, two in the Revenue Department and one in the Forest Department; four students became delta or channel superintendents and one a Railway Sub-Inspector, while one engaged in private work as a contractor. The remaining six were unemployed. Salaries ranged from Rs. 20 to Rs. 60.

Of the 14 Draftsmen who completed their College course in December 1899, eight were employed in the Public Works Department and two on the Madras Railway. Two were unemployed, and no information has been received from the remaining two. Salaries ranged from Rs. 20 to Rs. 50.

20. *Prospects of employment in* 1900.—The prospects of employment for the students who completed their courses at or about the end of 1900 appear to be good. Those of the Engineers have been improved by a recent ruling which renders them eligible for transfer from the temporary to the permanent Upper Subordinate establishment of the Public Works Department. Communications have been opened with the Board of Revenue with the object of prescribing the qualifications for Upper and Lower Subordinates of the Minor Irrigation establishment in the Public Service Notification. The pay of Draftsmen in the Public Works Department has been improved by G.O., No. 2397 W., dated 3rd September 1900, under which the four

existing classes, with salaries commencing at Rs. 20, Rs. 35, Rs. 50 and Rs. 100, have been converted into three grades, with pay Rs. 30—50, Rs. 55—70 and Rs. 100—130.

21. *Revision of Rules.*—The following are the principal changes made during the year:—

(1) Qualified Engineer students who do not obtain guaranteed appointments are eligible to be appointed to the temporary Upper Subordinate establishment of the Public Works Department, whence they may be transferred to the permanent establishment on the recommendation of Superintending Engineers.

(2) Qualified Engineer Subordinate students, who do not obtain guaranteed appointments to the permanent establishment (the number of which will be one annually from 1st January 1902) are eligible for appointment to the temporary Upper and Lower Subordinate establishments of the Public Works Department, whence they may be transferred to the permanent Upper Subordinate establishment.

(3) Students of European parentage who are classed as statutory natives of India are specifically declared eligible to compete for guaranteed appointments.

(4) The concession granted to persons who had never been through the College course for Draftsmen to present themselves for certificate examination was, after a trial of four years, withdrawn in November last; and the allotment of college marks to the Draftsman class was ordered to be resumed.

(5) The question of the abolition of the Artisan class has been under consideration since 1898. The class was formed in 1889; but though popular, it has not generally attracted the persons for whose benefit it was established. It was moreover a source of inconvenience to the teaching staff, and the instruction given was superficial. Government has now decided that the class shall be abolished from the 1st January 1902.

(6) Proficiency in practical surveying, to be tested by the College staff, has been made obligatory for all students of the Engineer, Engineer Subordinate, and Sub-Overseer and Surveyor classes.

(7) The date for admission to the Engineer class has been advanced from the last Monday in January to the 20th day of January, and the date for the entrance examination has been altered to the third Monday in November.

(8) Mechanical Engineer students under training at the Public Works workshops are permitted, if they so desire, to spend the last six months of their course in the College workshops.

(9) A revised syllabus in Applied Mechanics for the Engineer Subordinate class was sanctioned and introduced.

22. *Financial details.*—On referring to Appendix G, it will be seen that the receipts amounted to Rs. 25,829 and the charges to Rs. 94,394. The net cost to Government was therefore Rs. 68,565. Dividing this sum by the average number of students on the rolls, it appears that the net cost of educating each student was Rs. 223. Comparing the figures with those for 1899, it will be found that the increase in receipts was Rs. 4,008 or 18·4 per cent., while the increase in charges was Rupees 4,855 or 5·4 per cent. The net cost to Government increased by 1·3 per cent. The rise in receipts is due to the larger number of students in the College and to the increase in the number of candidates for admission. The enhancement of the charges is due mainly to the salary of the permanent as compared with that of the acting Principal, and to a portion of the cost of the Board of Examiners of 1899 having been paid in 1900. Full financial details for the official year are furnished with the annual returns. The receipts and charges for the last five calendar years are given in Appendix H.

The average tuition fee paid per student per annum was Rs. 74 in the College Department and Rs. 40 in the School Department.

23. *General.*—Notwithstanding the keen competition for admission to the Engineer Subordinate and Sub-Overseer and Surveyor classes, I do not consider that the time has yet arrived for raising the standard of general education for these classes. I am of opinion, however, that their training may be materially improved by increasing the length of the College courses to three years in each case. The sanctioned augmentation of the staff, the extension of the buildings, and the abolition of the artisan class contribute to render the change possible; and a separate report on the subject

will be submitted in due course. At the same time the desirableness will be considered of admitting all students in July, and of making the year consist of one term ending in April when the examinations would be held. The disadvantages of the present long break in the in-door work due to two survey camps and the midsummer vacation might thus be avoided.

In conclusion, I bring to notice the good work done during the year by the staff generally. Mr. Chatterton's success in the development of the workshop training and of the experimental work in the Engineering Laboratory is too conspicuous to need emphasising. I particularise Mr. Goddard for the energy he displayed in the improvement of the instruction in surveying as well as for the spirit which he has done so much to infuse into the students in regard to games. I also bring to notice, among the Assistant Instructors, the good work of Mr. Littlewood and M.R.Rys. Ramaswami Sivan, B.A., and Pranatartihara Aiyar. M.R.Ry. Venkataramaiya, B.A., L.T., undertook the much-needed rewriting of the vernacular text-books in use, and published at his own expense the first part of the Tamil revision.

APPENDIX A.

Distribution of Students according to class of Community on the 31st December 1900.

Classes.	Europeans and Eurasians.	Native Christians.	Muhammadans.	Hindus.				Aborigines.	Others.	Total.
				Brahmans.	Non-Brahman Caste Hindus.	Panchamas.	Other classes.			
Engineer	..	3	..	32	1	..	..	..	..	36
Engineer subordinate	9	1	..	76	6	..	..	..	..	92
Sub-Overseer and Surveyor	1	2	3	38	23	..	..	..	..	67
Draftsman	..	8	..	38	17	..	..	..	..	63
Artisan	..	5	1	6	36	..	..	..	..	48
Total	10	19	4	190	83	..	..	..	..	306

APPENDIX B.

Distribution of Students by Districts on the 31st December 1900.

Districts.	Engineer class.	Engineer Subordinate class.	Sub-Overseer and Surveyor class.	Draftsman class.	Artisan class.	Total.
Ganjám	..	..	..	1	..	1
Vizagapatam	..	..	..	..	..	..
Gódávari	2	3	6	5	..	16
Kistna	..	2	3	3	1	9
Nellore	..	1	1	..	..	2
Madras	1	2	3	7	25	38
Chingleput	..	1	6	1	5	13
North Arcot	3	2	3	2	4	14
South Arcot	1	..	2	1	..	4
Tanjore	13	32	27	18	8	98
Trichinopoly	4	8	6	5	1	24
Madura	..	5	1	4	..	10
Tinnevelly	2	13	4	4	2	25
Coimbatore	..	7	2	3	1	13
Salem	1	..	..	3	..	4
Malabar	..	1	1	3	..	5
South Canara	4	4	..	..	..	8
Pudukkóttai	1	1	..	1	..	3
Travancore	2	..	1	..	1	4
Cochin	1	..	..	..	..	1
Mysore	1	1	..	2	..	4
Goa	..	..	1	..	..	1
Military students	..	8	..	..	..	8
European	..	1	..	..	..	1
Total	36	92	67	63	48	306

APPENDIX C.

Distribution of Students by Wealth and Occupation of Parents on the 31st December 1900.

Classes in College.	Wealth.				Occupation.								
	Richer classes.	Middle classes.	Poorer classes.	Total.	Officials.	Petty officials.	Traders.	Landholders.	Artisans.	Coolies including agricultural labourers.	Mendicants.	Others.	Total.
Engineer class—													
Third year	..	10	1	11	1	1	..	9	..	..	..	..	11
Second year	..	10	2	12	3	..	..	8	..	..	..	1	12
First year	..	13	..	13	6	..	1	6	..	..	..	..	13
Engineer Subordinate class—													
Third year	1	25	3	29	5	1	2	18	..	..	..	3	29
Second year	..	26	3	29	13	4	2	10	..	..	..	..	29
First year	..	28	6	34	13	..	2	18	..	..	..	1	34
Sub-Overseer and Surveyor class—													
Second year	..	26	8	34	11	3	3	17	..	..	..	..	34
First year	2	24	7	33	14	5	3	11	..	..	..	..	33
Draftsman class—													
Second year	..	29	6	35	20	1	3	11	..	..	..	..	35
First year	2	22	4	28	14	1	3	10	..	..	..	..	28
Artisan class	..	21	27	48	* 20	* 13	* 4	* 4	* 7	..	..	..	48
Total ..	5	234	67	306	120	29	23	122	7	..	..	5	306

* The classification is furnished by the students. Careful enquiries show that, classing maistries as artisans, the entries in the five columns should be 10, 5, 1, 2 and 30, respectively.

APPENDIX D.

Average Number and Attendance in 1900.

	Average numbers on rolls.	Average daily attendance.
College department—		
Engineer class, third year	11·0	10·1
Do. second year	12·0	11·3
Do. first year	12·9	12·8
Engineer Subordinate class, third year	29·0	28·2
Do. do. second year	30·2	28·3
Do. do. first year	34·0	33·1
	129·1	123·8
School department—		
Sub-Overseer and Surveyor class, second year	34·1	32·5
Do. do. first year	33·2	32·7
Draftsman class, second year	34·3	32·0
Do. first year	28·4	26·5
Artisan and Maistry class	47·8	47·0
	177·8	170·7
Total College and School departments ...	306·9	294·5
Percentage of numbers present to numbers on the rolls—		
College department		95·9
School do.		96·0

APPENDIX E.

Government Technical Examinations of 1900.

Subject.	Grade.	Number examined.						Number passed.
		Engineer class.	Engineer Subordinate class.	Sub-Overseer and Surveyor class.	Draftsman class.	Artisan class.	Total.	
Building materials and construction.	I.	..	1	..	..	..	1	..
	E.	..	..	..	..	2	2	..
Building Drawing and Estimating	I.	..	1	..	..	..	1	1
	E.	..	..	..	..	2	2	1
Hydraulics and Irrigation Work.	I.	..	1	..	..	..	1	..
Surveying and Levelling.	I.	..	1	..	..	7	8	3
	E.	..	..	..	..	1	1	1
Practical Plane and Solid Geometry.	E.	..	..	..	3	..	3	3
Mensuration	E.	..	..	..	1	7	8	2
Freehand and Outline Drawing.	E.	..	..	..	2	..	2	..
Geometrical Drawing ..	I.	..	..	..	2	..	2	Results not known.
	E.	..	..	..	2	..	2	
Total ..	I.	..	4	..	2	7	13	4
	E.	..		..	8	12	20	7

APPENDIX F.

Classification of Vacancies notified during the year 1900.

	Government.			Local Boards and Municipalities.				Railways.				Native States.				Private employees.		Total.
	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.	Rs. 50 to 100.	Under Rs. 50.	
Engineer or Assistant	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	3
Supervisor	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1
Overseer	..	4	..	..	..	3	2	..	..	..	..	..	..	3	..	..	..	12
Sub-Overseer	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2
Draftsman	..	2	10	..	..	..	..	..	..	2	..	..	..	..	..	..	..	14
Surveyor	4	5	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	29
Anicut or Conservancy Superintendent.	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Total ..	4	11	33	..	2	3	3	..	..	2	..	2	..	3	..	..	..	63

APPENDIX G.

Financial Details for 1900.

Receipts—

Tuition Fees—

	Rs.	A.	P.	Rs.	A.	P.
College department	9,578	0	0			
School department	7,159	8	0			
				16,737	8	0
Entrance and final examination fees				8,590	8	0
Fines and miscellaneous receipts				501	5	1
Total ...				25,829	5	1

	Rs.	A.	P.
Charges—			
Principal	19,742	0	11
Professors, masters and teachers	39,499	1	4
Clerks, librarian and servants	4,763	15	8
Board of examiners	6,723	14	8
Library and prize allowances	260	10	6
Books and instruments	515	4	1
Other Europe stores	6,188	4	5
Other heads of contingent charges	9,669	10	0
Travelling allowances	837	2	0
Scholarships	4,278	2	10
Exchange compensation allowance	1,915	13	8
Total ...	94,394	0	1
Net cost to Government	*Rs.* 68,565		
Average number of students on rolls	*Rs.* 307		
Net cost per student	*Rs.* 223-3-0		
Average tuition fee paid per student per annum—			
College department	Rs. 74		
School department	Rs. 40		

APPENDIX H.

Financial Details.

	1900.	1899.	1898.	1897.	1896.
	Rs.	Rs.	Rs.	Rs.	Rs.
Receipts	25,829	21,821	17,553	16,366	14,590
Charges	94,394	89,538	75,480	74,179	66,288
Net cost to Government	68,565	67,718	57,928	57,813	51,698
Average number of students	307	283	285	239	205
Net cost per student	223	239	203	242	252

Read also the following letter from Lieut.-Colonel H. D. LOVE, R.E., Principal, College of Engineering, Madras, to the Director of Public Instruction, dated 12th April 1901 No. 82-C. :—

Referring to paragraph 6 of my administration report for 1900 and to your Reference on C. No. 1705, dated 27th March 1901, I have now the honour to furnish the following particulars regarding the final and term examinations which were held in February 1901 by the Board of Examiners under the presidentship of Mr. A. B. Strange :—

(*a*) *Engineer class.*—The third-year division contained 11 students. Ten of these passed the final examination. The average percentage of the total marks was 60. The second and first year divisions, numbering 12 and 13 students respectively appeared for the term examinations and obtained 57 and 63 per cent. of the total marks.

(*b*) *Engineer Subordinate class.*—The senior division of 29 students appeared for the final examination, and 28 were successful. The list was headed, for the first time since 1890, by a military student, Ag. Bombardier Gwynn. The two other military students in the class were successful, but the junior of these will, in accordance with article IX (v) of the College rules, revert to his regiment. The average percentage of marks gained by the whole class was 61. Twelve independent candidates also appeared, of whom seven passed. The intermediate and junior divisions of 29 and 33 students respectively appeared for the term examinations, and secured 57 and 63 per cent. of the total marks.

(*c*) *Sub-Overseer and Surveyor class.*—Out of 33 students in the senior division, 2 passed with first-class certificates and 24 with second-class. The division is the first to come under the operation of the rule requiring separate minima under Board's and

College marks. The average of marks was 59 per cent. Nine independent candidates presented themselves and five passed. The junior division comprising 33 students secured an average of 68 per cent. of the marks at the term examination.

(*d*) *Draftsman class.*—In the senior division 32 students (two of whom appeared as independent candidates) presented themselves. Seven passed with first-class certificates and 23 with second-class. The average total marks were 63 per cent. College students borne on the rolls will not in future be allowed to offer as independent candidates. Sixteen ordinary independent candidates were examined, of whom two passed with first-class certificates and eight with second-class. In the junior division of the draftsman class 28 students appeared for the term examination and secured an average of 51 per cent. of the total marks.

(*e*) *Artisan class.*—This class contained 48 students at the close of the year. Appendix C of my administration report shows that 30 of these are sons of artisans.

2. *Comparison of Results.*—The percentages of marks secured under the various subject heads by the senior divisions of classes compare as follows with the average results of the preceding four years:—

Engineer class—Senior division.

	1900.	Average of preceding four years.
	Per cent.	Per cent.
Mathematics	58	60
Science	52	48
Engineering	62	52
Drawing	62	53
Surveying	65	62
Language	55	55
Drills and exercises	62	66
Total ...	60	55

Engineer Subordinate class—Senior division.

Mathematics	61	55
Engineering	61	49
Drawing	63	49
Surveying	60	58
Language	58	50
Drills and exercises	63	69
Total ...	61	52

Sub-Overseer and Surveyor class—Senior division.

Surveying	62	* 59
Engineering	59	* 48
Drawing	57	* 52
Drills and exercises	48	58
Total ...	59	55

Draftsman class—Senior division.

Geometrical, &c., drawing	51	* 53
Building construction and drawing	65	* 51
Machine drawing	72	* 45
Estimating	53	* 58
Total ...	63	52

* The marks in these cases are those of the three years 1897, 1898 and 1899.

It will be observed from the above figures that there has been a rise in the totals of the senior divisions of all the classes, ranging from 4 per cent. in the Sub-overseer and Surveyor class to 11 per cent. in the Draftsman class. Under subject heads, the most notable increases appear in *Engineering* and *Drawing*. The senior divisions

of classes were in my opinion of good material; but their excellence was not so marked as to fully account for the noticeable rise of percentages. I attribute the increase in part to the complete change which has taken place in the *personnel* of the Board of Examiners.

Read—also letter from the same officer No. 128 C., dated 22nd April 1901, reporting that three students of the Sub-overseer and Surveyor class failed to satisfy the Principal in practical surveying, and that, two of these having failed in the final examination also, the success of the remaining candidate will not be notified until such time as he qualifies in the subject.

Proceedings, Dis. No. 2875, dated 14th May 1901.

Staff.—Lieutenant-Colonel Love continued in charge of the college throughout the year. Since the close of the year, Mr. Webster, the newly appointed instructor in Mechanical Engineering, has taken charge.

2. *Accommodation.*—The extensions to the college buildings were completed during the year. It is hoped that the question of further workshop accommodation will be taken up and definite proposals submitted as soon as possible.

3. *Workshops.*—During the year the workshops, which continued to be under the immediate control of Mr. Chatterton, were used to a large extent in connection with the Aluminium department of the School of Arts. The officer in charge is of opinion that the college students benefited by their association with this industrial work. The gas engine is now driver with gas from the Presidency College gas works, and a small electric plant was installed during the year. The Director is glad to note the increased interest shown by the students in the practical work of the workshops and the engineering laboratory.

4. *Strength and attendance.*—In the margin are given particulars of the strength of the different classes at the close of the last two years, students in their practical course being excluded. The number on the rolls was the largest on record in the quinquennium. Compared with the previous year, an increase is noticed in all the classes except the Sub-overseer and Surveyor class which contained the same number, while the competition for admission was also keener in all but the Engineer class. The increase in the strength of this class is, however, satisfactory. Owing, as stated by the Principal, to the general unhealthiness of the season, the proportion of average daily attendance to the average number on the rolls showed a deterioration in both the college and school departments. Six districts (Vizagapatam, Kurnool, Bellary, Anantapur, Cuddapah and the Nilgiris), as against three the previous year, were unrepresented in the college and Tanjore, as usual, was the chief source of supply, as many as 98 or nearly a third of the total number being drawn from it. The artisan class will cease to exist from 1st January next, Government having sanctioned its abolition.

	1899.	1900.
Engineer class	29	36
Engineer subordinate class. { Civil students ..	77	84
Engineer subordinate class. { Military students.	10	8
Sub-overseer and surveyor class ..	67	67
Draftsman class	56	63
Artisan class	38	48
Total ..	277	306

5. *Examinations*—(i) *University Examinations.*—The following are the results of the Degree Examination and the First examination in Engineering for the past two years:—

	1898-99.		1899-1900.	
	Examined.	Passed.	Examined.	Passed.
Degree examination	4	3	4	3
First examination in Engineering ..	11	5	13	4

The further deterioration at the latter examination is much to be regretted.

(ii) *The College Board Examinations.*—Owing to delay in the formation of the Board, these examinations could not be held during the year, but were conducted in February last. The Principal's suggestion that members of the Board should be appointed by rotation every year will be considered on the occurrence of the next vacancy.

The following summary compares the results of the examinations for the last two years:—

	1899.		1900.	
	Examined.	Passed.	Examined.	Passed.
Engineer class	6	6	11	10
Engineer subordinate class	28	17	29	28
Sub Overseer and surveyor class ..	34	24	33	26
Draftsman class	18	14	32	30

The results were very good and were an improvement on those of the previous year. In the Engineer class, Science and Mathematics require greater attention. The general improvement in the percentage of marks obtained by the various classes is satisfactory, though, as remarked by the Principal, this may be partly due to changes in the examining staff.

(iii) *Government Technical Examinations.*—For these examinations, 33 subject-candidates went up. Excluding those that appeared for the examination in geometrical drawing, the results in which have not been reported, 11 candidates are shown as having passed out of 29 entrants.

6. *Independent candidates.*—The results of the independent candidates are recorded in the margin. Compared with those of the previous year, these results show a deterioration except in the Sub-overseer and Surveyor class. Under G.O., No. 576, Educational, dated 12th November last, the Draftsman's test will no longer be open to those who have not been through the college.

	Examined.	Passed.
Engineer subordinate class ..	12	7
Sub-overseer and surveyor class.	9	5
Draftsman class	16	10

7. *Military students.*—Excluding the student engaged in his works course, there were under instruction in the college eight soldier students against nine the previous year. In the final examinations conducted by the Board of Examiners, all the three that appeared were successful, one of them heading the list.

8. *Practical course.*—Eight engineer students and 26 engineer subordinate students were under practical instruction. Five of the former who wished to qualify as mechanical engineers were undergoing training in the Madras Railway Workshop and the Public Works Workshop. Of the engineer subordinate students, the practical course of three had to be extended for insufficient progress. Owing to want of accommodation in the Bodyguard riding school, a few students had to be exempted from the course in equitation.

9. *Physical Education.*—The Recreation club worked with success during the year under the guidance of Mr. Goddard aided by two of the assistants. The improvement in drill is noted, but the degree of proficiency in gymnastics continued to be low. It is hoped that the warning given to the gymnastic instructor will have the desired effect. The Director trusts that the extension of the recreation ground will soon be taken up by the Public Works Department.

10. *Discipline and conduct.*—The conduct of the students and the discipline maintained in the college continued to be satisfactory.

11. *Employment of former students.*—The report of the Principal in regard to the employment of the students who completed their course in 1899 is, on the whole, encouraging. He considers that the students who have just left the college have also good prospects before them owing to the improvement effected in the pay of draftsmen in the Public Works Department and the recognition of the college examinations as qualifying tests for minor irrigation officers.

12. *Finance.*—For reasons explained in the report, there was a still further increase in both the receipts and charges of the college, the former having risen from Rs. 21,821 to Rs. 25,829 and the latter from Rs. 89,538 to Rs. 94,394. The net cost to Government was also higher, but the net cost per student fell from Rs. 239 to Rs. 223 owing to increase in the average number on the rolls and the larger average fee per annum paid by each student both in the college and school departments.

13. *General.*—The administration of the college during the year reflects credit on the Principal and the staff. The Director notes with pleasure the favourable testimony borne by the Principal to the good work done by the staff. In regard to the points referred to in paragraph 23 of the report, the further communication promised by the Principal is awaited.

Order—No. 301, Educational, dated 3rd June 1901.

Recorded.

(True Extract.)

C. J. WEIR,
Ag. Secretary to Government.

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

Letter—No. 302, Educational, dated Ootacamund, 3rd June 1901, to the Under Secretary of State for India.

With reference to 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, of this date, recording the report on the working of the College of Engineering during the year 1900.

C. J. WEIR,
Ag. Secretary to Government.

Ed: W. D'Mo[illegible]

1,000—16-11-00.

Educational (190/) Department.

CURRENT No. 720

From

[Name] The Hon'ble Mr.G.H.Stuart,M.A.,Bar-at-Law,

[Designation] Director of Public Instruction,

[Station] Madras.

DESPATCHED
17 MAY.1901

C *No.* 4145

Dated 16th May *190*1.

Received 17 MAY. 1901 *190* .

Enclosures One

Registered 20-5. *190*

SUBJECT.

Submitting a copy of his Proceedings reviewing the report on the working of the College of Engineering during 1900.

BACK PAPERS.

FURTHER PAPERS.

To

The Secretary to Government,

Educational Department.

Sir,

I have the honour to submit, for the information of Government, a copy of my Proceedings No 2875, dated 14th instant reviewing the report on the working of the College of Engineering during 1900.

I have the honour to be,

Sir,

Your most obedient servant,

G H Stuart

Director of Public Instruction.

[E. / 4]

1,500—8-11-6

EDUCATIONAL DEPARTMENT.

READ AGAIN G.O., No. ....., dated ..... 190 .

" " " " ....., " ..... 190 .

READ ALSO:—

C. No. 720, From the D.P.I., No. 4145, dated 16th May 1901.

" " , " " , " , " ..... 190 .

" " , " " , " , " ..... 190 .

ORDER No. 301, dated 3/6/ 190 1.

Recorded. H.L. 23.5.

2. The Govt. agree with the Director in considering that the administration of the College during the year reflects credit on the Principal and the Staff.

Pty 23/5/01

D.P.I. 3/6/01

24. 5. 01

Letter No. 302 dated 3/6/01.

To the Under Secretary of State for India

Sir,

With reference to Lord Hartington's despatch no 9, Public works, of the 18th May 1882. I am directed to forward a copy of the

H. Sir

P.S.

To The D.P.I. 31/5/01

" P.W.D. 13/6/01

The Editor's letter. Varma

Desp. Rec 20/6

6 Oct 1901

the attached
the proceedings of this Govt of this date recording the report on the working of the College of Engineering during the year 1900.

By
23/5/01

23.5-7

24.5.01

copy sent to Press.

urned for signature.

espatched in print.

NUMBER OF COPIES REQUIRED. Order complete. 20 Letter only. 10 Order complete with Letter. 20

EAD AGAIN G.O., No. , DATED

RRENT No.

ENCLOSURES TO C. No.

ORDER OF GOVERNMENT.

LETTER OF GOVERNMENT.

STATEMENT WITH DITTO.

PAPERS NOT FILED UP, BEING MEANT FOR DESPATCH IN ORIGINAL.

N.B.—

A = Print in full.
B = Not to be printed.
P = Print abstract only.
Q = Print heading only.