GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

Read—the following paper:—

From the Hon'ble Mr. D. DUNCAN, M.A., D.Sc., LL.D., Director of Public Instruction, to the Chief Secretary to Government, dated Madras, 12th May 1896, No. 5368.

I have the honour to submit, for the information of Government, a copy of my Proceedings, No. 5321, dated 11th instant, reviewing the report on the College of Engineering for the calendar year 1895. I beg also to enclose for reference and favour of return the reports of the individual members composing the College Board of Examiners.

Enclosures.

Proceedings of the Director of Public Instruction, dated 11th May 1896, No. 5321.

Read the following letter from the Principal, College of Engineering, Madras, to the Director of Public Instruction, No. 1285-C, dated 31st January 1896:—

I have the honour to submit the following review of the working of the College of Engineering during the year 1895.

2. *Establishment.*—The only change which occurred in the establishment was that due to my return from furlough, and re-assumption of the principalship from Mr. J. P. Davidson on 1st April. Application has been made to Government for an extension of the period during which the services of Sergeant B. O. Reynolds, Instructor in Engineering, are lent to the College. The principle of establishing a chain of responsibility among the members of the staff was extended by placing each assistant instructor under the control, so far as his work is concerned, of one of the two chief instructors. The plan has been found to answer well.

3. *Numbers.*—The numbers on the rolls at the end of the session were—

Class.	Practical course.		In College.			Total.
	Second year.	First year.	First division.	Second division.	Third division.	
Engineer classes	3	2	7	6	6	24
Do. Subordinate class	26	17	22	19	22	106
Military probationers	..	..	..	..	..	2
Draftsman class	..	..	* 34	30	..	64
Surveyor class	..	..	† 26	22	..	48
Artisan class	..	..	..	..	..	35
Total ..	..	..	..	..	..	279

* Including 6
† Including 8
who, for examination purposes, were classed as independent candidates.

Excluding the students going through the practical courses in workshops and on works, the total number actually in the College on 31st December 1895 was 231. The corresponding totals for the four preceding years were 1894, 265; 1893, 252; 1892, 217; 1891, 189. The reduction in numbers, as compared with those of 1894, is due partly to a falling off in the competition for the Engineer Subordinate class, partly to the abnormal strength of the senior divisions of the Draftsman and Surveyor classes of 1894, and partly to casualties. I expect a recovery to take place during 1896.

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

The numbers offering for admission were: Engineer classes 13, of whom 11 passed the entrance examination of December 1895; Engineer Subordinate class 31, of whom 25 qualified in April for admission; Draftsman and Surveyor classes 66 and 46, respectively, of whom 48 and 38 qualified in December 1895; Artisan class 103, of whom 40 have been selected.

4. *Examinations.*—The final and term examinations were conducted, as usual, by the Board of Examiners, with Mr. Ashpitel as President. A brief abstract of the results is given below :—

(*a*) *Engineer Classes.*—The first division contained 7 third-year students, 6 of whom passed the final examination. The second and third divisions, numbering 6 each, passed the usual term examinations.

(*b*) *Engineer Subordinate Class.*—The senior division of 21 students appeared for the final examination, and 15 were successful. S. Natesa Aiyar, who heads the list with more than three-fourths of the total marks, is the first native student to pass this examination in the first class. Four independent candidates also appeared, none of whom passed. The second and third divisions of 19 and 22, respectively, passed the usual term examinations.

(*c*) *Draftsman Class.*—The senior division consisted of 28 students, of whom 20 qualified, viz., 3 for first-class certificates, 3 for second-class and 14 for third-class certificates. These results show a great improvement over those of 1894. Thirty-one independent candidates presented themselves, of whom 20 passed, viz., one for a first-class certificate, four for second-class and 15 for third-class certificates. Twelve of these successful candidates are however already certificate holders. The second division of 30 students passed a fair term examination.

(*d*) *Surveyor Class.*—The first division of 22 students appeared for the final examination, and 16 passed, viz., 2 for second-class and 14 for third-class certificates. Eleven independent candidates presented themselves, and one was successful, gaining a third-class certificate. The second division of the class, numbering 22, passed a good term examination.

(*e*) *Artisan Class.*—This class, which opened with 40 students, fell through resignations and dismissals to 35 at the close of the year. Evening instruction was imparted as usual, and the class, judging from the large number of applications for admission, continues popular. It is reserved, as far as possible, for maistries, artisans and the sons of such persons.

The class percentages of the marks under the various subject-heads compare as follows with the average results of the preceding four years :—

	1895.	Average of previous four years.
Engineer Classes.		
Mathematics	57	65
Science	45	51
Engineering	51	66
Drawing	55	71
Surveying	61	69
Language	58	54
Drills and Exercises	62	72
Total	54	64
Engineer Subordinate Class.		
Mathematics	51	48
Engineering	47	50
Drawing	60	55
Surveying	59	56
Language	37	48
Drills and Exercises	70	71
Total	54	54

	1895.	Average of previous four years.
Draftsman Class.		
Practical Geometry	66	61
Free-hand, Perspective and Model Drawing	57	56
Building Drawing	56	57
Machine Drawing	58	55
Estimating	48	48
Topographical Drawing	50	51
Drills and Exercises	53	71
Total	55	56
Surveyor Class.		
Chain Compass and Plane Table Surveying	52	58
Levelling	49	63
Theodolite Surveying	43	61
Topographical Drawing	54	56
Drills and Exercises	68	67
Total	54	60

The usual proportion of the total marks was assigned by the College staff for session work and practical examinations, and the whole of the marks for drills and exercises.

The classes show great uniformity in the final results, each obtaining 54 or 55 per cent. of the total marks.

5. *Practical Courses.*—Three Engineer students and 24 Engineer Subordinate students completed their works course on 31st December. Another Engineer Subordinate will finish his course at the end of February. The Senior Engineer student, R. N. Arogyaswami Mudaliar, B.A., B.C.E., obtains the guaranteed appointment as Assistant Engineer, Public Works Department. Another Engineer student belonging to a previous year completed his course in May. The reports received from Executive Engineers are generally favourable to the progress of the students. There is a tendency in some divisions to employ the students chiefly on Survey work, which does not afford the complete training for which the course is designed. No reports were received regarding three students attached to the Madura and Tinnevelly divisions.

Two Engineer students and 17 Engineer Subordinate students completed their course in the Public Works Workshops on 31st December. Among the latter were two casualties, one by death and one by resignation. All the students went through a course of riding in the Body Guard school. One Engineer Subordinate student sustained a serious riding accident, but he has since recovered. The progress reports from the Superintendent of the Public Works Workshops were satisfactory. It has been suggested to the Superintendent that the working hours should be increased to thirty per week. One of the Engineer students was permitted to spend two months of his course in the College Workshop.

It has been determined, with the view of diminishing the present duration of the full curricula, to reduce the practical course from two years to one, the Chief Engineer deciding in individual cases on the division of the period between workshops and works. It is probable that the whole of the period will usually be spent on works, the training in workshop practice being given in the college shops during the theoretical course. The immediate effect of the alteration will be that two batches of Engineers and Engineer Subordinates will complete their course simultaneously in December 1896. To avoid this it has been suggested that the students of the earlier year shall be deemed to finish their course on 30th June. With the practical abolition of the Workshop year, special arrangements will have to be made for the riding course.

The course in workshops for Mechanical Engineer students will also, it is understood, be reduced to one year.

6. *Military Students.*—The total number of soldier students on 31st December 1895 was 11, viz., two on works, two in workshops, five in the Engineer Subordinate class, and two probationers. One probationer was remanded to his regiment in July for failure to pass the examination, and one regular student in September for misconduct.

It has been notified that the probationary course will be reduced from one year to six months for the next three years, and thereafter abolished completely, the entrance examination being raised to the standard required for civil candidates. The admissions are to be five per annum, and two appointments are guaranteed.

7. *Government Technical Examinations.*—Of the college regular students who voluntarily appeared for the Government Examinations in Engineering subjects, one passed the *Advanced* standard, six the *Intermediate*, viz., four in the first and two in the second class, and five the *Elementary*, viz., two in the first and three in the second class. The decision that Government Technical scholarships cannot be held during the college practical courses, will probably materially affect the number of students appearing for these examinations.

8. *Surveying.*—During February, two divisions of the Engineer class, two of the Engineer Subordinate class, and one of the Surveyor class, comprising 82 students, were encamped at Guindy for a fortnight's continuous work. In July, three divisions of the Engineer class, two of the Engineer Subordinate class, and one of the Surveyor class, numbering 65 in all, proceeded to Gúduvánchéri for three weeks for further practice. The work was done under the skilful superintendence of Sergeant Goddard, the Instructor in Surveying and Drawing, and was, on the whole, satisfactory; attention being paid more to accuracy of detail than to magnitude of outturn. Marks were allotted for the work then done, and practical examinations of all the classes in Surveying were held in November by the College staff. These examinations, on which great stress is laid, have proved of high value in encouraging knowledge of the manipulation of surveying instruments. It is intended to have the camps next year at Avadi, and to send out the whole of the Engineer, Engineer Subordinate and Surveyor classes.

9. *Estimating.*—The results in Estimating have always been low throughout the college. In 1894 wholesale failure occurred in this subject in the Draftsman class. Investigation showed that college marks had been insufficiently assigned; and, with the approval of the Board of Examiners and the sanction of Government, these marks were raised so as to correspond with those given by the Board. The result was that five additional students qualified as Draftsmen of the third class. Great attention has been devoted to Estimating during the year under review. Under the special direction of Sergeant Reynolds, the Instructor in Engineering, estimates were given to all the classes as vacation tasks, numbers were worked by each individual student, especially those of the Draftsman class, and carefully examined and checked; numerous examinations were held, and on many occasions holidays were compulsorily utilized. The Board of Examiners handsomely recognise the progress which has been made.

10. *Inspection of Works.*—In addition to the usual inspections of buildings, bridges, and factories, a tour was made by 86 students of the Engineer, Engineer Subordinate, and Draftsman classes to a portion of the Palar Irrigation system in North Arcot. Useful assistance was kindly rendered by Mr. H. E. Clerk, the Executive Engineer of that division. The Principal was permitted to visit the Periyar on the occasion of the opening of the works in October. Inspections of the Lawrence Asylum, Ootacamund, and of the Albert Victor Technical Institute at Trichinopoly were made by Mr. Chatterton, Professor of Engineering, under the orders of the Director of Public Instruction.

11. *Workshops.*—The Professor of Engineering, who is in charge of the workshops, reports that the Engineer and Engineer Subordinate classes attended the shops as usual, and that, though none of them displayed remarkable aptitude for mechanical work, several did very fairly. Two wood-turning lathes with wooden beds and one small iron foot lathe were constructed, but only a few of the students could be put on

this work, and most of the finishing was done by the instructors. A considerable amount of carpentry work was executed for the college, comprising benches, almirahs, drawing tables and stools, in which the students participated. When the contemplated revision of the syllabuses has been made, it is hoped that more time will be devoted to workshop practice, and that the advantages of the shops may be extended to the Draftsman and Surveyor classes.

The boiler was out of use for several months owing to damage to the tubes caused, it is believed, by foul water. Pending re-tubing, a small portable engine was hired from the Public Works Workshops. It is in contemplation to build an extension at the south end of the shops, to transfer the engine and boiler thither, and to convert the existing boiler room into a forge.

The 100-ton testing machine was delivered in Madras towards the end of 1894; but questions having arisen with regard to the site proposed, its erection was delayed. It is expected that the foundations will be put in early in 1896.

12. *Museum.*—The college is indebted to Mr. Upcott, the Consulting Engineer for Railways, for the presentation of several models connected with the erection of the Kistna Bridge at Bezwada.

13. *Revision of Rules.*—The revision of the syllabuses was taken in hand in March by a committee consisting of—

Mr. J. P. Davidson, Acting Principal.
Mr. H. C. West, Chief Engineer, Madras Railway.
Mr. R. E. Ellis, Engineer to the Municipality.
Mr. A. Chatterton, Professor of Engineering.
M.R.Ry. B. Hanumanta Rau, Acting Professor of Mathematics.

Besides recommending certain reductions in the syllabuses, the committee proposed that, in view of the permanent establishment of Sub-overseers likely to be created for the Public Works and Revenue Departments, the present Surveyor class should be developed into a class for Sub-overseers. The matter is still under the consideration of Government.

The reduction of the practical course for Engineer and Engineer Subordinate students from two years to one has already been adverted to.

To give further encouragement to the Engineer class, the tuition term fee has been reduced from Rs. 80 to Rs. 68, while the scholarships tenable in each division for one year have been increased from one of Rs. 30 to three of Rs. 15.

The riding course was made compulsory for all students to be appointed to the Engineer or Upper Subordinate establishment of the Public Works Department, the fees being payable by the students.

The above changes take effect from 1st January 1896.

Under the Provincial Service Rules (Public Works Department) the annual guaranteed appointment to the Engineer class will be made to the grade of Apprentice Engineer. Government have been pleased to order that the apprenticeship shall run from the termination of the theoretical course, and that it shall ordinarily last one year. This ruling applies to the batches which joined the college during and after 1893.

14. *Physical Training and Recreation.*—The additional land on the west side of the canal, which was placed at the disposal of the college in 1894, was levelled, and the whole ground is now used for both cricket and foot-ball. The College Recreation Club was placed on a satisfactory footing, and membership made compulsory, the fee payable being Rs. 2 per term. The Club maintains branches for *Reading Room*, *Cricket*, *Foot-ball* and *Lawn Tennis*, and is managed by the students with a member of the staff as Honorary Secretary. Considerable progress was made with cricket, and many matches were played; but the game is not cultivated by the native students as much as it should be. Encouragement was offered by allowing regular players to make good any deficiency of marks for gymnastics and drill up to a limit of 25 per cent. of the maximum. Teams were entered for the Brandt-Hutchins trophy and the

Inter-Collegiate Trophy matches. In the latter there were four wins and five losses down to the close of the year. Foot-ball has proved popular with a large number of students, but no matches have been played. Tennis is played regularly by a small number.

Instruction in drill and gymnastics was given as usual. The drill is generally slack and unsatisfactory, and more attention must be paid to it in future. One Drill Instructor, Sergeant England, has however taken great pains with his classes. I regard the drill practice as valuable not only physically but morally, as it teaches the practice of instant and unquestioning obedience to an order.

15. *Library.*—During the year 70 books were added to the Library, which now contains 3,225 volumes. The books issued to the students numbered 2,396, and to the staff 463; while 853 references were made to the Consulting Library. These figures show very marked reduction in the use of the Library since 1894. I attribute this result to the high pressure at which work has been conducted during 1895, and to the want of leisure for private reading from which the students have suffered in consequence. The preparation of a new catalogue was undertaken by M.R.Ry. M. Anantalwar under the supervision of M.R.Ry. B. Hanumanta Rau. The work is now in the press.

16. *College Buildings.*—An allotment for extended accommodation was made in the Public Works Budget for the year 1895–96. The Consulting Architect has prepared plans and estimates for the construction of a new west front to the old portion of the building; but up to the end of 1895 no sanction had been accorded. It would be advantageous if new quarters could be built for the Superintendent of Military students, the rooms he now occupies on the ground floor of the old building being handed over to the soldier students.

17. *Attendance and Conduct.*—The percentage of numbers present to numbers on the rolls was 94·6 for the Engineer and Engineer Subordinate classes, and 93·0 for the junior classes. As regards the conduct of the students I regret that I am unable to report in the usual favourable manner. The number of entries for disobedience of orders, deceit, inattention and idleness, and absence without leave, was unprecedented. The majority of cases occurred in the Draftsman and Surveyor classes; but the Engineer Subordinate class shows a record which is by no means unblemished. The want of discipline extended itself to the Military students, and it was not until two acting non-commissioned officers had been deprived of their lance stripes, and one of them remanded to his regiment, while stringent measures were taken with recalcitrant civil students, that the general behaviour became, towards the close of the year, again unexceptionable. Precautions were taken to prevent a recurrence of the unfair practices at examination of which cases were reported in 1894.

18. *Health.*—The college did not escape the general unhealthiness for which the year has been noticeable in Madras. There was an extraordinary amount of absence through sickness, properly supported by medical certificates. I regret to report no less than four casualties by death, viz., one Engineer Subordinate student in the Public Works Workshops, two college students of the same class, and one of the Draftsman class.

19. *University Examinations.*—Two candidates appeared for and passed the B.E. degree examination of 1895, both of whom were third-year students of the Engineer class. Nine candidates appeared for the F.E. examination, and 7 passed. Six of the 7 were second-year students of the Engineer class. Of the 2 who failed, 1 was a second-year and 1 a third-year student.

20. *Financial Details.*—The total expenditure for the calendar year 1895, exclusive of capital charges and repairs to buildings, amounted to Rs. 72,080 and the income from fees, &c., to Rs. 14,190. Detailed statements of receipts and charges are given in Appendices D and E, but the figures will probably not agree exactly with those of the Accountant-General. I take this opportunity of enquiring whether these

statements and those of distribution of students are necessary in future, seeing that full information is furnished in the annual returns for the official year.

The falling off in the receipts during 1894, which was commented on in the review of the report for that year, was apparent only, and was due to sums pertaining to 1892 being credited to the receipts of 1893.

21. *Employment of passed students of* 1894.—Of the three Engineer students who completed their practical course on 31st December 1894, the senior G.S. Rama Aiyar, B.A., B.C.E., was appointed Assistant Engineer in the Public Works Department; and the other two accepted posts as Upper Subordinates, one being permanent and the other temporary.

Of the 10 Engineer Subordinate students, who qualified for diplomas, seven were appointed to the permanent, and two to the temporary, Upper Subordinate establishment of the Public Works Department, while the remaining student, who was the first in his batch, accepted employment in the Public Works Department of Travancore.

Of the 15 Draftsmen, eight are known to have obtained employment of a temporary or permanent character on salaries ranging from Rs. 20 to Rs. 45.

Of the 20 Surveyors, 14 have reported appointment on salaries ranging from Rs. 20 to Rs. 60, viz., eight by the Public Works Department, two under Municipalities, one by a Local Board, one in the River Conservancy establishment, and two by the Sivaganga Zemindary.

22. *Prospects of employment.*—I regard the prospects of employment in the immediate future as exceptionally good. The large batch of 24 Engineer Subordinates who completed their practical course on 31st December 1895 was preceded by three small batches, nearly all the members of which were absorbed by the Public Works Department. Those of the present batch, whose services are not required by the department, are therefore likely to have little difficulty in obtaining employment under other departments and Local Boards. Seventeen, however, have already been appointed to or offered employment in the Public Works Department and one in a Railway Survey. Again, a large permanent establishment of Sub-overseers is likely to be required shortly for the Tank Restoration Scheme; and it is possible that Sub-overseers in considerable numbers may also be needed in the Revenue Department. It will be two, perhaps, three years before the college can turn out persons specially trained for these posts. In the meantime, appointments must be made from the best material now available.

The vacancies notified during the year in the Gazette, the public press and by letter to the Principal, were 125 in number, of which 49 were under Government, 33 under Local Boards and Municipalities, 25 on Railways, seven under Native States, and 11 under private employers. Ten of the vacancies were for Engineers and Assistants, three for Supervisors, 37 for Overseers, 20 for Draftsmen, 27 for Surveyors, 18 for lower subordinates, and two for maistries, while the remainder were of a miscellaneous character. Nine of the appointments carried salaries of Rs. 200 and upwards, four between Rs. 100 and Rs. 200, 64 between Rs. 50 and Rs. 150, and 48 under Rs. 50. Particulars are given in Appendix C.

23. *General Remarks.*—I desire to thank Mr. Ashpitel, the President of the Board of Examiners, for the uniform courtesy, consideration and promptness which he has displayed in all examination matters. I also acknowledge the cordial co-operation of Mr. Chatterton, the Professor of Engineering, and of M.R.Ry. B. Hanumanta Rau, the Acting Professor of Mathematics, with me in the work of the college. I further record the help given by the Instructor in Surveying and Drawing, and the Instructor in Engineering, and their respective assistants. I make special mention of the energy displayed by Sergeant Goddard in regard to the surveying work throughout the college, and by Sergeant Reynolds in developing the teaching of estimating and in the management of the Pálár tour and numerous inspections of works. Sergeant Goddard, as the Honorary Secretary of the Recreation Club and the guiding spirit in the cricket field, earns the gratitude of the students for his leadership in their games, as well as my own thanks for his devotion to the work of the college.

APPENDIX A.

Distribution of students by wealth and occupations of parents.

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 classes ..	1	17	1	19	9	1	..	8	..	..	1	..	19
Engineer Subordinate classes.	1	55	7	63	19	6	1	36	1	..	..	..	63
Military probationers ..	..	2	..	2	2	..	..	..	..	..	..	..	2
Draftsman classes ..	..	55	9	64	35	5	5	17	2	..	..	..	64
Surveyor classes ..	2	41	5	48	21	4	3	20	..	..	..	..	48
Artisan class	1	19	15	35	19	5	4	3	4	..	..	..	35
Total ..	5	189	37	231	105	21	13	84	7	..	1	..	231

APPENDIX B.

Distribution of students by districts.

—	Engineer classes.	Engineer subordinate classes.	Military probationers.	Draftsman classes.	Surveyor classes.	Artisan classes.	Total.
Ganjám	..	..	..	..	1	..	1
Vizagapatam	1	..	..	1	1	..	3
Gódávari	..	2	..	..	5	..	7
Kistna	..	..	..	8	1	..	9
Nellore	..	1	..	1	3	..	5
Cuddapah	..	..	..	..	..	2	2
Anantapur	..	..	..	1	..	..	1
Bellary	..	..	..	..	..	..	..
Kurnool	..	..	..	1	1	..	2
Madras	5	21	..	14	12	20	72
Chingleput	..	1	..	..	..	2	3
North Arcot	..	1	..	5	..	..	6
South Arcot	..	..	..	..	..	..	..
Tanjore	3	17	..	8	6	2	36
Trichinopoly	1	1	..	14	5	..	21
Madura	1	6	..	1	5	..	13
Tinnevelly	..	1	..	1	3	..	5
Coimbatore	..	..	..	2	2	5	9
Nilgiris	..	..	..	..	..	..	..
Salem	1	..	..	2	1	2	6
South Canara	..	1	..	1	..	..	2
Malabar	..	3	..	1	..	..	4
Cochin	..	..	..	..	1	..	1
Coorg	..	..	..	2	..	..	2
Mysore including Bangalore ..	6	..	..	1	1	2	10
Trivandrum	1	3	..	..	..	..	4
Extra Presidential	..	5	2	..	..	..	7
Total ..	19	63	2	64	48	35	231

APPENDIX B (1).

Statement showing the distribution of the different sections of the community among the College classes.

Class.	Europeans and Eurasians.	Brahmans.	Other Hindus.	Native Christians.	Musalmans.	Total.
Engineer classes	..	15	3	1	..	19
Do. Subordinate class ..	5	51	6	1	..	63
Military probationers	2	..	..	..	..	2
Draftsman class	..	27	32	3	2	64
Surveyor class	..	33	11	..	4	48
Artisan class	..	7	26	2	..	35
Total ..	7	133	78	7	6	231

APPENDIX C.

Classification of vacancies notified during the year 1895.

Vacancies.	Government.			Local Boards and Municipalities.				Railways.				Native States.			Private employers.		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. 150 to 200.	Rs. 50 to 150.	Under Rs. 50.	Rs. 100 to 200.	Rs. 50 to 100.	Under Rs. 50.	Rs. 50 to 100.	Under Rs. 50.	
Engineer or Assistant ..	..	..	..	9	1	..	..	..	..	..	..	..	..	..	..	..	10
Supervisor	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	3
Overseer	..	3	..	..	..	11	7	..	..	2	6	..	1	..	6	1	37
Draftsman	..	2	7	..	..	..	..	..	..	5	4	..	..	1	..	1	20
Surveyor	..	18	..	..	..	1	..	..	..	2	..	..	4	1	..	1	27
Sub-overseer	..	6	10	..	..	..	..	..	..	..	2	..	..	..	..	..	18
Maistry	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	2
Anicut Superintendent ..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	3
Tracer	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Drawing Master	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Permanent Way Inspectors.	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	3
Total ..	..	29	20	9	4	12	8	..	..	12	13	..	5	2	6	5	125

APPENDIX D.

Detailed statement of the receipts for the calendar year 1895.

Months.	Tuition fees.	Entrance and examination fees.	Fines, &c.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January 1895 ..	..	..	..	..
February ,, ..	4,506 0 0	..	..	4,506 0 0
March ,, ..	..	1,073 8 0	93 10 0	1,167 2 0
April ,, ..	278 8 0	..	..	278 8 0
May ,, ..	85 0 0	..	..	85 0 0
June ,, ..	..	..	..	..
July ,, ..	5,325 0 0	..	..	5,325 0 0
August ,, ..	107 0 0	..	..	107 0 0
September ,, ..	72 0 0	10 0 0	..	82 0 0
October ,, ..	60 0 0	754 0 2	..	814 0 0
November ,, ..	..	1,166 0 0	..	1,166 0 0
December ,, ..	71 0 0	440 0 0	148 8 10	659 8 10
Total ..	10,504 8 0	3,443 8 0	242 2 10	14,190 2 10

APPENDIX E.

Detailed statement of the charges for the calender year 1895.

—	Principal.	Professors, Masters, and Teachers.	Clerks, librarian and servants.	Board of Examiners.	Library and prize allowances.	Books and instruments.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January 1895 ..	1,000 0 0	1,652 0 0	..	250 0 0	..	..
February ,, ..	1,000 0 0	2,514 0 0	265 0 0	..	101 10 4	..
March ,, ..	1,000 0 0	2,534 0 0	336 12 0	..	..	194 12 2
April ,, ..	1,000 0 0	2,591 8 0	257 0 0	..	..	..
May ,, ..	1,240 14 0	2,560 0 0	249 15 0	..	..	..
June ,, ..	1,240 14 0	2,556 0 0	268 0 0	..	5 8 0	..
July ,, ..	1,240 14 0	2,556 0 0	268 0 0	4,502 8 0	..	..
August ,, ..	1,240 14 0	2,576 0 0	279 12 0	..	433 13 9	..
September ,, ..	1,240 14 0	2,576 0 0	279 6 9	..	8 0 0	234 6 0
October ,, ..	1,240 14 0	2,594 0 0	279 10 0	..	34 6 1	..
November ,, ..	1,240 14 0	2,580 0 0	271 1 10	..	..	2 8 0
December ,, ..	1,240 14 0	2,580 0 0	271 7 0	..	4 8 0	30 9 0
Total ..	13,927 0 0	29,869 8 0	3,029 0 7	4,752 8 0	587 14 2	429 12 2

APPENDIX E.—*cont.*

Detailed statement of the charges for the calendar year 1895—*cont.*

—	Miscellaneous.	Travelling allowances.	Exchange compensation allowances.	Scholarships.	Other Europe stores.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January 1895 ..	194 6 8	..	407 4 0	242 0 0	..	3,745 10 8
February ,, ..	83 1 6	..	439 8 3	40 0 0	* 695 2 10	5,138 6 11
March ,, ..	1,279 12 7	..	439 8 3	324 0 0	4,317 9 9	10,426 6 9
April ,, ..	0 12 1	58 8 0	640 12 0	182 0 0	..	4,730 8 1
May ,, ..	0 4 9	..	572 6 8	182 0 0	..	4,805 8 5
June ,, ..	..	..	571 10 5	322 0 0	4 12 2	4,978 12 7
July ,, ..	..	..	497 6 8	212 0 0	..	9,276 12 8
August ,, ..	..	169 12 0	500 15 5	232 0 0	..	5,533 3 7
September ,, ..	100 0 5	250 4 0	500 15 5	232 0 0	..	6,549 9 7
October ,, ..	† 1,227 11 5	12 12 0	510 0 0	213 0 6	..	4,884 10 7
November ,, ..	..	229 4 0	510 0 0	221 10 6	..	5,974 10 2
December ,, ..	919 3 10	..	510 0 0	220 11 6	..	6,035 12 6
Total ..	1,147 2 0					72,080 0 6
	4,952 7 3	720 8 0	6,100 7 1	2,633 6 6	5,017 8 9	

* Excluding Rs. 22,885, capital charges on workshops.

† Excluding Rs. 2,561, capital charges on workshops.

From the Board of Examiners, to the Director of Public Instruction, dated Madras, 28th January 1896.

We have the honour to forward herewith the mark sheets for the recent College of Engineering Examinations and the reports by individual Examiners which deal with the various subjects in detail. The Board is glad to be able to record its appreciation of the careful way in which the examinations were supervised by the College staff and the excellent arrangements made, which entirely removed the objections noticed in last year's report. We also wish to bring to notice the careful way in which college marks have been awarded. The question whether college marks should count at the final examinations is believed now to be under your consideration, and we take this opportunity to point out that under the altered system of marking we withdraw our previous objections to these marks, and support the Principal in his contention that a separate qualifying minimum in college and the Board's marks would be the most suitable solution of the difficulty. Outside independent candidates will not, if this is approved, be debarred from appearing for the examinations, if their success is made to depend entirely on Board's marks and drawings are required to be produced certified to have been done by themselves, and if a practical examination in surveying is held. This will not entail much extra labour or expense, as very few independent candidates have not, at one time or another, been through a course of instruction at the college. The Board in fact agrees with the arguments of the Principal in his letter, No. 1195-C., dated 15th January 1896, except that it considers that its previous opinion on this subject was at the time correct, being based on the then prevailing system of awarding college marks. Radical changes have now been introduced by the Principal which meet the objections made by the Board, the President of which has frequently visited the college and has been given every opportunity of seeing how these marks are awarded.

2. The following statement compares the percentage of marks awarded at the recent examinations with those obtained in previous years :—

—	1895.	1894.	1893.	Average of four years preceding 1893.	Independent candidates, 1895.
Engineer Class.					
Mathematics	57	70	75	55	..
Science	45	64	54	40	..
Engineering	51	68	71	55	..
Drawing	55	69	77	67	..
Surveying	61	75	68	67	..
Language	58	61	49	56	..
Drills and Exercises	62	69	84	80	..
Total ..	54	67	68	55	..
Engineer Subordinate Class.					
Mathematics	51	50	54	42	37
Engineering	47	53	55	46	33
Drawing	60	51	53	58	43
Surveying	59	54	49	61	45
Language	37	57	42	51	52
Drills and Exercises	70	66	75	81	54
Total ..	54	53	54	53	41
Draftsman Class.					
Geometrical Drawing	66	52	64	68	56
Free hand, Perspective, &c.	57	51	58	60	51
Building Drawing	56	60	55	65	56
Machine Drawing	58	44	68	55	52
Estimating	48	29	56	52	44
Topographical Drawing	50	44	55	54	58
Drills and Exercises	53	66	80	79	70
Total ..	55	48	60	60	53
Surveyor Class.					
Chain Compass and Plane Table	52	54	53	63	43
Levelling	59	66	64	63	44
Theodolite Surveying	43	57	53	61	35
Topographical Drawing	54	51	54	60	32
Drills and Exercises	68	66	77	72	54
Total ..	54	57	58	62	39

3. It will be observed that the Engineer class, 1st Division, has not done so well as in 1894 and 1893, though practically up to the average of the four years preceding 1893. The falling off in Hydraulics and Irrigation Works is very noticeable, and, as the Examiner remarks, the subject does not appear to have received so much attention as usual. It is believed, however, that there were several changes in the college staff whilst the class was under instruction, owing to the absence of the Principal on leave, and this probably accounts for the partial failure in this subject. Subjects connected with Railways also appear to require more attention, also the principles of designing, of which the students, judging by the results of the examination, appear to have a very poor idea. This can probably be rectified if, during the course of instruction in Drawing, independent designs of simple Masonry Works are required in the place of the more elaborate drawings which can only be copied. As regards instruction in subjects connected with Railways, it is suggested that some member of the College staff should be deputed for a short time to a railway under construction and for a further period to an open line. If this can be arranged, the course of instruction will become more practical, as it is believed that no member of the present staff has any practical railway experience. The improvement in Estimating, especially in style, bears evidence to the care which has been taken by the instructor.

4. *Engineer Subordinates classes.*—The first division of this class appears to be up to the average though the number of failures is most regrettable. The paper on Hydraulics was badly answered, as in the Engineer class, and probably for the same reason. The failure in this subject is, however, partially due to the carelessness of students, as nothing else can account for the absurd mistakes brought to notice by the Examiner. The improvement in Estimating is very marked.

5. *Draftsman class.*—In this class the improvement is most marked and, with the exception of Building Drawing, in which all classes failed, is seen in all subjects. This is especially the case in Estimating. That the percentage of marks is not higher is probably due to greater stringency in the award of college marks, as the improvement which has taken place is clearly shown by the award of no less than three first and three second class certificates. The independent candidates, all of whom have probably received instruction at the college in previous years, have also done well. There was, however, a general failure in Building Drawing (Buildings), a subject which appears to require more attention.

6. *Surveyor class.*—The Surveyor class has not done so well as in the previous two years, but the marks show that the improvement in recent years is being maintained. The class is, it is believed, to be re-organized as it supplies no known want in the Public Works Department owing to omission of several important subjects from the syllabus. The Examiners bring to notice that in several subjects the students have not done well, and it is a question whether it would not be well to raise the standard of qualification for entering the class, as the students appear to fail more from want of general education than from want of instruction in their subjects.

7. Taking the examinations as a whole the Board wish to bring to notice the good work done by the college instructors during the past year, as evidenced by the improvement in style and matter in the answer papers and though their efforts in this direction are necessarily not fully evident in the present year, believe that the greater stringency in awarding college marks has strengthened their hands considerably and will enable them to effect better results in future.

8. The examination in languages discloses the fact that the course of instruction is not sufficiently technical and that the students do not know the vernacular equivalents of many Engineering terms This, at first sight, may seem a matter of but little importance, but the Board would point out that a great many of the difficulties of both students and instructors would be removed if students knew exactly the meaning of technical words used, and this they cannot do unless they know the exact meaning in their own language. The instructor in this subject should, it is suggested, have some Engineering knowledge, as it is necessary that he should understand the meaning of the terms he uses in order to prevent still worse confusion.

Read the following letter from the Principal, College of Engineering, Madras, to the Director of Public Instruction, dated Madras, 17th February 1896, No. 1392-C:—

Adverting to your Endorsement, No. 737, dated 29th January 1896, on papers herewith returned, I have the honour to state that copies of the Examiners' reports have been circulated to the Instructors and Assistants for information and guidance.

2. It is gratifying to find that the special pains devoted to the teaching of Estimating during the greater part of 1895 has been productive of improved results.

3. A classified list of successful candidates is appended, as you request, for publication in the *Fort St. George Gazette.*

4. The original mark list of the Board of Examiners, which was furnished to me direct, is also forwarded herewith.

Staff.—The staff underwent little change during the year. Sergeant B. Reynold's retention on an enhanced salary of Rs. 300 per mensem has been sanctioned by Government for a period of three years.

2. *Accommodation.*—The permission of Government was sought in December last for the preparation of plans and estimates for the extra accommodation needed. In G.O. No. 224, Educational, dated 8th April 1896, the Government has, however,

suggested that the necessity for any additional accommodation might be obviated by holding the college examinations in the Senate House. The Government will again be addressed on the subject later on.

3. *Library and reading-room.*—The Principal has explained the insufficient use made of the library. It is hoped that arrangements will be made rendering it possible for the staff as well as the students to devote greater attention to extra and general reading. The reading-room is managed by the Recreation-club composed of college students.

4. *Workshops.*—These are now in good working order. The erection of the 100-ton testing machine was entrusted, with the approval of Government, to Mr. Chatterton who is in charge of the workshops, assisted by Mr. Perkins, the workshop instructor; and the usefulness of the machine has quite recently been tested with much success. Government has also accorded its sanction for the location of the engine at a convenient site, the original site selected having been pronounced dangerous by the Locomotive Superintendent of the Perambore Railway Works. It is under contemplation to take in students from industrial schools as apprentices in the workshops and to carry out orders from the public with a view to enlarge the scope of usefulness of the workshop. The Director trusts that the heads of colleges and schools in and about Madras will be able to get their furniture and appliances supplied from the college workshops at a lower rate and executed in a better style than at present.

5. *Strength and attendance.*—Excluding the students in their practical course, the strength of the college on the 31st December 1895 was 231, which was below the corresponding figures for 1894 and 1893 as particularized in the margin. The fall extended to all the classes except the Engineer class, which, it is encouraging to note, is gradually rising, and which may be expected to still further advance in numbers in consequence of the reduced rate of fees introduced since the beginning of 1896. The Principal's explanation in regard to the decrease is accepted, and judging from the number of candidates who had qualified for admission into the college, the Director is confident that the institution will regain its lost strength during the current year. An addition to the numbers may also be expected in future years as the result of the reduction in the duration of the practical courses for the Engineer and Engineer Subordinate classes. Particulars have not been given of the average number on the rolls and the average daily attendance of each class; these should be furnished in future reports. Owing to the general decline in the strength, the several classes of the community were not as well represented as in the year previous, the fall under Native Christians and Europeans being very marked. All the six Muhammadan students in the college belonged to the Draughtsman or Surveyor class, and it is much to be regretted that no student of this community has as yet joined the Engineer or the Engineer Subordinate class. Information has been furnished in the appendices regarding the distribution of students according to wealth, the occupation of parents, and the districts to which they belonged; and it is noted with satisfaction that the majority of the students of the several classes, with the exception of the artisan class, were, as might be expected, drawn from the richer and middle classes, and that almost all the districts in the Presidency were represented at the college, while 24 of the students belonged to Native States or other Presidencies. The town of Madras supplied the largest number of students, and it was closely followed by Tanjore, Trichinopoly and Madura. Bellary, South Arcot and the Nilgiris were not at all represented. The sons of officials and landholders predominated. The artisan class was 35 strong as against 39 in the year previous. As already noticed, the genuine artisan element was very poorly represented.

Class.	Strength on the 31st December		
	1893.	1894.	1895.
Engineer	14	17	19
Engineer Subordinate	81	76	63
Military Probationers	..	3	2
Draughtsman	67	73	64
Surveyor	50	57	48
Artisan	38	39	35
Total ..	252	265	231

6. *Examinations*—(i) *University tests.*—The results of the B.E. degree examination and the First examination in Engineering, as detailed in paragraph 19 of the

Principal's report, were satisfactory. The respective classes in which the successful students were placed as well as the branch—Civil or Mechanical—in which the Engineer students qualified, should have been specified.

(ii) *College Board examinations.*—The results, taken on the whole, left room for improvement, and several important subjects had not received the attention they deserved.

Engineer class.—Though the proportion of passes—six out of seven—obtained by the First division was satisfactory, the percentage of marks secured in each subject was hardly so, and the deterioration noticed in the important subjects of Mathematics, Engineering and Science is very much to be regretted. The students displayed weakness in Hydraulics and Irrigation works, Building Drawing, Railway and Bridge construction, &c., Mechanics and Machine Drawing. They had also not had sufficient practice in Plotting and Designing. The defects noticed by the Board in the work of the Second and Third divisions need also careful attention. Several students, both of the Engineer and the Draughtsman class, have been found fault with for using instruments in Freehand-drawing; this practice should be rigorously checked. It is unnecessary to consider the suggestion of the Board of Examiners that some member of the staff should be deputed with a view to acquiring sufficient practical knowledge of the subjects connected with Railways, as it is proposed to do away with this subject in the revised syllabuses which the Director has submitted to Government.

Engineer Subordinate class.—The results of the final examination of the Senior division compared favourably with those of the preceding year, and fair results were also shown by the Second and the Third divisions. Here, also, a deterioration is noticed in the important subject of Engineering. Among the other subjects that were badly done and that consequently required particular attention, were Hydraulics and Irrigation works, Building and Freehand Model and Perspective Drawing, Arithmetic, Mechanism and the Steam Engine, Machine Drawing and the Vernacular. Answers to questions in Arithmetic and Algebra should not be mixed up, and the answer sheets should be serially numbered and pinned or stitched together. The attention of the Assistants concerned should be drawn to the unfavourable report of the Examiner in the vernaculars, and they should be required to improve the teaching of the subject by acquainting themselves with the appropriate vernacular equivalents of all technical terms generally in vogue in the Public Works Department.

Draughtsman class.—At the final examination the senior division of this class acquitted itself creditably on the whole, judging especially from the number of first and second class passes secured in the year. The success of the independent candidates was also satisfactory. As in the Engineer and Engineer subordinate classes, Building Drawing seems to require greater attention.

Surveyor class.—The results of the senior division of this class at the final examination did not compare favourably with those of the previous year, and the independent candidates also made a very poor figure at the above examination. The percentage of passes was below the average under each sub-head. The Board of Examiners attributes the unfavourable results to the low general educational attainments of the students composing the class, and urges the desirability of raising the standard of the admission test. Entrance to this class is now regulated by a written competitive examination among candidates who have passed the Lower Secondary or some other recognized test of equal or higher standard, and it does not seem expedient to insist on a higher standard of qualification at present at the risk of depleting the class for a number of years. This matter has received due attention in connection with the reconstitution of the class and the revision of the syllabuses.

Notwithstanding the existence of the defects detailed above, the Board of Examiners seems to have been favourably impressed with the general progress made by the several classes and hopefully looks forward to a general improvement in the results achieved. Its recommendations to allow session marks to count towards the final total and to fix a separate qualifying minimum in the marks awarded by the College staff and the Board of Examiners, have been duly considered in connection with the revised syllabuses. The Director will, however, note here, in passing, that the session marks are

not included in the final examination marks in any of the public examinations conducted by the University or by a Board of Examiners, and that there is no guarantee that session marks are always assigned on a uniform principle. An analysis of the results of the last final examination so far as they relate to subjects for which separate marks are assigned by the Board and the College staff shows that, while only two students of the Draughtsman class secured 50 per cent. or more of the marks awarded by the Board, but less than 50 per cent. of the session marks, as many as 38 students (six Engineers, eight Engineer subordinates, eight Draughtsmen and sixteen Surveyors) secured 50 per cent. or more of session marks, but failed to secure 50 per cent. of the marks awarded by the Board. The inequality in marking is very striking, after allowing a fair margin for all ordinary variations. One other point which merits the attention of the Principal and the staff is the bad and illegible handwriting of the students animadverted on by the Examiners. It is much to be regretted that the handwriting of the students has shown little improvement, notwithstanding that it has been one of the subjects of the entrance examinations conducted by the College staff. If the handwriting of the students is again reported on unfavourably, the expediency of fixing a qualifying minimum in the subject in the scheme of the entrance examinations will have to be considered.

(iii) *Government Technical Examinations.*—The results of the Government Technical Examinations are given in paragraph 7 of the Principal's report, but as noticed in the last review the number of examinees in each grade has not been reported. Consequently, no opinion can be formed of the nature of the results.

7. *Independent candidates.*—The following statement compares the success of the independent candidates during the past two years in the final examinations held by the Board of Examiners:—

Final Examination.	1894.		1895.	
	Examined.	Passed.	Examined.	Passed.
Engineer candidates	1	..	..	..
Engineer Subordinate candidates	2	2	4	..
Draughtsman candidates	27	13	31	* 20
Surveyor candidates	11	3	11	1

* 1 first class, 4 second class, 15 third class.

The Draughtsman candidates excepted, all the candidates fared very badly. These independent candidates are mostly the failures of the previous years and seem to have appeared for the examination with no better preparation, but with an expectation that they may by chance get through it.

8. *Military students.*—Including the students in their practical course, there were 11 military students on the rolls on the 31st December last as against 13 in the preceding year, the fall being due to two students having been remanded to their regiment about the middle of the year—one for failure to pass the examination and the other for misconduct. No information is available as to the general progress of the students in their respective courses and as to whether any of them had passed the final examination for Engineer subordinates and the Government Technical Examinations. It is hoped that better recruits will be secured in future, now that it has been decided to dispense with the probationary course gradually, and the practical course has been reduced from two years to one year.

9. *Practical courses.*—Major Love's report is full under this head and calls for little comment. The conduct and progress of the students during their Workshop and Works courses have been favourably reported on. The attention of the Chief Engineer will be invited to the Principal's complaints in paragraph 5 of the report regarding the employment of students in some of the Works divisions chiefly on survey work, which, he thinks, does not cover the full ground of training which the students are expected to traverse, and to the non-receipt of the usual reports from the Madura and Tinnevelly divisions. The practical course having been reduced to one year, it is hoped that the training in the college workshop will be rendered as efficient and complete as possible

The Director is in correspondence with the Chief Engineer regarding the riding course of students who joined the Works divisions in January last directly from the college.

10. *Physical education.*—Due attention was paid to this part of the students' training. It is hoped that Native students will engage in manly exercises with greater readiness and regularity.

11. *Employment of past students.*—The Director has perused with much satisfaction Major Love's remarks regarding the encouragement afforded by the Public Works Department and other public or local bodies to the students who have successfully passed through the college. He is advised to forward a list of successful students of each batch to the Teachers' Guild, Madras.

12. *Finance.*—From the financial summary furnished in paragraph 20 of the report, it is observed that both the receipts and charges during 1895 were higher than in the year previous, and that the net cost exceeded that of 1894 by Rs. 4,300. The Principal should, as usual, have calculated the net cost of educating each student, or at least have reported the average strength of the college during the year from which to determine the net cost per head. The financial and other statements appended to the report are useful and should continue to be submitted, but the details need not be furnished month by month. The Principal is requested to see that his figures agree with those of the Account Department as approximately as possible.

13. *Revision of rules.*—The revised syllabuses have been submitted to Government for consideration and sanction in a separate letter, and the Director hopes to submit the revised draft rules in a few weeks. He could not take up the subject earlier, as several connected questions were pending disposal until quite recently.

14. *General.*—The unfavourable features of the year, that have not been already touched upon, are the conduct and health of the students. It is very discreditable that certain students, both civil and military, should have committed breaches of discipline; but the Director sincerely trusts that the students will, as a body, show more satisfactory conduct in future. The poor health of the students was probably due to the insanitary surroundings of the native hotels or houses occupied by them. A better state of things may be expected when the Victoria Hostel is completed and the students resort to it freely. The thanks of the Department are due to Mr. Upcott for the presentation of numerous models to the college museum. In conclusion, the Director considers that a fair amount of work was done by the college and that its general condition is creditable to the Principal and the staff.

(A true Extract.)

(Signed) D. DUNCAN,
Director of Public Instruction.

To the Principal, College of Engineering.
„ Principals of other Government Colleges.
„ Inspectors of Schools.
„ the Superintendent, School of Arts.

Copy to the President, Board of Examiners, College of Engineering.
„ the Chief Engineer, Public Works Department, for information.
„ the Government, with covering letter.
„ the Editors, *Indian Journal of Education* and the *Educational Review.*

Order—No. 438, Educational, dated 18th July 1896.

The report on the working of the College of Engineering during the year 1895 is, on the whole, satisfactory. The Government is glad to see that both the Principal and the Director of Public Instruction consider that the fall in the strength of the students is merely temporary and that a recovery will take place during the current year.

2. The marked improvement in the results of the examinations in estimating, which formed the subject of unfavourable comment in the last review, is noteworthy. The reports of the various examiners should be noted by the college authorities with particular care, and special attention should be devoted to those subjects in which the

students acquitted themselves indifferently. The difficulty of ensuring that sessions marks are granted on uniform principles, referred to by the Director of Public Instruction, will be largely counteracted by the rule proposed in the new syllabuses that separate minima must be secured both in the college marks and in the marks awarded by the Board of Examiners.

3. The proposal to take in students from Industrial schools as apprentices in the workshops, mentioned in paragraph 4 of the Director of Public Instruction's Proceedings, seems likely to enlarge the usefulness of the college as a place of technical instruction. Details of the suggestion will be awaited.

4. The Government agrees with the Director of Public Instruction in considering that it would be useful if fuller details of the results obtained in the Government Technical examinations were given, as this would enable the standard of teaching received in the school to be gauged by an independent standard, and the Principal should be given instructions accordingly.

5. The Government is glad to observe that the revised rules for the college are at length almost completed. Orders on the revised syllabuses submitted with the Director's letter, No. 5304, dated 9th May 1896, will be passed in separate Proceedings.

6. The Principal's report deals but shortly with the financial position of the college. Notwithstanding an increase in the receipts from fees, the net cost of maintaining the college rose by Rs. 4,300. The net cost of each student has not been given, but as the net cost of the college increased and its strength decreased it is evident that it was higher than in 1894. The Director of Public Instruction will be requested to explain.

7. The lack of discipline referred to in paragraph 17 of the Principal's report is unsatisfactory. Any further symptoms of a tendency to disobey rules should be immediately and sternly repressed.

[Here enter Letter, No. 439, Educational, dated 18th July 1896.]

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Director of Public Instruction.
„ Public Works Department.
„ Local and Municipal Department.
„ Deputy Adjutant-General.
Editors' Table.

Exd. A. Raitt

Govt. of {1896} Madras.

EDUCATIONAL.

No: 2443 W dy 21 August 96
Communicated to
officers of the P.W.
Dept. for information
2. The attention of
Supty: Engineers is
drawn to the
remarks in para
5 of the Principal's
letter and para 9
of the Director's
review.

Sd/ D. Ir. C
W

Issued

Recd. *Encl.*

G.O., No. 438, 18th July 1896.

JULY.

College of Engineering.

Reviewing the report on the working of the — during the year 1895.

Ch: E. for I
C. E. for Rys
Supty: Engrs
C. A. for Govt.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper:—

From the Hon'ble Mr. D. DUNCAN, M.A., D.Sc., LL.D., Director of Public Instruction, to the Chief Secretary to Government, dated Madras, 12th May 1896, No. 5368.

I have the honour to submit, for the information of Government, a copy of my Proceedings, No. 5321, dated 11th instant, reviewing the report on the College of Engineering for the calendar year 1895. I beg also to enclose for reference and favour of re[illegible]n the reports of the individual members composing the College Board of Examiners.

ENCLOSURES.

PROCEEDINGS of the Director of Public Instruction, dated 11th May 1896, No. 5321.

Read the following letter from the Principal, College of Engineering, Madras, to the Director of Public Instruction, No. 1285-C, dated 31st January 1896:—

I have the honour to submit the following review of the working of the College of Engineering during the year 1895.

2. *Establishment.*—The only change which occurred in the establishment was that due to my return from furlough, and re-assumption of the principalship from Mr. J. P. Davidson on 1st April. Application has been made to Government for an extension of the period during which the services of Sergeant B. O. Reynolds, Instructor in Engineering, are lent to the College. The principle of establishing a chain of responsibility among the members of the staff was extended by placing each assistant instructor under the control, so far as his work is concerned, of one of the two chief instructors. The plan has been found to answer well.

3. *Numbers.*—The numbers on the rolls at the end of the session were—

Class.	Practical course.		In College.			Total.
	Second year.	First year.	First division.	Second division.	Third division.	
Engineer classes	3	2	7	6	6	24
Do. Subordinate class	26	17	22	19	22	106
Military probationers	..	..	..	..	..	2
Draftsman class	..	..	* 34	30	..	64
Surveyor class	..	..	† 26	22	..	48
Artisan class	..	..	..	..	..	35
Total ..	..	..	..	..	..	279

* Including 6 } who, for examination purposes, were classed as independent candidates.
† Including 8 }

Excluding the students going through the practical courses in workshops and on works, the total number actually in the College on 31st December 1895 was 231. The corresponding totals for the four preceding years were 1894, 265; 1893, 252; 1892, 217; 1891, 189. The reduction in numbers, as compared with those of 1894, is due partly to a falling off in the competition for the Engineer Subordinate class, partly to the abnormal strength of the senior divisions of the Draftsman and Surveyor classes of 1894, and partly to casualties. I expect a recovery to take place during 1896.

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

The numbers offering for admission were: Engineer classes 13, of whom 11 passed the entrance examination of December 1895; Engineer Subordinate class 31, of whom 25 qualified in April for admission; Draftsman and Surveyor classes 66 and 46, respectively, of whom 48 and 38 qualified in December 1895; Artisan class 103, of whom 40 have been selected.

4. *Examinations.*—The final and term examinations were conducted, as usual, by the Board of Examiners, with Mr. Ashpitel as President. A brief abstract of the results is given below :—

(*a*) *Engineer Classes.*—The first division contained 7 third-year students, 6 of whom passed the final examination. The second and third divisions, numbering 6 each, passed the usual term examinations.

(*b*) *Engineer Subordinate Class.*—The senior division of 21 students appeared for the final examination, and 15 were successful. S. Natesa Aiyar, who heads the list with more than three-fourths of the total marks, is the first native student to pass this examination in the first class. Four independent candidates also appeared, none of whom passed. The second and third divisions of 19 and 22, respectively, passed the usual term examinations.

(*c*) *Draftsman Class.*—The senior division consisted of 28 students, of whom 20 qualified, viz., 3 for first-class certificates, 3 for second-class and 14 for third-class certificates. These results show a great improvement over those of 1894. Thirty-one independent candidates presented themselves, of whom 20 passed, viz., one for a first-class certificate, four for second-class and 15 for third-class certificates. Twelve of these successful candidates are however already certificate holders. The second division of 30 students passed a fair term examination.

(*d*) *Surveyor Class.*—The first division of 22 students appeared for the final examination, and 16 passed, viz., 2 for second-class and 14 for third-class certificates. Eleven independent candidates presented themselves, and one was successful, gaining a third-class certificate. The second division of the class, numbering 22, passed a good term examination.

(*e*) *Artisan Class.*—This class, which opened with 40 students, fell through resignations and dismissals to 35 at the close of the year. Evening instruction was imparted as usual, and the class, judging from the large number of applications for admission, continues popular. It is reserved, as far as possible, for maistries, artisans and the sons of such persons.

The class percentages of the marks under the various subject-heads compare as follows with the average results of the preceding four years :—

	1895.	Average of previous four years.
Engineer Classes.		
Mathematics	57	65
Science	45	51
Engineering	51	66
Drawing	55	71
Surveying	61	69
Language	58	54
Drills and Exercises	62	72
Total	54	64
Engineer Subordinate Class.		
Mathematics	51	48
Engineering	47	50
Drawing	60	55
Surveying	59	56
Language	37	48
Drills and Exercises	70	71
Total	54	54

	1895.	Average of previous four years.
Draftsman Class.		
Practical Geometry	66	61
Free-hand, Perspective and Model Drawing	57	56
Building Drawing	56	57
Machine Drawing	58	55
Estimating	48	48
Topographical Drawing	50	51
Drills and Exercises	53	71
Total	55	56
Surveyor Class.		
Chain Compass and Plane Table Surveying	52	58
Levelling	49	63
Theodolite Surveying	43	61
Topographical Drawing	54	56
Drills and Exercises	68	67
Total	54	60

The usual proportion of the total marks was assigned by the College staff for session work and practical examinations, and the whole of the marks for drills and exercises.

The classes show great uniformity in the final results, each obtaining 54 or 55 per cent. of the total marks.

5. *Practical Courses.*—Three Engineer students and 24 Engineer Subordinate students completed their works course on 31st December. Another Engineer Subordinate will finish his course at the end of February. The Senior Engineer student, R. N. Arogyaswami Mudaliar, B.A., B.C.E., obtains the guaranteed appointment as Assistant Engineer, Public Works Department. Another Engineer student belonging to a previous year completed his course in May. The reports received from Executive Engineers are generally favourable to the progress of the students. There is a tendency in some divisions to employ the students chiefly on Survey work, which does not afford the complete training for which the course is designed. No reports were received regarding three students attached to the Madura and Tinnevelly divisions.

Two Engineer students and 17 Engineer Subordinate students completed their course in the Public Works Workshops on 31st December. Among the latter were two casualties, one by death and one by resignation. All the students went through a course of riding in the Body Guard school. One Engineer Subordinate student sustained a serious riding accident, but he has since recovered. The progress reports from the Superintendent of the Public Works Workshops were satisfactory. It has been suggested to the Superintendent that the working hours should be increased to thirty per week. One of the Engineer students was permitted to spend two months of his course in the College Workshop.

It has been determined, with the view of diminishing the present duration of the full curricula, to reduce the practical course from two years to one, the Chief Engineer deciding in individual cases on the division of the period between workshops and works. It is probable that the whole of the period will usually be spent on works, the training in workshop practice being given in the college shops during the theoretical course. The immediate effect of the alteration will be that two batches of Engineers and Engineer Subordinates will complete their course simultaneously in December 1896. To avoid this it has been suggested that the students of the earlier year shall be deemed to finish their course on 30th June. With the practical abolition of the Workshop year, special arrangements will have to be made for the riding course.

The course in workshops for Mechanical Engineer students will also, it is understood, be reduced to one year.

6. *Military Students.*—The total number of soldier students on 31st December 1895 was 11, viz., two on works, two in workshops, five in the Engineer Subordinate class, and two probationers. One probationer was remanded to his regiment in July for failure to pass the examination, and one regular student in September for misconduct.

It has been notified that the probationary course will be reduced from one year to six months for the next three years, and thereafter abolished completely, the entrance examination being raised to the standard required for civil candidates. The admissions are to be five per annum, and two appointments are guaranteed.

7. *Government Technical Examinations.*—Of the college regular students who voluntarily appeared for the Government Examinations in Engineering subjects, one passed the *Advanced* standard, six the *Intermediate*, viz., four in the first and two in the second class, and five the *Elementary*, viz., two in the first and three in the second class. The decision that Government Technical scholarships cannot be held during the college practical courses, will probably materially affect the number of students appearing for these examinations.

8. *Surveying.*—During February, two divisions of the Engineer class, two of the Engineer Subordinate class, and one of the Surveyor class, comprising 82 students, were encamped at Guindy for a fortnight's continuous work. In July, three divisions of the Engineer class, two of the Engineer Subordinate class, and one of the Surveyor class, numbering 65 in all, proceeded to Gúduvánchéri for three weeks for further practice. The work was done under the skilful superintendence of Sergeant Goddard, the Instructor in Surveying and Drawing, and was, on the whole, satisfactory; attention being paid more to accuracy of detail than to magnitude of outturn. Marks were allotted for the work then done, and practical examinations of all the classes in Surveying were held in November by the College staff. These examinations, on which great stress is laid, have proved of high value in encouraging knowledge of the manipulation of surveying instruments. It is intended to have the camps next year at Avadi, and to send out the whole of the Engineer, Engineer Subordinate and Surveyor classes.

9. *Estimating.*—The results in Estimating have always been low throughout the college. In 1894 wholesale failure occurred in this subject in the Draftsman class. Investigation showed that college marks had been insufficiently assigned; and, with the approval of the Board of Examiners and the sanction of Government, these marks were raised so as to correspond with those given by the Board. The result was that five additional students qualified as Draftsmen of the third class. Great attention has been devoted to Estimating during the year under review. Under the special direction of Sergeant Reynolds, the Instructor in Engineering, estimates were given to all the classes as vacation tasks, numbers were worked by each individual student, especially those of the Draftsman class, and carefully examined and checked; numerous examinations were held, and on many occasions holidays were compulsorily utilized. The Board of Examiners handsomely recognise the progress which has been made.

10. *Inspection of Works.*—In addition to the usual inspections of buildings, bridges, and factories, a tour was made by 86 students of the Engineer, Engineer Subordinate, and Draftsman classes to a portion of the Palar Irrigation system in North Arcot. Useful assistance was kindly rendered by Mr. H. E. Clerk, the Executive Engineer of that division. The Principal was permitted to visit the Periyar on the occasion of the opening of the works in October. Inspections of the Lawrence Asylum, Ootacamund, and of the Albert Victor Technical Institute at Trichinopoly were made by Mr. Chatterton, Professor of Engineering, under the orders of the Director of Public Instruction.

11. *Workshops.*—The Professor of Engineering, who is in charge of the workshops, reports that the Engineer and Engineer Subordinate classes attended the shops as usual, and that, though none of them displayed remarkable aptitude for mechanical work, several did very fairly. Two wood-turning lathes with wooden beds and one small iron foot lathe were constructed, but only a few of the students could be put on

this work, and most of the finishing was done by the instructors. A considerable amount of carpentry work was executed for the college, comprising benches, almirahs, drawing tables and stools, in which the students participated. When the contemplated revision of the syllabuses has been made, it is hoped that more time will be devoted to workshop practice, and that the advantages of the shops may be extended to the Draftsman and Surveyor classes.

The boiler was out of use for several months owing to damage to the tubes caused, it is believed, by foul water. Pending re-tubing, a small portable engine was hired from the Public Works Workshops. It is in contemplation to build an extension at the south end of the shops, to transfer the engine and boiler thither, and to convert the existing boiler room into a forge.

The 100-ton testing machine was delivered in Madras towards the end of 1894; but questions having arisen with regard to the site proposed, its erection was delayed. It is expected that the foundations will be put in early in 1896.

12. *Museum.*—The college is indebted to Mr. Upcott, the Consulting Engineer for Railways, for the presentation of several models connected with the erection of the Kistna Bridge at Bezwada.

13. *Revision of Rules.*—The revision of the syllabuses was taken in hand in March by a committee consisting of—

Mr. J. P. Davidson, Acting Principal.
Mr. H. C. West, Chief Engineer, Madras Railway.
Mr. R. E. Ellis, Engineer to the Municipality.
Mr. A. Chatterton, Professor of Engineering.
M.R.Ry. B. Hanumanta Rau, Acting Professor of Mathematics.

Besides recommending certain reductions in the syllabuses, the committee proposed that, in view of the permanent establishment of Sub-overseers likely to be created for the Public Works and Revenue Departments, the present Surveyor class should be developed into a class for Sub-overseers. The matter is still under the consideration of Government.

The reduction of the practical course for Engineer and Engineer Subordinate students from two years to one has already been adverted to.

To give further encouragement to the Engineer class, the tuition term fee has been reduced from Rs. 80 to Rs. 68, while the scholarships tenable in each division for one year have been increased from one of Rs. 30 to three of Rs. 15.

The riding course was made compulsory for all students to be appointed to the Engineer or Upper Subordinate establishment of the Public Works Department, the fees being payable by the students.

The above changes take effect from 1st January 1896.

Under the Provincial Service Rules (Public Works Department) the annual guaranteed appointment to the Engineer class will be made to the grade of Apprentice Engineer. Government have been pleased to order that the apprenticeship shall run from the termination of the theoretical course, and that it shall ordinarily last one year. This ruling applies to the batches which joined the college during and after 1893.

14. *Physical Training and Recreation.*—The additional land on the west side of the canal, which was placed at the disposal of the college in 1894, was levelled, and the whole ground is now used for both cricket and foot-ball. The College Recreation Club was placed on a satisfactory footing, and membership made compulsory, the fee payable being Rs. 2 per term. The Club maintains branches for *Reading Room*, *Cricket*, *Foot-ball* and *Lawn Tennis*, and is managed by the students with a member of the staff as Honorary Secretary. Considerable progress was made with cricket, and many matches were played; but the game is not cultivated by the native students as much as it should be. Encouragement was offered by allowing regular players to make good any deficiency of marks for gymnastics and drill up to a limit of 25 per cent. of the maximum. Teams were entered for the Brandt-Hutchins trophy and the

Inter-Collegiate Trophy matches. In the latter there were four wins and five losses down to the close of the year. Foot-ball has proved popular with a large number of students, but no matches have been played. Tennis is played regularly by a small number.

Instruction in drill and gymnastics was given as usual. The drill is generally slack and unsatisfactory, and more attention must be paid to it in future. One Drill Instructor, Sergeant England, has however taken great pains with his classes. I regard the drill practice as valuable not only physically but morally, as it teaches the practice of instant and unquestioning obedience to an order.

15. *Library.*—During the year 70 books were added to the Library, which now contains 3,225 volumes. The books issued to the students numbered 2,396, and to the staff 463; while 853 references were made to the Consulting Library. These figures show very marked reduction in the use of the Library since 1894. I attribute this result to the high pressure at which work has been conducted during 1895, and to the want of leisure for private reading from which the students have suffered in consequence. The preparation of a new catalogue was undertaken by M.R.Ry. M. Anantalwar under the supervision of M.R.Ry. B. Hanumanta Rau. The work is now in the press.

16. *College Buildings.*—An allotment for extended accommodation was made in the Public Works Budget for the year 1895–96. The Consulting Architect has prepared plans and estimates for the construction of a new west front to the old portion of the building; but up to the end of 1895 no sanction had been accorded. It would be advantageous if new quarters could be built for the Superintendent of Military students, the rooms he now occupies on the ground floor of the old building being handed over to the soldier students.

17. *Attendance and Conduct.*—The percentage of numbers present to numbers on the rolls was 94·6 for the Engineer and Engineer Subordinate classes, and 93·0 for the junior classes. As regards the conduct of the students I regret that I am unable to report in the usual favourable manner. The number of entries for disobedience of orders, deceit, inattention and idleness, and absence without leave, was unprecedented. The majority of cases occurred in the Draftsman and Surveyor classes; but the Engineer Subordinate class shows a record which is by no means unblemished. The want of discipline extended itself to the Military students, and it was not until two acting non-commissioned officers had been deprived of their lance stripes, and one of them remanded to his regiment, while stringent measures were taken with recalcitrant civil students, that the general behaviour became, towards the close of the year, again unexceptionable. Precautions were taken to prevent a recurrence of the unfair practices at examination of which cases were reported in 1894.

18. *Health.*—The college did not escape the general unhealthiness for which the year has been noticeable in Madras. There was an extraordinary amount of absence through sickness, properly supported by medical certificates. I regret to report no less than four casualties by death, viz., one Engineer Subordinate student in the Public Works Workshops, two college students of the same class, and one of the Draftsman class.

19. *University Examinations.*—Two candidates appeared for and passed the B.E. degree examination of 1895, both of whom were third-year students of the Engineer class. Nine candidates appeared for the F.E. examination, and 7 passed. Six of the 7 were second-year students of the Engineer class. Of the 2 who failed, 1 was a second-year and 1 a third-year student.

20. *Financial Details.*—The total expenditure for the calendar year 1895, exclusive of capital charges and repairs to buildings, amounted to Rs. 72,080 and the income from fees, &c., to Rs. 14,190. Detailed statements of receipts and charges are given in Appendices D and E, but the figures will probably not agree exactly with those of the Accountant-General. I take this opportunity of enquiring whether these

statements and those of distribution of students are necessary in future, seeing that full information is furnished in the annual returns for the official year.

The falling off in the receipts during 1894, which was commented on in the review of the report for that year, was apparent only, and was due to sums pertaining to 1892 being credited to the receipts of 1893.

21. *Employment of passed students of* 1894.—Of the three Engineer students who completed their practical course on 31st December 1894, the senior G.S. Rama Aiyar, B.A., B.C.E., was appointed Assistant Engineer in the Public Works Department; and the other two accepted posts as Upper Subordinates, one being permanent and the other temporary.

Of the 10 Engineer Subordinate students, who qualified for diplomas, seven were appointed to the permanent, and two to the temporary, Upper Subordinate establishment of the Public Works Department, while the remaining student, who was the first in his batch, accepted employment in the Public Works Department of Travancore.

Of the 15 Draftsmen, eight are known to have obtained employment of a temporary or permanent character on salaries ranging from Rs. 20 to Rs. 45.

Of the 20 Surveyors, 14 have reported appointment on salaries ranging from Rs. 20 to Rs. 60, viz., eight by the Public Works Department, two under Municipalities, one by a Local Board, one in the River Conservancy establishment, and two by the Sivaganga Zemindary.

22. *Prospects of employment.*—I regard the prospects of employment in the immediate future as exceptionally good. The large batch of 24 Engineer Subordinates who completed their practical course on 31st December 1895 was preceded by three small batches, nearly all the members of which were absorbed by the Public Works Department. Those of the present batch, whose services are not required by the department, are therefore likely to have little difficulty in obtaining employment under other departments and Local Boards. Seventeen, however, have already been appointed to or offered employment in the Public Works Department and one in a Railway Survey. Again, a large permanent establishment of Sub-overseers is likely to be required shortly for the Tank Restoration Scheme; and it is possible that Sub-overseers in considerable numbers may also be needed in the Revenue Department. It will be two, perhaps, three years before the college can turn out persons specially trained for these posts. In the meantime, appointments must be made from the best material now available.

The vacancies notified during the year in the Gazette, the public press and by letter to the Principal, were 125 in number, of which 49 were under Government, 33 under Local Boards and Municipalities, 25 on Railways, seven under Native States, and 11 under private employers. Ten of the vacancies were for Engineers and Assistants, three for Supervisors, 37 for Overseers, 20 for Draftsmen, 27 for Surveyors, 18 for lower subordinates, and two for maistries, while the remainder were of a miscellaneous character. Nine of the appointments carried salaries of Rs. 200 and upwards, four between Rs. 100 and Rs. 200, 64 between Rs. 50 and Rs. 150, and 48 under Rs. 50. Particulars are given in Appendix C.

23. *General Remarks.*—I desire to thank Mr. Ashpitel, the President of the Board of Examiners, for the uniform courtesy, consideration and promptness which he has displayed in all examination matters. I also acknowledge the cordial co-operation of Mr. Chatterton, the Professor of Engineering, and of M.R.Ry. B. Hanumanta Rau, the Acting Professor of Mathematics, with me in the work of the college. I further record the help given by the Instructor in Surveying and Drawing, and the Instructor in Engineering, and their respective assistants. I make special mention of the energy displayed by Sergeant Goddard in regard to the surveying work throughout the college, and by Sergeant Reynolds in developing the teaching of estimating and in the management of the Pálár tour and numerous inspections of works. Sergeant Goddard, as the Honorary Secretary of the Recreation Club and the guiding spirit in the cricket field, earns the gratitude of the students for his leadership in their games, as well as my own thanks for his devotion to the work of the college.

APPENDIX A.

Distribution of students by wealth and occupations of parents.

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 classes ..	1	17	1	19	9	1	..	8	..	..	1	..	19
Engineer Subordinate classes.	1	55	7	63	19	6	1	36	1	..	..	..	63
Military probationers ..	..	2	..	2	2	..	..	..	..	..	..	..	2
Draftsman classes ..	..	55	9	64	35	5	5	17	2	..	..	..	64
Surveyor classes ..	2	41	5	48	21	4	3	20	..	..	..	..	48
Artisan class	1	19	15	35	19	5	4	3	4	..	..	..	35
Total ..	5	189	37	231	105	21	13	84	7	..	1	..	231

APPENDIX B.

Distribution of students by districts.

—	Engineer classes.	Engineer subordinate classes.	Military probationers.	Draftsman classes.	Surveyor classes.	Artisan classes.	Total.
Ganjám	..	..	..	..	1	..	1
Vizagapatam	1	..	..	1	1	..	3
Gódávari	..	2	..	..	5	..	7
Kistna	..	..	..	8	1	..	9
Nellore	..	1	..	1	3	..	5
Cuddapah	..	..	..	..	..	2	2
Anantapur	..	..	..	1	..	..	1
Bellary	..	..	..	..	..	..	..
Kurnool	..	..	..	1	1	..	2
Madras	5	21	..	14	12	20	72
Chingleput	..	1	..	..	..	2	3
North Arcot	..	1	..	5	..	..	6
South Arcot	..	..	..	..	..	..	..
Tanjore	3	17	..	8	6	2	36
Trichinopoly	1	1	..	14	5	..	21
Madura	1	6	..	1	5	..	13
Tinnevelly	..	1	..	1	3	..	5
Coimbatore	..	..	..	2	2	5	9
Nilgiris	..	..	..	..	..	..	..
Salem	1	..	..	2	1	2	6
South Canara	..	1	..	1	..	..	2
Malabar	..	3	..	1	..	..	4
Cochin	..	..	..	..	1	..	1
Coorg	..	..	..	2	..	..	2
Mysore including Bangalore ..	6	..	..	1	1	2	10
Trivandrum	1	3	..	..	..	..	4
Extra Presidential	..	5	2	..	..	..	7
Total ..	19	63	2	64	48	35	231

APPENDIX B (1).

Statement showing the distribution of the different sections of the community among the College classes.

Class.	Europeans and Eurasians.	Brahmans.	Other Hindus.	Native Christians.	Musalmans.	Total.
Engineer classes	..	15	3	1	..	19
Do. Subordinate class ..	5	51	6	1	..	63
Military probationers	2	..	..	..	..	2
Draftsman class	..	27	32	3	2	64
Surveyor class	..	33	11	..	4	48
Artisan class	..	7	26	2	..	35
Total ..	7	133	78	7	6	231

APPENDIX C.

Classification of vacancies notified during the year 1895.

Vacancies.	Government.			Local Boards and Municipalities.				Railways.				Native States.			Private employers.		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. 150 to 200.	Rs. 50 to 150.	Under Rs. 50.	Rs. 100 to 200.	Rs. 50 to 100.	Under Rs. 50.	Rs. 50 to 100.	Under Rs. 50.	
Engineer or Assistant ..	..	..	..	9	1	..	..	..	..	..	..	..	..	..	..	..	10
Supervisor	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	3
Overseer	..	3	..	..	..	11	7	..	..	2	6	..	1	..	6	1	37
Draftsman	..	2	7	..	..	..	..	..	..	5	4	..	..	1	..	1	20
Surveyor	..	18	..	..	..	1	..	..	..	2	..	..	4	1	..	1	27
Sub-overseer	..	6	10	..	..	..	..	..	..	..	2	..	..	..	..	..	18
Maistry	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	2
Anicut Superintendent ..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	1	3
Tracer	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Drawing Master	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Permanent Way Inspectors.	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	3
Total ..	..	29	20	9	4	12	8	..	..	12	13	..	5	2	6	5	125

APPENDIX D.

Detailed statement of the receipts for the calendar year 1895.

Months.	Tuition fees.	Entrance and examination fees.	Fines, &c.	Total.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
January 1895 ..	..	..	..	..
February ,, ..	4,506 0 0	..	..	4,506 0 0
March ,, ..	..	1,073 8 0	93 10 0	1,167 2 0
April ,, ..	278 8 0	..	..	278 8 0
May ,, ..	85 0 0	..	..	85 0 0
June ,, ..	..	..	..	..
July ,, ..	5,325 0 0	..	..	5,325 0 0
August ,, ..	107 0 0	..	..	107 0 0
September ,, ..	72 0 0	10 0 0	..	82 0 0
October ,, ..	60 0 0	754 0 2	..	814 0 0
November ,, ..	..	1,166 0 0	..	1,166 0 0
December ,, ..	71 0 0	440 0 0	148 8 10	659 8 10
Total ..	10,504 8 0	3,443 8 0	242 2 10	14,190 2 10

APPENDIX E.

Detailed statement of the charges for the calender year 1895.

—	Principal.	Professors, Masters, and Teachers.	Clerks, librarian and servants.	Board of Examiners.	Library and prize allowances.	Books and instruments.
	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.	RS. A. P.
January 1895 ..	1,000 0 0	1,652 0 0	..	250 0 0	..	..
February ,, ..	1,000 0 0	2,514 0 0	265 0 0	..	101 10 4	..
March ,, ..	1,000 0 0	2,534 0 0	336 12 0	..	..	194 12 2
April ,, ..	1,000 0 0	2,591 8 0	257 0 0	..	..	..
May ,, ..	1,240 14 0	2,560 0 0	249 15 0	..	..	..
June ,, ..	1,240 14 0	2,556 0 0	268 0 0	..	5 8 0	..
July ,, ..	1,240 14 0	2,556 0 0	268 0 0	4,502 8 0	..	..
August ,, ..	1,240 14 0	2,576 0 0	279 12 0	..	433 13 9	..
September ,, ..	1,240 14 0	2,576 0 0	279 6 9	..	8 0 0	234 6 0
October ,, ..	1,240 14 0	2,594 0 0	279 10 0	..	34 6 1	..
November ,, ..	1,240 14 0	2,580 0 0	271 1 10	..	..	2 8 0
December ,, ..	1,240 14 0	2,580 0 0	271 7 0	..	4 8 0	30 9 0
Total ..	13,927 0 0	29,869 8 0	3,029 0 7	4,752 8 0	587 14 2	429 12 2

APPENDIX E.—*cont.*

Detailed statement of the charges for the calendar year 1895—*cont.*

—	Miscellaneous.	Travelling allowances.	Exchange compensation allowances.	Scholarships.	Other Europe stores.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January 1895 ..	194 6 8	..	407 4 0	242 0 0	..	3,745 10 8
February ,, ..	83 1 6	..	439 8 3	40 0 0	* 695 2 10	5,138 6 11
March ,, ..	1,279 12 7	..	439 8 3	324 6 0	4,317 9 9	10,426 6 9
April ,, ..	0 12 1	58 8 0	640 12 0	182 0 0	..	4,730 8 1
May ,, ..	0 4 9	..	572 6 8	182 0 0	..	4,805 8 5
June ,, ..	..	..	571 10 5	322 0 9	4 12 2	4,978 12 7
July ,, ..	..	..	497 6 8	212 0 0	..	9,216 12 8
August ,, ..	100 0 5	169 12 0	500 15 5	232 0 0	..	5,533 3 7
September ,, ..	† 1,227 11 5	250 4 0	500 15 5	232 0 0	..	6,549 9 7
October ,, ..	..	12 12 0	510 0 0	213 0 6	..	4,884 10 7
November ,, ..	919 3 10	229 4 0	510 0 0	221 10 6	..	5,974 10 2
December ,, ..	1,147 2 0	..	510 0 0	220 11 6	..	6,035 12 6
Total ..	4,952 7 3	720 8 0	6,100 7 1	2,633 6 6	5,017 8 9	72,080 0 6

* Excluding Rs. 22,885, capital charges on workshops.

† Excluding Rs. 2,561, capital charges on workshops.

From the Board of Examiners, to the Director of Public Instruction, dated Madras, 28th January 1896.

We have the honour to forward herewith the mark sheets for the recent College of Engineering Examinations and the reports by individual Examiners which deal with the various subjects in detail. The Board is glad to be able to record its appreciation of the careful way in which the examinations were supervised by the College staff and the excellent arrangements made, which entirely removed the objections noticed in last year's report. We also wish to bring to notice the careful way in which college marks have been awarded. The question whether college marks should count at the final examinations is believed now to be under your consideration, and we take this opportunity to point out that under the altered system of marking we withdraw our previous objections to these marks, and support the Principal in his contention that a separate qualifying minimum in college and the Board's marks would be the most suitable solution of the difficulty. Outside independent candidates will not, if this is approved, be debarred from appearing for the examinations, if their success is made to depend entirely on Board's marks and drawings are required to be produced certified to have been done by themselves, and if a practical examination in surveying is held. This will not entail much extra labour or expense, as very few independent candidates have not, at one time or another, been through a course of instruction at the college. The Board in fact agrees with the arguments of the Principal in his letter, No. 1195-C., dated 15th January 1896, except that it considers that its previous opinion on this subject was at the time correct, being based on the then prevailing system of awarding college marks. Radical changes have now been introduced by the Principal which meet the objections made by the Board, the President of which has frequently visited the college and has been given every opportunity of seeing how these marks are awarded.

2. The following statement compares the percentage of marks awarded at the recent examinations with those obtained in previous years:—

—	1895.	1894.	1893.	Average of four years preceding 1893.	Independent candidates, 1895.
Engineer Class.					
Mathematics ..	57	70	75	55	..
Science	45	64	54	40	..
Engineering ..	51	68	71	55	..
Drawing	55	69	77	67	..
Surveying	61	75	68	67	..
Language	58	61	49	56	..
Drills and Exercises ..	62	69	84	80	..
Total ..	54	67	68	55	..
Engineer Subordinate Class.					
Mathematics ..	51	50	54	42	37
Engineering ..	47	53	55	46	33
Drawing	60	51	53	58	43
Surveying	59	54	49	61	45
Language	37	57	42	51	52
Drills and Exercises ..	70	66	75	81	54
Total ..	54	53	54	53	41
Draftsman Class.					
Geometrical Drawing ..	66	52	64	68	56
Free hand, Perspective, &c. ..	57	51	58	60	51
Building Drawing ..	56	60	55	65	56
Machine Drawing ..	58	44	68	55	52
Estimating	48	29	56	52	44
Topographical Drawing ..	50	44	55	54	58
Drills and Exercises ..	53	66	80	79	70
Total ..	55	48	60	60	53
Surveyor Class.					
Chain Compass and Plane Table ..	52	54	53	63	43
Levelling	59	66	64	63	44
Theodolite Surveying ..	43	57	53	61	35
Topographical Drawing ..	54	51	54	60	32
Drills and Exercises ..	68	66	77	72	54
Total ..	54	57	58	62	39

3. It will be observed that the Engineer class, 1st Division, has not done so well as in 1894 and 1893, though practically up to the average of the four years preceding 1893. The falling off in Hydraulics and Irrigation Works is very noticeable, and, as the Examiner remarks, the subject does not appear to have received so much attention as usual. It is believed, however, that there were several changes in the college staff whilst the class was under instruction, owing to the absence of the Principal on leave, and this probably accounts for the partial failure in this subject. Subjects connected with Railways also appear to require more attention, also the principles of designing, of which the students, judging by the results of the examination, appear to have a very poor idea. This can probably be rectified if, during the course of instruction in Drawing, independent designs of simple Masonry Works are required in the place of the more elaborate drawings which can only be copied. As regards instruction in subjects connected with Railways, it is suggested that some member of the College staff should be deputed for a short time to a railway under construction and for a further period to an open line. If this can be arranged, the course of instruction will become more practical, as it is believed that no member of the present staff has any practical railway experience. The improvement in Estimating, especially in style, bears evidence to the care which has been taken by the instructor.

4. *Engineer Subordinates classes.*—The first division of this class appears to be up to the average though the number of failures is most regrettable. The paper on Hydraulics was badly answered, as in the Engineer class, and probably for the same reason. The failure in this subject is, however, partially due to the carelessness of students, as nothing else can account for the absurd mistakes brought to notice by the Examiner. The improvement in Estimating is very marked.

5. *Draftsman class.*—In this class the improvement is most marked and, with the exception of Building Drawing, in which all classes failed, is seen in all subjects. This is especially the case in Estimating. That the percentage of marks is not higher is probably due to greater stringency in the award of college marks, as the improvement which has taken place is clearly shown by the award of no less than three first and three second class certificates. The independent candidates, all of whom have probably received instruction at the college in previous years, have also done well. There was, however, a general failure in Building Drawing (Buildings), a subject which appears to require more attention.

6. *Surveyor class.*—The Surveyor class has not done so well as in the previous two years, but the marks show that the improvement in recent years is being maintained. The class is, it is believed, to be re-organized as it supplies no known want in the Public Works Department owing to omission of several important subjects from the syllabus. The Examiners bring to notice that in several subjects the students have not done well, and it is a question whether it would not be well to raise the standard of qualification for entering the class, as the students appear to fail more from want of general education than from want of instruction in their subjects.

7. Taking the examinations as a whole the Board wish to bring to notice the good work done by the college instructors during the past year, as evidenced by the improvement in style and matter in the answer papers and though their efforts in this direction are necessarily not fully evident in the present year, believe that the greater stringency in awarding college marks has strengthened their hands considerably and will enable them to effect better results in future.

8. The examination in languages discloses the fact that the course of instruction is not sufficiently technical and that the students do not know the vernacular equivalents of many Engineering terms. This, at first sight, may seem a matter of but little importance, but the Board would point out that a great many of the difficulties of both students and instructors would be removed if students knew exactly the meaning of technical words used, and this they cannot do unless they know the exact meaning in their own language. The instructor in this subject should, it is suggested, have some Engineering knowledge, as it is necessary that he should understand the meaning of the terms he uses in order to prevent still worse confusion.

Read the following letter from the Principal, College of Engineering, Madras, to the Director of Public Instruction, dated Madras, 17th February 1896, No. 1392-C:—

Adverting to your Endorsement, No. 737, dated 29th January 1896, on papers herewith returned, I have the honour to state that copies of the Examiners' reports have been circulated to the Instructors and Assistants for information and guidance.

2. It is gratifying to find that the special pains devoted to the teaching of Estimating during the greater part of 1895 has been productive of improved results.

3. A classified list of successful candidates is appended, as you request, for publication in the *Fort St. George Gazette.*

4. The original mark list of the Board of Examiners, which was furnished to me direct, is also forwarded herewith.

Staff.—The staff underwent little change during the year. Sergeant B. Reynold's retention on an enhanced salary of Rs. 300 per mensem has been sanctioned by Government for a period of three years.

2. *Accommodation.*—The permission of Government was sought in December last for the preparation of plans and estimates for the extra accommodation needed. In G.O. No. 224, Educational, dated 8th April 1896, the Government has, however,

suggested that the necessity for any additional accommodation might be obviated by holding the college examinations in the Senate House. The Government will again be addressed on the subject later on.

3. *Library and reading-room.*—The Principal has explained the insufficient use made of the library. It is hoped that arrangements will be made rendering it possible for the staff as well as the students to devote greater attention to extra and general reading. The reading-room is managed by the Recreation-club composed of college students.

4. *Workshops.*—These are now in good working order. The erection of the 100-ton testing machine was entrusted, with the approval of Government, to Mr. Chatterton who is in charge of the workshops, assisted by Mr. Perkins, the workshop instructor; and the usefulness of the machine has quite recently been tested with much success. Government has also accorded its sanction for the location of the engine at a convenient site, the original site selected having been pronounced dangerous by the Locomotive Superintendent of the Perambore Railway Works. It is under contemplation to take in students from industrial schools as apprentices in the workshops and to carry out orders from the public with a view to enlarge the scope of usefulness of the workshop. The Director trusts that the heads of colleges and schools in and about Madras will be able to get their furniture and appliances supplied from the college workshops at a lower rate and executed in a better style than at present.

5. *Strength and attendance.*—Excluding the students in their practical course, the strength of the college on the 31st December 1895 was 231, which was below the corresponding figures for 1894 and 1893 as particularized in the margin. The fall extended to all the classes except the Engineer class, which, it is encouraging to note, is gradually rising, and which may be expected to still further advance in numbers in consequence of the reduced rate of fees introduced since the beginning of 1896. The Principal's explanation in regard to the decrease is accepted, and judging from the number of candidates who had qualified for admission into the college, the Director is confident that the institution will regain its lost strength during the current year. An addition to the numbers may also be expected in future years as the result of the reduction in the duration of the practical courses for the Engineer and Engineer Subordinate classes. Particulars have not been given of the average number on the rolls and the average daily attendance of each class; these should be furnished in future reports. Owing to the general decline in the strength, the several classes of the community were not as well represented as in the year previous, the fall under Native Christians and Europeans being very marked. All the six Muhammadan students in the college belonged to the Draughtsman or Surveyor class, and it is much to be regretted that no student of this community has as yet joined the Engineer or the Engineer Subordinate class. Information has been furnished in the appendices regarding the distribution of students according to wealth, the occupation of parents, and the districts to which they belonged; and it is noted with satisfaction that the majority of the students of the several classes, with the exception of the artisan class, were, as might be expected, drawn from the richer and middle classes, and that almost all the districts in the Presidency were represented at the college, while 24 of the students belonged to Native States or other Presidencies. The town of Madras supplied the largest number of students, and it was closely followed by Tanjore, Trichinopoly and Madura. Bellary, South Arcot and the Nilgiris were not at all represented. The sons of officials and landholders predominated. The artisan class was 35 strong as against 39 in the year previous. As already noticed, the genuine artisan element was very poorly represented.

Class.	Strength on the 31st December		
	1893.	1894.	1895.
Engineer	14	17	19
Engineer Subordinate	81	76	63
Military Probationers	..	3	2
Draughtsman	67	73	64
Surveyor	50	57	48
Artisan	38	39	35
Total ..	252	265	231

6. *Examinations*—(i) *University tests.*—The results of the B.E. degree examination and the First examination in Engineering, as detailed in paragraph 19 of the

Principal's report, were satisfactory. The respective classes in which the successful students were placed as well as the branch—Civil or Mechanical—in which the Engineer students qualified, should have been specified.

(ii) *College Board examinations.*—The results, taken on the whole, left room for improvement, and several important subjects had not received the attention they deserved.

Engineer class.—Though the proportion of passes—six out of seven—obtained by the First division was satisfactory, the percentage of marks secured in each subject was hardly so, and the deterioration noticed in the important subjects of Mathematics, Engineering and Science is very much to be regretted. The students displayed weakness in Hydraulics and Irrigation works, Building Drawing, Railway and Bridge construction, &c., Mechanics and Machine Drawing. They had also not had sufficient practice in Plotting and Designing. The defects noticed by the Board in the work of the Second and Third divisions need also careful attention. Several students, both of the Engineer and the Draughtsman class, have been found fault with for using instruments in Freehand-drawing; this practice should be rigorously checked. It is unnecessary to consider the suggestion of the Board of Examiners that some member of the staff should be deputed with a view to acquiring sufficient practical knowledge of the subjects connected with Railways, as it is proposed to do away with this subject in the revised syllabuses which the Director has submitted to Government.

Engineer Subordinate class.—The results of the final examination of the Senior division compared favourably with those of the preceding year, and fair results were also shown by the Second and the Third divisions. Here, also, a deterioration is noticed in the important subject of Engineering. Among the other subjects that were badly done and that consequently required particular attention, were Hydraulics and Irrigation works, Building and Freehand Model and Perspective Drawing, Arithmetic, Mechanism and the Steam Engine, Machine Drawing and the Vernacular. Answers to questions in Arithmetic and Algebra should not be mixed up, and the answer sheets should be serially numbered and pinned or stitched together. The attention of the Assistants concerned should be drawn to the unfavourable report of the Examiner in the vernaculars, and they should be required to improve the teaching of the subject by acquainting themselves with the appropriate vernacular equivalents of all technical terms generally in vogue in the Public Works Department.

Draughtsman class.—At the final examination the senior division of this class acquitted itself creditably on the whole, judging especially from the number of first and second class passes secured in the year. The success of the independent candidates was also satisfactory. As in the Engineer and Engineer subordinate classes, Building Drawing seems to require greater attention.

Surveyor class.—The results of the senior division of this class at the final examination did not compare favourably with those of the previous year, and the independent candidates also made a very poor figure at the above examination. The percentage of passes was below the average under each sub-head. The Board of Examiners attributes the unfavourable results to the low general educational attainments of the students composing the class, and urges the desirability of raising the standard of the admission test. Entrance to this class is now regulated by a written competitive examination among candidates who have passed the Lower Secondary or some other recognized test of equal or higher standard, and it does not seem expedient to insist on a higher standard of qualification at present at the risk of depleting the class for a number of years. This matter has received due attention in connection with the reconstitution of the class and the revision of the syllabuses.

Notwithstanding the existence of the defects detailed above, the Board of Examiners seems to have been favourably impressed with the general progress made by the several classes and hopefully looks forward to a general improvement in the results achieved. Its recommendations to allow session marks to count towards the final total and to fix a separate qualifying minimum in the marks awarded by the College staff and the Board of Examiners, have been duly considered in connection with the revised syllabuses. The Director will, however, note here, in passing, that the session marks are

not included in the final examination marks in any of the public examinations conducted by the University or by a Board of Examiners, and that there is no guarantee that session marks are always assigned on a uniform principle. An analysis of the results of the last final examination so far as they relate to subjects for which separate marks are assigned by the Board and the College staff shows that, while only two students of the Draughtsman class secured 50 per cent. or more of the marks awarded by the Board, but less than 50 per cent. of the session marks, as many as 38 students (six Engineers, eight Engineer subordinates, eight Draughtsmen and sixteen Surveyors) secured 50 per cent. or more of session marks, but failed to secure 50 per cent. of the marks awarded by the Board. The inequality in marking is very striking, after allowing a fair margin for all ordinary variations. One other point which merits the attention of the Principal and the staff is the bad and illegible handwriting of the students animadverted on by the Examiners. It is much to be regretted that the handwriting of the students has shown little improvement, notwithstanding that it has been one of the subjects of the entrance examinations conducted by the College staff. If the handwriting of the students is again reported on unfavourably, the expediency of fixing a qualifying minimum in the subject in the scheme of the entrance examinations will have to be considered.

(iii) *Government Technical Examinations.*—The results of the Government Technical Examinations are given in paragraph 7 of the Principal's report, but as noticed in the last review the number of examinees in each grade has not been reported. Consequently, no opinion can be formed of the nature of the results.

7. *Independent candidates.*—The following statement compares the success of the independent candidates during the past two years in the final examinations held by the Board of Examiners:—

Final Examination.	1894.		1895.	
	Examined.	Passed.	Examined.	Passed.
Engineer candidates	1	..	..	..
Engineer Subordinate candidates	2	2	4	..
Draughtsman candidates	27	13	31	* 20
Surveyor candidates	11	3	11	1

* 1 first class, 4 second class, 15 third class.

The Draughtsman candidates excepted, all the candidates fared very badly. These independent candidates are mostly the failures of the previous years and seem to have appeared for the examination with no better preparation, but with an expectation that they may by chance get through it.

8. *Military students.*—Including the students in their practical course, there were 11 military students on the rolls on the 31st December last as against 13 in the preceding year, the fall being due to two students having been remanded to their regiment about the middle of the year—one for failure to pass the examination and the other for misconduct. No information is available as to the general progress of the students in their respective courses and as to whether any of them had passed the final examination for Engineer subordinates and the Government Technical Examinations. It is hoped that better recruits will be secured in future, now that it has been decided to dispense with the probationary course gradually, and the practical course has been reduced from two years to one year.

9. *Practical courses.*—Major Love's report is full under this head and calls for little comment. The conduct and progress of the students during their Workshop and Works courses have been favourably reported on. The attention of the Chief Engineer will be invited to the Principal's complaints in paragraph 5 of the report regarding the employment of students in some of the Works divisions chiefly on survey work, which, he thinks, does not cover the full ground of training which the students are expected to traverse, and to the non-receipt of the usual reports from the Madura and Tinnevelly divisions. The practical course having been reduced to one year, it is hoped that the training in the college workshop will be rendered as efficient and complete as possible

The Director is in correspondence with the Chief Engineer regarding the riding course of students who joined the Works divisions in January last directly from the college.

10. *Physical education.*—Due attention was paid to this part of the students' training. It is hoped that Native students will engage in manly exercises with greater readiness and regularity.

11. *Employment of past students.*—The Director has perused with much satisfaction Major Love's remarks regarding the encouragement afforded by the Public Works Department and other public or local bodies to the students who have successfully passed through the college. He is advised to forward a list of successful students of each batch to the Teachers' Guild, Madras.

12. *Finance.*—From the financial summary furnished in paragraph 20 of the report, it is observed that both the receipts and charges during 1895 were higher than in the year previous, and that the net cost exceeded that of 1894 by Rs. 4,300. The Principal should, as usual, have calculated the net cost of educating each student, or at least have reported the average strength of the college during the year from which to determine the net cost per head. The financial and other statements appended to the report are useful and should continue to be submitted, but the details need not be furnished month by month. The Principal is requested to see that his figures agree with those of the Account Department as approximately as possible.

13. *Revision of rules.*—The revised syllabuses have been submitted to Government for consideration and sanction in a separate letter, and the Director hopes to submit the revised draft rules in a few weeks. He could not take up the subject earlier, as several connected questions were pending disposal until quite recently.

14. *General.*—The unfavourable features of the year, that have not been already touched upon, are the conduct and health of the students. It is very discreditable that certain students, both civil and military, should have committed breaches of discipline; but the Director sincerely trusts that the students will, as a body, show more satisfactory conduct in future. The poor health of the students was probably due to the insanitary surroundings of the native hotels or houses occupied by them. A better state of things may be expected when the Victoria Hostel is completed and the students resort to it freely. The thanks of the Department are due to Mr. Upcott for the presentation of numerous models to the college museum. In conclusion, the Director considers that a fair amount of work was done by the college and that its general condition is creditable to the Principal and the staff.

(A true Extract.)

(Signed) D. DUNCAN,
Director of Public Instruction.

To the Principal, College of Engineering.
„ Principals of other Government Colleges.
„ Inspectors of Schools.
„ the Superintendent, School of Arts.

Copy to the President, Board of Examiners, College of Engineering.
„ the Chief Engineer, Public Works Department, for information.
„ the Government, with covering letter.
„ the Editors, *Indian Journal of Education* and the *Educational Review.*

Order—No. 438, Educational, dated 18th July 1896.

The report on the working of the College of Engineering during the year 1895 is, on the whole, satisfactory. The Government is glad to see that both the Principal and the Director of Public Instruction consider that the fall in the strength of the students is merely temporary and that a recovery will take place during the current year.

2. The marked improvement in the results of the examinations in estimating, which formed the subject of unfavourable comment in the last review, is noteworthy. The reports of the various examiners should be noted by the college authorities with particular care, and special attention should be devoted to those subjects in which the

students acquitted themselves indifferently. The difficulty of ensuring that sessions marks are granted on uniform principles, referred to by the Director of Public Instruction, will be largely counteracted by the rule proposed in the new syllabuses that separate minima must be secured both in the college marks and in the marks awarded by the Board of Examiners.

3. The proposal to take in students from Industrial schools as apprentices in the workshops, mentioned in paragraph 4 of the Director of Public Instruction's Proceedings, seems likely to enlarge the usefulness of the college as a place of technical instruction. Details of the suggestion will be awaited.

4. The Government agrees with the Director of Public Instruction in considering that it would be useful if fuller details of the results obtained in the Government Technical examinations were given, as this would enable the standard of teaching received in the school to be gauged by an independent standard, and the Principal should be given instructions accordingly.

5. The Government is glad to observe that the revised rules for the college are at length almost completed. Orders on the revised syllabuses submitted with the Director's letter, No. 5304, dated 9th May 1896, will be passed in separate Proceedings.

6. The Principal's report deals but shortly with the financial position of the college. Notwithstanding an increase in the receipts from fees, the net cost of maintaining the college rose by Rs. 4,300. The net cost of each student has not been given, but as the net cost of the college increased and its strength decreased it is evident that it was higher than in 1894. The Director of Public Instruction will be requested to explain.

7. The lack of discipline referred to in paragraph 17 of the Principal's report is unsatisfactory. Any further symptoms of a tendency to disobey rules should be immediately and sternly repressed.

[Here enter Letter, No. 439, Educational, dated 18th July 1896.]

(True Extract.)

for *Chief Secretary.*

To the Director of Public Instruction.
„ Public Works Department.
„ Local and Municipal Department.
„ Deputy Adjutant-General.
Editors' Table.

Exd. A. Raitt.

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P. W. CURRENT No. 726A

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No. 2443 W & 21 August 96

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Communicated
Communicated
to officers of the
P. W. Dept for information.
The attention of
Supts. Engrs is
drawn to the remarks
in para 5 of the
Principal's letter and
para 9 of the Director's
review

13/8/96

Ch. E. for Supt
C. E. for Supt
Supts. Engrs
C.A. to Govt.

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Recd. Encl.

G.O., No. 438, 18th July 1896.

JULY.

College of Engineering.

Reviewing the report on the working of the — during the year 1895.

No. 1790 W. D. 18-7-96