

1ST OCTOBER 1883, No. 652, EDUCATIONAL.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

From H. B. GRIGG, Esq., M.A., Director of Public Instruction, to the Acting Chief Secretary to Government, dated Madras, 25th August 1883, No. 5909.

With reference to G.O., dated 21st June 1882, No. 101, Educational, I have the honor to submit three copies of the report on the Civil Engineering College for 1882-83, together with my review of the same.

ENCLOSURE.

Proceedings of the Director of Public Instruction, dated 10th August 1883, No. 5513.

Read the following letter from Lieutenant H. D. LOVE, R.E., Principal, Civil Engineering College, dated 29th May 1883, No. 250-C.

I have the honor to submit the following report on the working of the Civil Engineering College during the past year, and on the results of the examinations for certificates which have been held in that period.

2. *Changes in Establishment.*—Owing to the absence, on furlough, of Mr. Bradshaw, Mr. Kenny continued to act as First Assistant Master throughout the year. Consequent on the absence, in England, of Mr. McAleese at the commencement of the Session in August, Mr. W. Cames acted as Second Assistant Master, Storekeeper and Librarian; Mr. W. Hyde as Third Assistant Master and Instructor in Photography; and Mr. J. Hamilton as Fourth Assistant Master, Mr. J. B. Hennessy taking charge of the Drawing Class in addition to his own duties.

On 1st November 1882, Mr. McAleese, Second Assistant Master, returned from furlough, and the masters junior to him reverted to their substantive appointments.

On 17th January 1883, Mr. J. B. Hennessy was appointed temporarily to the Public Works Secretariat, and Mr. F. Pope was transferred from that office to the college.

On 2nd March 1883, Sub-Conductor W. J. McAleese was transferred to the Military Department, and the following appointments were made :—

Mr. W. Cames to be Second Assistant Master, Librarian and Storekeeper.

Mr. W. Hyde to be Third Assistant Master and Instructor in Photography.

Mr. J. Hamilton to be Fourth Assistant Master, sub. *pro tem*.

Mr. F. Pope to be Fifth Assistant Master, sub. *pro tem*.

The services of Mr. J. Campbell of the Public Works Department have been applied for as Sixth Assistant Master, sub. *pro tem*.

It will be observed that, during the greater part of the year, the staff has been one under its full complement. Considerable extra work has consequently devolved on Messrs. Hyde and Hamilton, the Instructors in Surveying and Drawing.

3. *First Department—Engineer Classes.*—This department contains eight students in the first division, and thirteen in the second—in all twenty-one—the largest number of which it has ever consisted. As several of the students are already Graduates in Arts, it appears probable that these classes will do themselves and the college credit in the examinations for certificates as Assistant Engineer, which will be held in this and the following years, as well as in the corresponding University Examinations for the degree in Civil Engineering. In December 1882, no first division existed, and consequently no students appeared from the college for the last degree examination. The students of the second division, however, passed a satisfactory sessional

examination, and were all promoted to the first division. In the following January, the number of applications for the senior department was unusually large, and thirteen students were admitted. The present popularity of the first department appears to be due partly to the appointments made by the Public Works Department in 1881 to the grade of Apprentice Supervisor, and partly to the extended field for employment which is now furnished by Local Fund Boards and Municipalities.

4. *Second Department—Subordinate Classes.*—In the first class of this department, ten students have just undergone examination for certificates of qualification as Overseer, Public Works Department. These men joined the college two years ago at a time when the popular alarm caused by reductions in the Public Works Department had not subsided, and when confidence in the immutability of that branch of the public service had not been restored. The number of applicants for admission to the college was therefore small; but their quality, judged by the results of the recent examination, is nevertheless above the average.

5. I take this opportunity to express my grateful thanks to the following gentlemen, who have been so good as to serve as Examiners:—

Arithmetic	Lieutenant-Colonel A. F. Hamilton, R.E.
Algebra	Lieutenant H. Andrews-Speed, R.E.
Euclid	Captain J. S. S. Barker, R.A.
Mensuration	Colonel H. L. Prendergast, R.E.
Trigonometry and Statics	A. S. Russell, Esq.,
Building Materials and Construction	C. Vincent, Esq., A.I.C.E.
Earthwork and Road-making	Colonel R. B. Kennedy, S.C.
Bridges and Irrigation Works	Lieutenant-Colonel C. J. Smith, R.E.
Hydraulics	Captain W. H. Coaker, R.E.
Strength of Materials	F. B. Hanna, Esq., M.A., M.E.
Chain, Compass, and Sextant Surveying	Captain G. Henry, R.E.
Levelling	P. Scott, Esq., M. Inst. C.E.
Traversing with Theodolite	Lieutenant R. E. Hamilton, R.E.
Drawing from Specification	G. Bayly, Esq., B.A.
Estimating	Major R. R. E. Drake-Brockman, R.E.
Tamil and Telugu	M.R.Ry. V. Krishnamachariyar Avargal.

6. The following extracts are made from the reports of Examiners:—

Arithmetic.—Colonel Hamilton says:—"This paper has been answered very well, as shown by the high average marks obtained, only one student failing to get three-quarter marks."

Algebra.—Mr. Andrews-Speed writes:—"On the whole, I consider the papers very fair."

Euclid.—Captain Barker reports:—"The papers are decidedly good."

Mensuration.—Colonel Prendergast states that "the candidates have done the Mensuration paper well, although it was a stiff one."

Trigonometry and Statics.—Mr. Russell reports that "the general average is good."

Building Materials and Construction.—Mr. Vincent writes:—"I cannot say more of the majority of answers than that they are fair."

Earthwork and Roads.—Colonel Kennedy says:—"With the exception of the first four in the list, I cannot consider that the candidates have acquitted themselves at all creditably."

Bridges and Irrigation Works.—Colonel C. J. Smith writes:—"There is little to choose between the first three men; their papers are excellent, neatly and quickly written, well expressed and neatly illustrated. I consider the replies on the whole very good."

Hydraulics.—Captain Coaker reports:—"The results are good, the average marks gained being 65 per cent. The students possess a good knowledge of formulæ; but some examples are clumsily worked out."

Strength of Materials.—Mr. Hanna makes no remark.

Chain, Compass, and Box Sextant Surveying.—Captain Henry observes that "the results generally are more satisfactory than in previous years, and afford evidence of good instruction."

Levelling.—Mr. Scott remarks that "the results are most satisfactory, and show that the students are all well grounded in the subject."

Traversing with the Theodolite.—Mr. Hamilton states that "the result of the examination is satisfactory."

Drawing from Specification.—Mr. Bayly reports that "the drawings are in general neat and satisfactory."

Estimating.—Major Drake-Brockman writes:—"The plan was designed to test the abilities of the candidates in as varied a manner as possible. Three out of the ten examinees grasped the easiest method of taking out the quantities, and two failed to get more than 10 per cent. of the marks."

Language.—Mr. Krishnamachariyar states that "the result of the examination may be regarded as tolerably fair."

7. Comparing, as was done last year, the results of the examination with those of 1881, a suitable year for comparison, it will be found that there has been—

- A rise of 2 per cent. in Mathematics.
- A rise of 7 per cent. in Engineering.
- A rise of 6 per cent. in Surveying.
- A rise of 9 per cent. in Drawing.
- A rise of 10 per cent. in Language.
- A rise of 9 per cent. on the total.

The improvement is partly due, I consider, to slight unintentional relaxation of the usual standard on the part of one or two of the examiners, but chiefly to the exceptional merit of the five men who stand highest on the list. The results reflect credit on the instructional staff.

8. All ten candidates passed. Five obtain certificates as Supervisor, Public Works Department, having gained not less than 35 per cent. of the marks in each subject and 60 per cent. of the total; and the remainder secure certificates as Overseer, Public Works Department, the qualification for which is 25 per cent. on each subject and 40 per cent. of the total.

Gunner Coghlan, R.H.A., stands first with 1,890 marks out of 2,500. He obtains a certificate as Supervisor and gains the Royal Engineer Officer's prize for distinguished Proficiency, and the prize for Drawing. He receives special mention from the Examiners in Arithmetic, Euclid, Bridges and Irrigation Works, Traversing, Drawing from Specification and Estimating.

Gunner Alford, R.A., occupies the second place with 1,860 marks, taking a Supervisor's certificate, and obtaining the prize for Surveying and that for Language. He receives special mention from the Examiners in Euclid, Trigonometry and Statics, Levelling Bridges and Irrigation Works, and Estimating.

H. Subba Rao stands third with 1,852 marks. He secures a Supervisor's certificate, obtains the prize for Mathematics and that for Engineering, and receives special mention from the Examiners in Algebra, Euclid, Trigonometry and Statics, and Bridges and Irrigation Works.

A considerable gap occurs between these three men and C. H. Edwards and M. P. Narasimha Aiyangar, who occupy the fourth and fifth places with 1,716 and 1,708 marks respectively. Both have gained certificates as Supervisor, and both have received special mention from several of the examiners.

Between the fifth and sixth men there is a gap of upwards of 300 marks. The following students occupy places ranging from sixth to tenth, and have all been successful in securing certificates as Overseer:—

N. Venkatadri.	D. G. Thomas.
A. Ramamurti.	P. Duncan.
M. Aiyannah Nayudu.	

9. The second class of this department contains twenty students, nineteen of whom have recently undergone a satisfactory examination. The whole of the pupils have been promoted to the first class.

V. R. Venkatarama Aiyar stands first with 1,045 marks out of 1,400, and gains the prize for Mathematics, and a scholarship of Rs. 15 *per mensem*. S. L. Abraham takes the second place with 1,009 marks, gaining the prizes for Surveying and Drawing, and a scholarship of Rs. 15 *per mensem*.

Driver Huson occupies the third place and secures the prizes for Engineering and Language. To the next three men—T. S. Venkatesvariah, T. Krishnaji Rao, and C. Murugesu Mudaliar—are awarded scholarships of Rs. 15 each *per mensem*. The rest of the class have done very fairly.

10. *Drawing Class.*—The first division of eight students has done exceedingly well. G. Ellis stands first with 427 marks out of 500, and M. Embaraya Nayudu second, with 422. Both these men secure the distinction of first-class certificates, the prize being awarded to Embaraya Nayudu owing to his senior having spent more than two years at the college. The next two men—K. Sadagopa Mudaliar and P. Sundararamanjulu Naidu—obtain second-class certificates, and the remaining four men, third-class certificates. These results are creditable to the instructor Mr. Pope.

11. In the second division, the three students who have been examined are promoted to the first division. None of them, however, have done sufficiently well to justify the award of a scholarship.

12. Candidates other than college students, to the number of forty, have also undergone examination for certificates as draftsman. The majority of these are employed in the Public Works Department, and appear for the examination with the view of obtaining a higher class of certificate than they already possess. The results of the examination are not yet known.

13. *Surveying Class.*—The first division, comprising three students, has been examined for certificates. R. Sivasubramania Aiyar has done very well, obtaining the prize and a first-class certificate. M. A. Muthu Pillai secures a third-class certificate, and the remaining member of the class, who has failed, will be permitted to study for another year in the college.

14. The second division of five students, four of whom have recently undergone examination, has done fairly. A scholarship of Rs. 8 *per mensem* is awarded to A. Periasawmi Pillai who occupies the first place on the list.

15. A larger number of students might, with advantage, join both the Drawing and Surveying classes, especially the former. The maximum pay of a first-class draftsman in the Public Works Department has now been raised to Rs. 100 *per mensem*, and the demand for qualified men is in excess of the supply. The pay of the lower grades is, however, still small, and I fear that little improvement in the general attainments of candidates for the college entrance examination for this class can be expected until the condition of these grades has been ameliorated.

16. The number of applicants for admission to the Survey class is not large, and their attainments are usually inferior. It is hoped that a proposal, which has been made to create a graded list of Surveyors for the Public Works Department, will be carried out, as the fact that employment is generally of a temporary nature is one of the causes of the unpopularity of this class of the college.

17. *Photographic Class.*—This class consists of twelve students selected from the second and special departments of the college. Creditable work has been done with wet plates; and the instructor, Mr. Hyde, is now introducing the dry plate process which has already almost superseded the older system.

18. *Military Students.*—The session commenced with five students—three in the first-class of the second department and two in the second. Of the former, one was compelled to revert to his battery on account of ill-health.

Four men in the vernacular class at Bangalore are about to be examined in Language for entry to the college in August next.

Eight non-commissioned officers and men qualified at the entrance examination in April last, and the first five of these will join the vernacular class early in June.

19. *Employment—First Department.*—Up to the present time, the profession of Engineering has not been a popular one among natives. As to the cause of its unpopularity, there can be no uncertainty. To call into and maintain in existence a novel profession in this country, encouragement must first be given by Government, and reasonable prospect of employment must subsequently be held out. Excepting the advantage of a cheap education, both these conditions have, as regards Civil Engineering, been wanting until very lately. The fact that during the seventeen years following the formation of the Engineer class at the college, only two appointments of natives were made to the Engineer establishment of the Public Works Department, speaks to the absence of both the conditions of success, since the Public Works Department was, during that period, the chief, almost the sole, employer of the Civil Engineering profession. Efforts, extending over several years, were made to obtain a guarantee for the employment of at least one student annually of the Engineer class, but without success. To show that encouragement is all that is wanted to make Civil Engineering popular, it need only be said that in 1881, after three years had elapsed with but a single appointment conferred by the Public Works Department, and when the number of students in the senior class had, in consequence, become diminished to one, five nominations (of previously passed men) were made to the new grade of Apprentice Supervisor with the result that the following session commenced with eight students and the succeeding one with thirteen—the numbers at present occupying first department.

20. There now appears to be every prospect that the encouragement thus afforded will be continued and extended. From a notification in the *Fort St. George Gazette* of 27th February, it will be seen that the Government of India propose reserving certain appointments to the Engineer establishment of the Public Works Department for the different Civil Engineering Colleges of India. Should this proposal be carried out, the allotment to Madras would probably be one appointment per annum, commencing with the year 1885. As an alternative measure, it has been suggested that nominations from the college should be made to the rank of Sub-Engineer at the rate probably of two per annum, and that the annual appointment to the superior establishment should be conferred only after long and approved service. The first of these alternatives would doubtless be the more acceptable to present and prospective students of the first department; but, whichever is ultimately adopted, an impetus will be given to the acquirement of engineering knowledge, of which the results to the natives of this presidency can scarcely be over-estimated.

21. When it is considered that lack of encouragement and difficulty of obtaining employment have hitherto been the obstacles which have prevented natives from taking full advantage of the engineering instruction held out to them, and when it is further borne in mind that, owing to the policy of decentralization and the extension of the principle of local self-government, the general prospects of employment are now unusually good, it is not difficult to realise that the future, which is opening to the senior classes of the college, should form an emphatic contrast to the past.

22. I have heard fears expressed that the native of India is not likely to make a good Public Works officer. The answer is to point to Northern India, where, according to the Public Works Classified List, corrected to 31st December 1881, there are 58 natives in the Engineer establishment, viz., 10 executive engineers and 48 assistant engineers. These figures prove that the appointment of natives has not been a failure; and I do not believe that natives of this Presidency will show themselves in any way inferior to those of Northern India.

23. When the requisite encouragement has been afforded in the manner described, there will be no difficulty in increasing the length of the course, so as to afford that practical training without which no man can become a useful engineer. The desirableness of such training, being imparted to all students, whether destined for the Public Works department, or not, has been recognised by the Government in their Proceedings, No. 3057 W., dated 18th November 1882, and the question has been referred to the Committee on the Civil Engineering College to which allusion has been made in recent annual reports. The Committee submitted a further report in the early part of the present year, and it is hoped that orders will now shortly be passed on the important matters which are there dealt with.

24. *Second Department.*—As in the first department, so in the second, the appointments to the Government service are regarded as the chief prizes of a successful course of study. To stimulate competition at the entrance examination, and thus to secure a superior class of students, it is essential that comparative uniformity should be preserved in the number of appointments conferred annually, and that no year should, if possible, be allowed to elapse without some, if only a very few, nominations being made at the close of the college session. The results of neglect of this consideration make themselves felt three or four years after the causes arise, and the Public Works department may thus experience difficulty in obtaining a sufficient supply of suitable men long after changes have been made which affect the influx of candidates to the college. Thus it is immediately traceable to the extensive reductions which were made in the Public Works department in the years 1879 and 1880, that the number of students passing out of the college overseer class in 1882 was only seven, and that in the present year it is only ten. The gradual restoration of public confidence will be recognised by the fact that in 1884, the number will rise to about twenty, and in 1885 to thirty or even more. Had Local Fund boards possessed in 1879 their present engineering establishments, the numbers I first quoted could not have fallen so low; but making every allowance for extended prospects of employment outside the Government service, it seems to me that it would be advantageous in every way if the Public Works department could arrange to appoint a certain minimum number of apprentice overseers annually. Under G.O., No. 2733 W., dated 4th November 1881, the maximum number is fixed at ten. It is believed that the upper subordinate establishment of the Public Works department is, at this moment, in excess of its normal strength; but I trust that it may be found possible shortly to nominate to the public service a few of the civilians now passing out in addition to the two military students who are guaranteed employment by the rules under which they entered the college.

25. The chief desideratum for the second department is that all its students should undergo a practical course on works, so that they may become serviceable overseers when permanently appointed to an establishment. The College Committee have laid stress on this point.

26. *Surveyors and Draftsmen.*—These men are appointed, as required, by Superintending and Executive Engineers in the Public Works department, and by other officers in want of their services. It is not possible, therefore, to furnish precise statistics of the numbers employed during the year. Efforts are made to induce the men to communicate particulars regarding themselves; but there exists an unwillingness to do so, which is probably due to a fear that a man known to be employed might fail to be recommended for the vacancies which are from time to time referred to the college.

27. To become aware that present prospects of employment generally are good, it is only necessary to refer to the public press, where advertisements for engineers, for supervisors, overseers, surveyors, and draftsmen are of frequent occurrence. With the view of assisting students and their friends, these advertisements are collected and posted at the college. In addition, applications from officers for the services of passed men are occasionally received, and recommendations are made to them. In response to such requests, seven overseers, seventeen surveyors, and fifteen draftsmen have been recommended during the year; and I have no doubt that the services of a fair proportion of these have been retained.

28. Allusion was made in last year's report to the fact that the engineering establishments of the Local Fund boards contained many individuals who would not be eligible for corresponding positions in the Public Works department. It is hoped that the recommendations of the Local Self-Government Committee, which has been sitting during the year, will result in the employment of uncertificated men being prohibited.

29. *Model Room.*—Several useful models have been added to the collection. Chief among them are—

A plate girder bridge (admirably constructed in zinc under the supervision of Mr. E. W. Stoney of the Madras Railway).
Working models of Stoney's excavators.
Pile-driver.
Apparatus illustrating shearing stress in beams.
Four model steam engines (from Public Workshops, Dowlaisheram).

30. *Library.*—During the year under review, 56 works have been added to the library, making a total of 1,580 volumes. The library is now freely utilized, 931 books having been issued to masters and students, as against 290 in 1880-81, and 647 in 1881-82.

31. It has not been found possible to effect any development of physical training for the students. This question is one of the numerous matters which must await the passing of final orders on the College Committee's report.

32. The conduct of the students has been uniformly good, and their attendance regular. I trust that the relaxation of the coming vacation will enable both them and the staff to return to their duties with fresh vigor at the commencement of the ensuing session.

There were not many changes in the staff during the year. Mr. McAleese was transferred to the Military department in March last, and on the occasion of the two temporary vacancies which preceded this transfer, a re-arrangement of the work among the existing staff was effected in one case, and Mr. Pope was brought in in the other. The Principal's remark that "during the greater part of the year the staff has been one under its full complement," is not understood. The remark would seem to apply only to the short period that Mr. McAleese was absent on furlough, viz., from the commencement of August session to 31st October 1882.

2. *First Department.*—The Director is glad to observe that the first department is becoming more and more popular every year. The first and second divisions had eight and thirteen pupils respectively, while in 1881-82 there were no students in the first class, and only nine in the second—a number which was said to be the largest attained for many years. Very good results are expected from the fact of several of the students being already graduates in arts. The fact that graduates in arts are entering college is a most hopeful feature in the year's report, as it indicates that classes of natives of Madras who have not hitherto taken to engineering as a profession are, in the present demand among graduates in arts, for suitable employment, tending to do so now. The Director is persuaded that the time is not far distant when it will be possible to secure for even the lower subordinate establishments men who have added to a degree in arts, a degree in civil engineering, as the remuneration granted in the lower subordinate establishment is, on the whole, more favorable than that attainable in several departments to which graduates now flock. To render this change, however, an unmixed benefit to the great employers of engineering labor in this country, it is essential that such men, by the time they leave the institution, shall have obtained not merely a good theoretical but also a thoroughly practical knowledge of the mechanical and industrial arts which it will be their duty to guide and exercise. The Principal does not name the classes of the community to which the students belong, but from the returns it appears that, as contrasted with 1881-82, the figures are as follow for all departments:—

	1881-82.	1882-83.
Europeans and Eurasians	11	11
Brahmans	11	33
Hindus (not Brahmans)	17	15
Native Christians	9	7
Muhammadans	1	1
Others	3	3
Total	51	70

The absence of any students in the first division last year accounts for the college not having sent up any students for the last B.C.E. Degree Examination. The Director trusts that the impetus given by the admission of natives to the grade of apprentice supervisor and the prospect of employment afforded by Local Fund boards and Municipalities will conduce to the department improving in strength and supplying candidates for the B.C.E. degree hereafter.

3. *Second Department.*—There were (10) ten students in the first class of this department, who all underwent examinations for certificates as overseers. Five obtained certificates as

supervisor, Public Works department, and the remaining, certificates as overseer. The results of the examination were, on the whole, good, and the five men who head the list are said to possess exceptional merit. In "Earth-work and Roads," the results were poor, and "Building Materials and Construction" only moderate. The partial failure in these two practical subjects, as against the almost uniform success in those of more theoretical character, is noted. Compared with 1881, in some cases marked increase appears in the average percentage of marks obtained in the several subjects, but "the unintentional relaxation of the usual standard on the part of one or two of the examiners," is noted by the Principal as one of the causes of this improvement:—

Mathematics	..	..	..	..	..	..	..	Increase 2 per cent.
Engineering	..	..	..	..	..	..	..	" 7 "
Surveying	..	..	..	..	..	..	..	" 6 "
Drawing	..	..	..	..	..	..	..	" 9 "
Language	..	..	..	..	..	..	..	" 10 "
Total Increase	..	..	..	..	..	..	..	9

The strength of the class would have been greater but for the panic caused by the reductions in the Public Works department two years ago, when these students entered the college. Now that it has subsided, greater numbers are expected to enter the college.

4. The second class was twenty strong. Nineteen of these are reported to have passed a fair examination and all twenty have been promoted to the first class. The circumstances under which one of the number did not undergo examination and yet obtained promotion should have been explained. The first six students are said to have acquitted themselves very creditably at the examination, but only five obtained scholarships. Driver Huson occupied the third place and obtained prizes for engineering and language. He does not appear to have been awarded a scholarship, although the three who stand below him obtained one each.

5. *Drawing Class.*—The numbers in the two divisions show decline—

	Present strength.
First division	8 against 10 in the preceding year.
Second do.	3 do. 5 do. do.

A marked improvement appears in the first division, to having secured first-class certificates, two second class, and four third class. These results are very creditable. Two of the pupils appear to have had more than two years' training.

The results of the second division are disappointing. None of the three forming the class succeeded in securing a scholarship.

The Drawing Class Examination was open also to candidates other than college students. There were forty of these. The results of their examination are not known.

6. *Surveying Class.*—The first division consisted of only three students, who have been examined for certificates. One obtained a first class, another a third class, and the third failed. The second division, with five students, did fairly at the examination.

7. Regarding the poor strength of the drawing and surveying classes, it is remarked that the pay of the lower grades of draftsmen is still small; and until their condition is ameliorated, improved attainments in this class, or increase of numbers, cannot be looked for. If a proposal to create a graded establishment of surveyors for the Public Works department is carried out, this department will doubtless improve in number and in the calibre of the students. A photographic class was formed during the year of twelve selected students of the college. Creditable work is reported to have been done with wet plates, and the dry plate process is now being introduced.

8. *Military Students.*—There were three students in the first class of the second department and two in the second, when the session commenced. Ill-health compelled one of the former to return to his battery.

In the vernacular class at Bangalore, four men were expected to pass in language, with the object of joining the college in August, eight non-commissioned officers and men passed the entrance examination in April, and five of these were expected to join the vernacular class in June. The reservation to military students of a considerable portion of the openings annually available in the Departments of Public Works must unquestionably prejudicially affect the progress of education in engineering and kindred subjects among the natives of the Presidency, however necessary such reservation may be to the interests of the department itself.

9. *Employment of Passed Students.*—The Principal has forcibly explained the causes which have prevented natives from taking full advantage of the engineering instruction given to them, and the gradual increase from 1881 is pointed out. The notification of the Government of India proposing to reserve certain appointments to the engineer establishment of the Public

Works department for the different Civil Engineering Colleges of India will, with the policy of decentralization and local self-government, doubtless tend to enlarge the prospects of employment to the college students; but the Director is persuaded that the institution, in all its branches, will never take its proper position in the educational scheme of the country, until it ceases to educate men for a few reserved Government appointments, but has, instead, the permanently assured prospects of admission to the subordinate ranks of the Public Works department by means of some system of open competition.

10. It is reported that seven overseers, seventeen surveyors, and fifteen draftsmen have been recommended for employment to various departments.

11. The model room and the library have received valuable additions during the year.

12. As to development of physical training of the students, the Principal reports that it has not been found possible to effect any arrangements. The Director does not understand what difficulty there is in doing so, and why final orders on the College Committee's report should be awaited before taking action in the matter.

(A true Copy and Extract.)

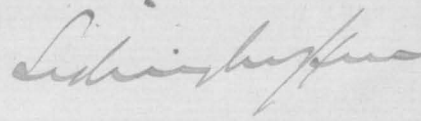
(Signed) H. B. GRIGG,
Director of Public Instruction.

To the Principal, Civil Engineering College.

ORDER—dated 1st October 1883, No. 652, Educational.

Ordered that the report be forwarded to the India office.

(True Extract.)



for Acting Chief Secretary.

To the Director of Public Instruction.
„ Public Works department.

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Mr. J. Hamilton to be Fourth Assistant Master, sub. *pro tem*.

Mr. F. Pope to be Fifth Assistant Master, sub. *pro tem*.

The services of Mr. J. Campbell of the Public Works Department have been applied for as Sixth Assistant Master, sub. *pro tem*.

It will be observed that, during the greater part of the year, the staff has been one under its full complement. Considerable extra work has consequently devolved on Messrs. Hyde and Hamilton, the Instructors in Surveying and Drawing.

3. *First Department—Engineer Classes.*—This department contains eight students in the first division, and thirteen in the second—in all twenty-one—the largest number of which it has ever consisted. As several of the students are already Graduates in Arts, it appears probable that these classes will do themselves and the college credit in the examinations for certificates as Assistant Engineer, which will be held in this and the following years, as well as in the corresponding University Examinations for the degree in Civil Engineering. In December 1882, no first division existed, and consequently no students appeared from the college for the last degree examination. The students of the second division, however, passed a satisfactory sessional

examination, and were all promoted to the first division. In the following January, the number of applications for the senior department was unusually large, and thirteen students were admitted. The present popularity of the first department appears to be due partly to the appointments made by the Public Works Department in 1881 to the grade of Apprentice Supervisor, and partly to the extended field for employment which is now furnished by Local Fund Boards and Municipalities.

4. *Second Department—Subordinate Classes.*—In the first class of this department, ten students have just undergone examination for certificates of qualification as Overseer, Public Works Department. These men joined the college two years ago at a time when the popular alarm caused by reductions in the Public Works Department had not subsided, and when confidence in the immutability of that branch of the public service had not been restored. The number of applicants for admission to the college was therefore small; but their quality, judged by the results of the recent examination, is nevertheless above the average.

5. I take this opportunity to express my grateful thanks to the following gentlemen, who have been so good as to serve as Examiners:—

Arithmetic	Lieutenant-Colonel A. F. Hamilton, R.E.
Algebra	Lieutenant H. Andrews-Speed, R.E.
Euclid	Captain J. S. S. Barker, R.A.
Mensuration	Colonel H. L. Prendergast, R.E.
Trigonometry and Statics	A. S. Russell, Esq.,
Building Materials and Construction	C. Vincent, Esq., A.I.C.E.
Earthwork and Road-making	Colonel R. B. Kennedy, S.C.
Bridges and Irrigation Works	Lieutenant-Colonel C. J. Smith, R.E.
Hydraulics	Captain W. H. Coaker, R.E.
Strength of Materials	F. B. Hanna, Esq., M.A., M.E.
Chain, Compass, and Sextant Surveying	Captain G. Henry, R.E.
Levelling	P. Scott, Esq., M. Inst. C.E.
Traversing with Theodolite	Lieutenant R. E. Hamilton, R.E.
Drawing from Specification	G. Bayly, Esq., B.A.
Estimating	Major R. R. E. Drake-Brockman, R.E.
Tamil and Telugu	M.R.Ry. V. Krishnamachariyar Avargal.

6. The following extracts are made from the reports of Examiners:—

Arithmetic.—Colonel Hamilton says:—"This paper has been answered very well, as shown by the high average marks obtained, only one student failing to get three-quarter marks."

Algebra.—Mr. Andrews-Speed writes:—"On the whole, I consider the papers very fair."

Euclid.—Captain Barker reports:—"The papers are decidedly good."

Mensuration.—Colonel Prendergast states that "the candidates have done the Mensuration paper well, although it was a stiff one."

Trigonometry and Statics.—Mr. Russell reports that "the general average is good."

Building Materials and Construction.—Mr. Vincent writes:—"I cannot say more of the majority of answers than that they are fair."

Earthwork and Roads.—Colonel Kennedy says:—"With the exception of the first four in the list, I cannot consider that the candidates have acquitted themselves at all creditably."

Bridges and Irrigation Works.—Colonel C. J. Smith writes:—"There is little to choose between the first three men; their papers are excellent, neatly and quickly written, well expressed and neatly illustrated. I consider the replies on the whole very good."

Hydraulics.—Captain Coaker reports:—"The results are good, the average marks gained being 65 per cent. The students possess a good knowledge of formulæ; but some examples are clumsily worked out."

Strength of Materials.—Mr. Hanna makes no remark.

Chain, Compass, and Box Sextant Surveying.—Captain Henry observes that "the results generally are more satisfactory than in previous years, and afford evidence of good instruction."

Levelling.—Mr. Scott remarks that "the results are most satisfactory, and show that the students are all well grounded in the subject."

Traversing with the Theodolite.—Mr. Hamilton states that "the result of the examination is satisfactory."

Drawing from Specification.—Mr. Bayly reports that "the drawings are in general neat and satisfactory."

Estimating.—Major Drake-Brockman writes:—"The plan was designed to test the abilities of the candidates in as varied a manner as possible. Three out of the ten examinees grasped the easiest method of taking out the quantities, and two failed to get more than 10 per cent. of the marks."

Language.—Mr. Krishnamachariyar states that "the result of the examination may be regarded as tolerably fair."

7. Comparing, as was done last year, the results of the examination with those of 1881, a suitable year for comparison, it will be found that there has been—

- A rise of 2 per cent. in Mathematics.
- A rise of 7 per cent. in Engineering.
- A rise of 6 per cent. in Surveying.
- A rise of 9 per cent. in Drawing.
- A rise of 10 per cent. in Language.
- A rise of 9 per cent. on the total.

The improvement is partly due, I consider, to slight unintentional relaxation of the usual standard on the part of one or two of the examiners, but chiefly to the exceptional merit of the five men who stand highest on the list. The results reflect credit on the instructional staff.

8. All ten candidates passed. Five obtain certificates as Supervisor, Public Works Department, having gained not less than 35 per cent. of the marks in each subject and 60 per cent. of the total; and the remainder secure certificates as Overseer, Public Works Department, the qualification for which is 25 per cent. on each subject and 40 per cent. of the total.

Gunner Coghlan, R.H.A., stands first with 1,890 marks out of 2,500. He obtains a certificate as Supervisor and gains the Royal Engineer Officer's prize for distinguished Proficiency, and the prize for Drawing. He receives special mention from the Examiners in Arithmetic, Euclid, Bridges and Irrigation Works, Traversing, Drawing from Specification and Estimating.

Gunner Alford, R.A., occupies the second place with 1,860 marks, taking a Supervisor's certificate, and obtaining the prize for Surveying and that for Language. He receives special mention from the Examiners in Euclid, Trigonometry and Statics, Levelling Bridges and Irrigation Works, and Estimating.

H. Subba Rao stands third with 1,852 marks. He secures a Supervisor's certificate, obtains the prize for Mathematics and that for Engineering, and receives special mention from the Examiners in Algebra, Euclid, Trigonometry and Statics, and Bridges and Irrigation Works.

A considerable gap occurs between these three men and C. H. Edwards and M. P. Narasimha Aiyangar, who occupy the fourth and fifth places with 1,716 and 1,708 marks respectively. Both have gained certificates as Supervisor, and both have received special mention from several of the examiners.

Between the fifth and sixth men there is a gap of upwards of 300 marks. The following students occupy places ranging from sixth to tenth, and have all been successful in securing certificates as Overseer:—

N. Venkatadri.	D. G. Thomas.
A. Ramamurti.	P. Duncan.
M. Aiyannah Nayudu.	

9. The second class of this department contains twenty students, nineteen of whom have recently undergone a satisfactory examination. The whole of the pupils have been promoted to the first class.

V. R. Venkatarama Aiyar stands first with 1,045 marks out of 1,400, and gains the prize for Mathematics, and a scholarship of Rs. 15 *per mensem*. S. L. Abraham takes the second place with 1,009 marks, gaining the prizes for Surveying and Drawing, and a scholarship of Rs. 15 *per mensem*.

Driver Huson occupies the third place and secures the prizes for Engineering and Language. To the next three men—T. S. Venkatesvariah, T. Krishnaji Rao, and C. Murugesu Mudaliar—are awarded scholarships of Rs. 15 each *per mensem*. The rest of the class have done very fairly.

10. *Drawing Class.*—The first division of eight students has done exceedingly well. G. Ellis stands first with 427 marks out of 500, and M. Embaraya Nayudu second, with 422. Both these men secure the distinction of first-class certificates, the prize being awarded to Embaraya Nayudu owing to his senior having spent more than two years at the college. The next two men—K. Sadagopa Mudaliar and P. Sundararamanjulu Naidu—obtain second-class certificates, and the remaining four men, third-class certificates. These results are creditable to the instructor Mr. Pope.

11. In the second division, the three students who have been examined are promoted to the first division. None of them, however, have done sufficiently well to justify the award of a scholarship.

12. Candidates other than college students, to the number of forty, have also undergone examination for certificates as draftsman. The majority of these are employed in the Public Works Department, and appear for the examination with the view of obtaining a higher class of certificate than they already possess. The results of the examination are not yet known.

13. *Surveying Class.*—The first division, comprising three students, has been examined for certificates. R. Sivasubramania Aiyar has done very well, obtaining the prize and a first-class certificate. M. A. Muthu Pillai secures a third-class certificate, and the remaining member of the class, who has failed, will be permitted to study for another year in the college.

14. The second division of five students, four of whom have recently undergone examination, has done fairly. A scholarship of Rs. 8 *per mensem* is awarded to A. Periasawmi Pillai who occupies the first place on the list.

15. A larger number of students might, with advantage, join both the Drawing and Surveying classes, especially the former. The maximum pay of a first-class draftsman in the Public Works Department has now been raised to Rs. 100 *per mensem*, and the demand for qualified men is in excess of the supply. The pay of the lower grades is, however, still small, and I fear that little improvement in the general attainments of candidates for the college entrance examination for this class can be expected until the condition of these grades has been ameliorated.

16. The number of applicants for admission to the Survey class is not large, and their attainments are usually inferior. It is hoped that a proposal, which has been made to create a graded list of Surveyors for the Public Works Department, will be carried out, as the fact that employment is generally of a temporary nature is one of the causes of the unpopularity of this class of the college.

17. *Photographic Class.*—This class consists of twelve students selected from the second and special departments of the college. Creditable work has been done with wet plates; and the student, Mr. Hyde, is now introducing the dry plate process which has already almost superseded the older system.

18. *Military Students.*—The session commenced with five students—three in the first-class of the second department and two in the second. Of the former, one was compelled to revert to his battery on account of ill-health.

Four men in the vernacular class at Bangalore are about to be examined in Language for entry to the college in August next.

Eight non-commissioned officers and men qualified at the entrance examination in April last, and the first five of these will join the vernacular class early in June.

19. *Employment—First Department.*—Up to the present time, the profession of Engineering has not been a popular one among natives. As to the cause of its unpopularity, there can be no uncertainty. To call into and maintain in existence a novel profession in this country, encouragement must first be given by Government, and reasonable prospect of employment must subsequently be held out. Excepting the advantage of a cheap education, both these conditions have, as regards Civil Engineering, been wanting until very lately. The fact that during the seven-teen years following the formation of the Engineer class at the college, only two appointments of natives were made to the Engineer establishment of the Public Works Department, speaks to the absence of both the conditions of success, since the Public Works Department was, during that period, the chief, almost the sole, employer of the Civil Engineering profession. Efforts, extending over several years, were made to obtain a guarantee for the employment of at least one student annually of the Engineer class, but without success. To show that encouragement is all that is wanted to make Civil Engineering popular, it need only be said that in 1881, after three years had elapsed with but a single appointment conferred by the Public Works Department, one, five nominations (of previously passed men) were made to the new grade of Apprentice Supervisor with the result that the following session commenced with eight students and the succeeding one with thirteen—the numbers at present occupying first department.

20. There now appears to be every prospect that the encouragement thus afforded will be continued and extended. From a notification in the *Fort St. George Gazette* of 27th February, it will be seen that the Government of India propose reserving certain appointments to the Engineer establishment of the Public Works Department for the different Civil Engineering Colleges of India. Should this proposal be carried out, the allotment to Madras would probably be one appointment per annum, commencing with the year 1885. As an alternative measure, it has been suggested that nominations from the college should be made to the rank of Sub-Engineer at the rate probably of two per annum, and that the annual appointment to the superior establishment should be conferred only after long and approved service. The first of these alternatives would doubtless be the more acceptable to present and prospective students of the first department; but, whichever is ultimately adopted, an impetus will be given to the acquirement of engineering knowledge, of which the results to the natives of this presidency can scarcely be over-estimated.

21. When it is considered that lack of encouragement and difficulty of obtaining employment have hitherto been the obstacles which have prevented natives from taking full advantage of the engineering instruction held out to them, and when it is further borne in mind that, owing to the policy of decentralization and the extension of the principle of local self-government, the general prospects of employment are now unusually good, it is not difficult to realise that the future, which is opening to the senior classes of the college, should form an emphatic contrast to the past.

22. I have heard fears expressed that the native of India is not likely to make a good Public Works officer. The answer is to point to Northern India, where, according to the Public Works Classified List, corrected to 31st December 1881, there are 58 natives in the Engineer establishment, viz., 10 executive engineers and 48 assistant engineers. These figures prove that the appointment of natives has not been a failure; and I do not believe that natives of this Presidency will show themselves in any way inferior to those of Northern India.

23. When the requisite encouragement has been afforded in the manner described, there will be no difficulty in increasing the length of the course, so as to afford that practical training without which no man can become a useful engineer. The desirableness of such training, being imparted to all students, whether destined for the Public Works department, or not, has been recognised by the Government in their Proceedings, No. 3057 W., dated 18th November 1882, and the question has been referred to the Committee on the Civil Engineering College to which allusion has been made in recent annual reports. The Committee submitted a further report in the early part of the present year, and it is hoped that orders will now shortly be passed on the important matters which are there dealt with.

24. *Second Department.*—As in the first department, so in the second, the appointments to the Government service are regarded as the chief prizes of a successful course of study. To stimulate competition at the entrance examination, and thus to secure a superior class of students, it is essential that comparative uniformity should be preserved in the number of appointments conferred annually, and that no year should, if possible, be allowed to elapse without some, if only a very few, nominations being made at the close of the college session. The results of neglect of this consideration make themselves felt three or four years after the causes arise, and the Public Works department may thus experience difficulty in obtaining a sufficient supply of suitable men long after changes have been made which affect the influx of candidates to the college. Thus it is immediately traceable to the extensive reductions which were made in the Public Works department in the years 1879 and 1880, that the number of students passing out of the college overseer class in 1882 was only seven, and that in the present year it is only ten. The gradual restoration of public confidence will be recognised by the fact that in 1884, the number will rise to about twenty, and in 1885 to thirty or even more. Had Local Fund boards possessed in 1879 their present engineering establishments, the numbers I first quoted could not have fallen so low; but making every allowance for extended prospects of employment outside the Government service, it seems to me that it would be advantageous in every way if the Public Works department could arrange to appoint a certain minimum number of apprentice overseers annually. Under G.O., No. 2733 W., dated 4th November 1881, the maximum number is fixed at ten. It is believed that the upper subordinate establishment of the Public Works department is, at this moment, in excess of its normal strength; but I trust that it may be found possible shortly to nominate to the public service a few of the civilians now passing out in addition to the two military students who are guaranteed employment by the rules under which they entered the college.

25. The chief desideratum for the second department is that all its students should undergo a practical course on works, so that they may become serviceable overseers when permanently appointed to an establishment. The College Committee have laid stress on this point.

26. *Surveyors and Draftsmen.*—These men are appointed, as required, by Superintending and Executive Engineers in the Public Works department, and by other officers in want of their services. It is not possible, therefore, to furnish precise statistics of the numbers employed during the year. Efforts are made to induce the men to communicate particulars regarding themselves; but there exists an unwillingness to do so, which is probably due to a fear that a man known to be employed might fail to be recommended for the vacancies which are from time to time referred to the college.

27. To become aware that present prospects of employment generally are good, it is only necessary to refer to the public press, where advertisements for engineers, for supervisors, overseers, surveyors, and draftsmen are of frequent occurrence. With the view of assisting students and their friends, these advertisements are collected and posted at the college. In addition, applications from officers for the services of passed men are occasionally received, and recommendations are made to them. In response to such requests, seven overseers, seventeen surveyors, and fifteen draftsmen have been recommended during the year; and I have no doubt that the services of a fair proportion of these have been retained.

28. Allusion was made in last year's report to the fact that the engineering establishments of the Local Fund boards contained many individuals who would not be eligible for corresponding positions in the Public Works department. It is hoped that the recommendations of the Local Self-Government Committee, which has been sitting during the year, will result in the employment of uncertificated men being prohibited.

29. *Model Room*.—Several useful models have been added to the collection. Chief among them are—

- A plate girder bridge (admirably constructed in zinc under the supervision of Mr. E. W. Stoney of the Madras Railway).
- Working models of Stoney's excavators.
- Pile-driver.
- Apparatus illustrating shearing stress in beams.
- Four model steam engines (from Public Workshops, Dowlaishweram).

30. *Library*.—During the year under review, 56 works have been added to the library, making a total of 1,580 volumes. The library is now freely utilized, 931 books having been issued to masters and students, as against 290 in 1880-81, and 647 in 1881-82.

31. It has not been found possible to effect any development of physical training for the students. This question is one of the numerous matters which must await the passing of final orders on the College Committee's report.

32. The conduct of the students has been uniformly good, and their attendance regular. I trust that the relaxation of the coming vacation will enable both them and the staff to return to their duties with fresh vigor at the commencement of the ensuing session.

There were not many changes in the staff during the year. Mr. McAleese was transferred to the Military department in March last, and on the occasion of the two temporary vacancies which preceded this transfer, a re-arrangement of the work among the existing staff was effected in one case, and Mr. Pope was brought in in the other. The Principal's remark that "during the greater part of the year the staff has been one under its full complement," is not understood. The remark would seem to apply only to the short period that Mr. McAleese was absent on furlough, viz., from the commencement of August session to 31st October 1882.

2. *First Department*.—The Director is glad to observe that the first department is becoming more and more popular every year. The first and second divisions had eight and thirteen pupils respectively, while in 1881-82 there were no students in the first class, and only nine in the second—a number which was said to be the largest attained for many years. Very good results are expected from the fact of several of the students being already graduates in arts. The fact that graduates in arts are entering college is a most hopeful feature in the year's report, as it indicates that classes of natives of Madras who have not hitherto taken to engineering as a profession are, in the present demand among graduates in arts, for suitable employment, tending to do so now. The Director is persuaded that the time is not far distant when it will be possible to secure for even the lower subordinate establishments men who have added to a degree in arts, a degree in civil engineering, as the remuneration granted in the lower subordinate establishment is, on the whole, more favorable than that attainable in several departments to which graduates now flock. To render this change, however, an unmixed benefit to the great employers of engineering labor in this country, it is essential that such men, by the time they leave the institution, shall have obtained not merely a good theoretical but also a thoroughly practical knowledge of the mechanical and industrial arts which it will be their duty to guide and exercise. The Principal does not name the classes of the community to which the students belong, but from the returns it appears that, as contrasted with 1881-82, the figures are as follow for all departments:—

	1881-82.	1882-83.
Europeans and Eurasians		
Brahmans		
Hindus (not Brahmans)		
Native Christians		
Muhammadans		
Others		
Total	51	70

The absence of any students in the first division last year accounts for the college not having sent up any students for the last B.C.E. Degree Examination. The Director trusts that the impetus given by the admission of natives to the grade of apprentice supervisor and the prospect of employment afforded by Local Fund boards and Municipalities will conduce to the department improving in strength and supplying candidates for the B.C.E. degree hereafter.

3. *Second Department*.—There were (10) ten students in the first class of this department, who all underwent examinations for certificates as overseers. Five obtained certificates as

supervisor, Public Works department, and the remaining, certificates as overseer. The results of the examination were, on the whole, good, and the five men who head the list are said to possess exceptional merit. In "Earth-work and Roads," the results were poor, and "Building Materials and Construction" only moderate. The partial failure in these two practical subjects, as against the almost uniform success in those of more theoretical character, is noted. Compared with 1881, in some cases marked increase appears in the average percentage of marks obtained in the several subjects, but "the unintentional relaxation of the usual standard on the part of one or two of the examiners," is noted by the Principal as one of the causes of this improvement:—

Mathematics	.. .. .	.. .. .	Increase 2 per cent.
Engineering	.. .. .	.. .. .	" 7 "
Surveying	.. .. .	.. .. .	" 6 "
Drawing	.. .. .	.. .. .	" 9 "
Language	.. .. .	.. .. .	" 10 "
Total Increase	.. .. .	.. .. .	9

The strength of the class would have been greater but for the panic caused by the reductions in the Public Works department two years ago, when these students entered the college. Now that it has subsided, greater numbers are expected to enter the college.

4. The second class was twenty strong. Nineteen of these are reported to have passed a fair examination and all twenty have been promoted to the first class. The circumstances under which one of the number did not undergo examination and yet obtained promotion should have been explained. The first six students are said to have acquitted themselves very creditably at the examination, but only five obtained scholarships. Driver Huson occupied the third place and obtained prizes for engineering and language. He does not appear to have been awarded a scholarship, although the three who stand below him obtained one each.

5. *Drawing Class*.—The numbers in the two divisions show decline—

	Present strength.	8 against 10 in the preceding year.
First division	.. .. .	.. .. .
Second do.	.. .. .	.. .. .

A marked improvement appears in the first division, to having secured first-class certificates, two second class, and four third class. These results are very creditable. Two of the pupils appear to have had more than two years' training.

The results of the second division are disappointing. None of the three forming the class succeeded in securing a scholarship.

The Drawing Class Examination was open also to candidates other than college students. There were forty of these. The results of their examination are not known.

6. *Surveying Class*.—The first division consisted of only three students, who have been examined for certificates. One obtained a first class, another a third class, and the third failed. The second division, with five students, did fairly at the examination.

7. Regarding the poor strength of the drawing and surveying classes, it is remarked that the pay of the lower grades of draftsmen is still small; and until their condition is ameliorated, improved attainments in this class, or increase of numbers, cannot be looked for. If a proposal to create a graded establishment of surveyors for the Public Works department is carried out, this department will doubtless improve in number and in the calibre of the students. A photographic class was formed during the year of twelve selected students of the college. Creditable work is reported to have been done with wet plates, and the dry plate process is now being introduced.

8. *Military Students*.—There were three students in the first class of the second department and two in the second, when the session commenced. Ill-health compelled one of the former to return to his battery.

In the vernacular class at Bangalore, four men were expected to pass in language, with the object of joining the college in August, eight non-commissioned officers and men passed the entrance examination in April, and five of these were expected to join the vernacular class in June. The reservation to military students of a considerable portion of the openings annually available in the Departments of Public Works must unquestionably prejudicially affect the progress of education in engineering and kindred subjects among the natives of the Presidency, however necessary such reservation may be to the interests of the department itself.

9. *Employment of Passed Students*.—The Principal has forcibly explained the causes which have prevented natives from taking full advantage of the engineering instruction given to them, and the gradual increase from 1881 is pointed out. The notification of the Government of India proposing to reserve certain appointments to the engineer establishment of the Public

Works department for the different Civil Engineering Colleges of India will, with the policy of decentralization and local self-government, doubtless tend to enlarge the prospects of employment to the college students; but the Director is persuaded that the institution, in all its branches, will never take its proper position in the educational scheme of the country, until it ceases to educate men for a few reserved Government appointments, but has, instead, the permanently assured prospects of admission to the subordinate ranks of the Public Works department by means of some system of open competition.

10. It is reported that seven overseers, seventeen surveyors, and fifteen draftsmen have been recommended for employment to various departments.

11. The model room and the library have received valuable additions during the year.

12. As to development of physical training of the students, the Principal reports that it has not been found possible to effect any arrangements. The Director does not understand what difficulty there is in doing so, and why final orders on the College Committee's report should be awaited before taking action in the matter.

(A true Copy and Extract.)

(Signed) H. B. GRIGG,
Director of Public Instruction.

To the Principal, Civil Engineering College.

ORDER—dated 1st October 1883, No. 652, Educational.

Ordered that the report be forwarded to the India office.

(True Extract.)

E. F. WEBSTER,
Acting Chief Secretary.

To the Director of Public Instruction.
„ Public Works department.

Exd. J. Wright.

Govt. of (1883) Madras.

EDUCATIONAL.

Issued

Recd.

Encl.

G.O., 1st October 1883, No. 652.

Bk. 3021W of 24-10-83

OCTOBER.

Civil Engineering College.

Forwarding to the India office report on the working of the — during the year 1882-83.

1ST OCTOBER 1883, No. 652, EDUCATIONAL.

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

From H. B. GRIGG, Esq., M.A., Director of Public Instruction, to the Acting Chief Secretary to Government, dated Madras, 25th August 1883, No. 5909.

With reference to G.O., dated 21st June 1882, No. 101, Educational, I have the honor to submit three copies of the report on the Civil Engineering College for 1882-83, together with my review of the same.

ENCLOSURE.

Proceedings of the Director of Public Instruction, dated 10th August 1883, No. 5513.

Read the following letter from Lieutenant H. D. LOVE, R.E., Principal, Civil Engineering College, dated 29th May 1883, No. 250-C.

I have the honor to submit the following report on the working of the Civil Engineering College during the past year, and on the results of the examinations for certificates which have been held in that period.

2. *Changes in Establishment.*—Owing to the absence, on furlough, of Mr. Bradshaw, Mr. Kenny continued to act as First Assistant Master throughout the year.

Consequent on the absence, in England, of Mr. McAleese at the commencement of the Session in August, Mr. W. Cames acted as Second Assistant Master, Storekeeper and Librarian; Mr. W. Hyde as Third Assistant Master and Instructor in Photography; and Mr. J. Hamilton as Fourth Assistant Master, Mr. J. B. Hennessy taking charge of the Drawing Class in addition to his own duties.

On 1st November 1882, Mr. McAleese, Second Assistant Master, returned from furlough, and the masters junior to him reverted to their substantive appointments.

On 17th January 1883, Mr. J. B. Hennessy was appointed temporarily to the Public Works Secretariat, and Mr. F. Pope was transferred from that office to the college.

On 2nd March 1883, Sub-Conductor W. J. McAleese was transferred to the Military Department, and the following appointments were made :—

Mr. W. Cames to be Second Assistant Master, Librarian and Storekeeper.

Mr. W. Hyde to be Third Assistant Master and Instructor in Photography.

Mr. J. Hamilton to be Fourth Assistant Master, sub. *pro tem*.

Mr. F. Pope to be Fifth Assistant Master, sub. *pro tem*.

The services of Mr. J. Campbell of the Public Works Department have been applied for as Sixth Assistant Master, sub. *pro tem*.

It will be observed that, during the greater part of the year, the staff has been one under its full complement. Considerable extra work has consequently devolved on Messrs. Hyde and Hamilton, the Instructors in Surveying and Drawing.

3. *First Department—Engineer Classes.*—This department contains eight students in the first division, and thirteen in the second—in all twenty-one—the largest number of which it has ever consisted. As several of the students are already Graduates in Arts, it appears probable that these classes will do themselves and the college credit in the examinations for certificates as Assistant Engineer, which will be held in this and the following years, as well as in the corresponding University Examinations for the degree in Civil Engineering. In December 1882, no first division existed, and consequently no students appeared from the college for the last degree examination. The students of the second division, however, passed a satisfactory sessional

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5. I take this opportunity to express my grateful thanks to the following gentlemen, who have been so good as to serve as Examiners:—

Arithmetic	..	..	..	..	..	Lieutenant-Colonel A. F. Hamilton, R.E.
Algebra	..	..	..	..	..	Lieutenant H. Andrews-Speed, R.E.
Euclid	..	..	..	..	..	Captain J. S. S. Barker, R.A.
Mensuration	..	..	..	..	..	Colonel H. L. Prendergast, R.E.
Trigonometry and Statics	..	..	..	..	..	A. S. Russell, Esq.,
Building Materials and Construction	..	..	..	..	..	C. Vincent, Esq., A.I.C.E.
Earthwork and Road-making	..	..	..	..	..	Colonel R. B. Kennedy, S.C.
Bridges and Irrigation Works	..	..	..	..	..	Lieutenant-Colonel C. J. Smith, R.E.
Hydraulics	..	..	..	..	..	Captain W. H. Coaker, R.E.
Strength of Materials	..	..	..	..	..	F. B. Hanna, Esq., M.A., M.E.
Chain, Compass, and Sextant Surveying	..	..	..	..	..	Captain G. Henry, R.E.
Levelling	..	..	..	..	..	P. Scott, Esq., M. Inst. C.E.
Traversing with Theodolite	..	..	..	..	..	Lieutenant R. E. Hamilton, R.E.
Drawing from Specification	..	..	..	..	..	G. Bayly, Esq., B.A.
Estimating	..	..	..	..	..	Major R. R. E. Drake-Brockman, R.E.
Tamil and Telugu	..	..	..	..	..	M.R.Ry. V. Krishnamachariyar Avargal.

6. The following extracts are made from the reports of Examiners:—

Arithmetic.—Colonel Hamilton says:—"This paper has been answered very well, as shown by the high average marks obtained, only one student failing to get three-quarter marks."
Algebra.—Mr. Andrews-Speed writes:—"On the whole, I consider the papers very fair."
Euclid.—Captain Barker reports:—"The papers are decidedly good."
Mensuration.—Colonel Prendergast states that "the candidates have done the Mensuration paper well, although it was a stiff one."
Trigonometry and Statics.—Mr. Russell reports that "the general average is good."
Building Materials and Construction.—Mr. Vincent writes:—"I cannot say more of the majority of answers than that they are fair."
Earthwork and Roads.—Colonel Kennedy says:—"With the exception of the first four in the list, I cannot consider that the candidates have acquitted themselves at all creditably."
Bridges and Irrigation Works.—Colonel C. J. Smith writes:—"There is little to choose between the first three men; their papers are excellent, neatly and quickly written, well expressed and neatly illustrated. I consider the replies on the whole very good."
Hydraulics.—Captain Coaker reports:—"The results are good, the average marks gained being 65 per cent. The students possess a good knowledge of formulæ; but some examples are clumsily worked out."
Strength of Materials.—Mr. Hanna makes no remark.
Chain, Compass, and Box Sextant Surveying.—Captain Henry observes that "the results generally are more satisfactory than in previous years, and afford evidence of good instruction."
Levelling.—Mr. Scott remarks that "the results are most satisfactory, and show that the students are all well grounded in the subject."
Traversing with the Theodolite.—Mr. Hamilton states that "the result of the examination is satisfactory."
Drawing from Specification.—Mr. Bayly reports that "the drawings are in general neat and satisfactory."
Estimating.—Major Drake-Brockman writes:—"The plan was designed to test the abilities of the candidates in as varied a manner as possible. Three out of the ten examinees grasped the easiest method of taking out the quantities, and two failed to get more than 10 per cent. of the marks."
Language.—Mr. Krishnamachariyar states that "the result of the examination may be regarded as tolerably fair."

7. Comparing, as was done last year, the results of the examination with those of 1881, a suitable year for comparison, it will be found that there has been—

- A rise of 2 per cent. in Mathematics.
- A rise of 7 per cent. in Engineering.
- A rise of 6 per cent. in Surveying.
- A rise of 9 per cent. in Drawing.
- A rise of 10 per cent. in Language.
- A rise of 9 per cent. on the total.

The improvement is partly due, I consider, to slight unintentional relaxation of the usual standard on the part of one or two of the examiners, but chiefly to the exceptional merit of the five men who stand highest on the list. The results reflect credit on the instructional staff.

8. All ten candidates passed. Five obtain certificates as Supervisor, Public Works Department, having gained not less than 35 per cent. of the marks in each subject and 60 per cent. of the total; and the remainder secure certificates as Overseer, Public Works Department, the qualification for which is 25 per cent. on each subject and 40 per cent. of the total.

Gunner Coghlan, R.H.A., stands first with 1,890 marks out of 2,500. He obtains a certificate as Supervisor and gains the Royal Engineer Officer's prize for distinguished Proficiency, and the prize for Drawing. He receives special mention from the Examiners in Arithmetic, Euclid, Bridges and Irrigation Works, Traversing, Drawing from Specification and Estimating.

Gunner Alford, R.A., occupies the second place with 1,860 marks, taking a Supervisor's certificate, and obtaining the prize for Surveying and that for Language. He receives special mention from the Examiners in Euclid, Trigonometry and Statics, Levelling Bridges and Irrigation Works, and Estimating.

H. Subba Rao stands third with 1,852 marks. He secures a Supervisor's certificate, obtains the prize for Mathematics and that for Engineering, and receives special mention from the Examiners in Algebra, Euclid, Trigonometry and Statics, and Bridges and Irrigation Works.

A considerable gap occurs between these three men and C. H. Edwards and M. P. Narasimha Aiyangar, who occupy the fourth and fifth places with 1,716 and 1,708 marks respectively. Both have gained certificates as Supervisor, and both have received special mention from several of the examiners.

Between the fifth and sixth men there is a gap of upwards of 300 marks. The following students occupy places ranging from sixth to tenth, and have all been successful in securing certificates as Overseer:—

N. Venkatadri.	D. G. Thomas.
A. Ramamurti.	P. Duncan.
M. Aiyannah Nayudu.	

9. The second class of this department contains twenty students, nineteen of whom have recently undergone a satisfactory examination. The whole of the pupils have been promoted to the first class.

V. R. Venkatarama Aiyar stands first with 1,045 marks out of 1,400, and gains the prize for Mathematics, and a scholarship of Rs. 15 *per mensem*. S. L. Abraham takes the second place with 1,009 marks, gaining the prizes for Surveying and Drawing, and a scholarship of Rs. 15 *per mensem*.

Driver Huson occupies the third place and secures the prizes for Engineering and Language. To the next three men—T. S. Venkatesvariah, T. Krishnaji Rao, and C. Murugesu Mudaliar—are awarded scholarships of Rs. 15 each *per mensem*. The rest of the class have done very fairly.

10. *Drawing Class.*—The first division of eight students has done exceedingly well. G. Ellis stands first with 427 marks out of 500, and M. Embaraya Nayudu second, with 422. Both these men secure the distinction of first-class certificates, the prize being awarded to Embaraya Nayudu owing to his senior having spent more than two years at the college. The next two men—K. Sadagopa Mudaliar and P. Sundararamanjulu Naidu—obtain second-class certificates, and the remaining four men, third-class certificates. These results are creditable to the instructor Mr. Pope.

11. In the second division, the three students who have been examined are promoted to the first division. None of them, however, have done sufficiently well to justify the award of a scholarship.

12. Candidates other than college students, to the number of forty, have also undergone examination for certificates as draftsman. The majority of these are employed in the Public Works Department, and appear for the examination with the view of obtaining a higher class of certificate than they already possess. The results of the examination are not yet known.

13. *Surveying Class.*—The first division, comprising three students, has been examined for certificates. R. Sivasubramania Aiyar has done very well, obtaining the prize and a first-class certificate. M. A. Muthu Pillai secures a third-class certificate, and the remaining member of the class, who has failed, will be permitted to study for another year in the college.

14. The second division of five students, four of whom have recently undergone examination, has done fairly. A scholarship of Rs. 8 *per mensem* is awarded to A. Periasawmi Pillai who occupies the first place on the list.

15. A larger number of students might, with advantage, join both the Drawing and Surveying classes, especially the former. The maximum pay of a first-class draftsman in the Public Works Department has now been raised to Rs. 100 *per mensem*, and the demand for qualified men is in excess of the supply. The pay of the lower grades is, however, still small, and I fear that little improvement in the general attainments of candidates for the college entrance examination for this class can be expected until the condition of these grades has been ameliorated.

16. The number of applicants for admission to the Survey class is not large, and their attainments are usually inferior. It is hoped that a proposal, which has been made to create a graded list of Surveyors for the Public Works Department, will be carried out, as the fact that employment is generally of a temporary nature is one of the causes of the unpopularity of this class of the college.

17. *Photographic Class.*—This class consists of twelve students selected from the second and special departments of the college. Creditable work has been done with wet plates; and the instructor, Mr. Hyde, is now introducing the dry plate process which has already almost superseded the older system.

18. *Military Students.*—The session commenced with five students—three in the first-class of the second department and two in the second. Of the former, one was compelled to revert to his battery on account of ill-health.

Four men in the vernacular class at Bangalore are about to be examined in Language for entry to the college in August next. Eight non-commissioned officers and men qualified at the entrance examination in April last, and the first five of these will join the vernacular class early in June.

19. *Employment—First Department.*—Up to the present time, the profession of Engineering has not been a popular one among natives. As to the cause of its unpopularity, there can be no uncertainty. To call into and maintain in existence a novel profession in this country, encouragement must first be given by Government, and reasonable prospect of employment must subsequently be held out. Excepting the advantage of a cheap education, both these conditions have, as regards Civil Engineering, been wanting until very lately. The fact that during the seventeen years following the formation of the Engineer class at the college, only two appointments of natives were made to the Engineer establishment of the Public Works Department, speaks to the absence of both the conditions of success, since the Public Works Department was, during that period, the chief, almost the sole, employer of the Civil Engineering profession. Efforts, extending over several years, were made to obtain a guarantee for the employment of at least one student annually of the Engineer class, but without success. To show that encouragement is all that is wanted to make Civil Engineering popular, it need only be said that in 1881, after three years had elapsed with but a single appointment conferred by the Public Works Department, and when the number of students in the senior class had, in consequence, become diminished to one, five nominations (of previously passed men) were made to the new grade of Apprentice Supervisor with the result that the following session commenced with eight students and the succeeding one with thirteen—the numbers at present occupying first department.

20. There now appears to be every prospect that the encouragement thus afforded will be continued and extended. From a notification in the *Fort St. George Gazette* of 27th February, it will be seen that the Government of India propose reserving certain appointments to the Engineer establishment of the Public Works Department for the different Civil Engineering Colleges of India. Should this proposal be carried out, the allotment to Madras would probably be one appointment per annum, commencing with the year 1885. As an alternative measure, it has been suggested that nominations from the college should be made to the rank of Sub-Engineer at the rate probably of two per annum, and that the annual appointment to the superior establishment should be conferred only after long and approved service. The first of these alternatives would doubtless be the more acceptable to present and prospective students of the first department; but, whichever is ultimately adopted, an impetus will be given to the acquirement of engineering knowledge, of which the results to the natives of this presidency can scarcely be over-estimated.

21. When it is considered that lack of encouragement and difficulty of obtaining employment have hitherto been the obstacles which have prevented natives from taking full advantage of the engineering instruction held out to them, and when it is further borne in mind that, owing to the policy of decentralization and the extension of the principle of local self-government, the general prospects of employment are now unusually good, it is not difficult to realise that the future, which is opening to the senior classes of the college, should form an emphatic contrast to the past.

22. I have heard fears expressed that the native of India is not likely to make a good Public Works officer. The answer is to point to Northern India, where, according to the Public Works Classified List, corrected to 31st December 1881, there are 58 natives in the Engineer establishment, viz., 10 executive engineers and 48 assistant engineers. These figures prove that the appointment of natives has not been a failure; and I do not believe that natives of this Presidency will show themselves in any way inferior to those of Northern India.

23. When the requisite encouragement has been afforded in the manner described, there will be no difficulty in increasing the length of the course, so as to afford that practical training without which no man can become a useful engineer. The desirableness of such training, being imparted to *all* students, whether destined for the Public Works department, or not, has been recognised by the Government in their Proceedings, No. 3057 W., dated 18th November 1882, and the question has been referred to the Committee on the Civil Engineering College to which allusion has been made in recent annual reports. The Committee submitted a further report in the early part of the present year, and it is hoped that orders will now shortly be passed on the important matters which are there dealt with.

24. *Second Department.*—As in the first department, so in the second, the appointments to the Government service are regarded as the chief prizes of a successful course of study. To stimulate competition at the entrance examination, and thus to secure a superior class of students, it is essential that comparative uniformity should be preserved in the number of appointments conferred annually, and that no year should, if possible, be allowed to elapse without some, if only a very few, nominations being made at the close of the college session. The results of neglect of this consideration make themselves felt three or four years after the causes arise, and the Public Works department may thus experience difficulty in obtaining a sufficient supply of suitable men long after changes have been made which affect the influx of candidates to the college. Thus it is immediately traceable to the extensive reductions which were made in the Public Works department in the years 1879 and 1880, that the number of students passing out of the college overseer class in 1882 was only seven, and that in the present year it is only ten. The gradual restoration of public confidence will be recognised by the fact that in 1884, the number will rise to about twenty, and in 1885 to thirty or even more. Had Local Fund boards possessed in 1879 their present engineering establishments, the numbers I first quoted could not have fallen so low; but making every allowance for extended prospects of employment outside the Government service, it seems to me that it would be advantageous in every way if the Public Works department could arrange to appoint a certain minimum number of apprentice overseers annually. Under G.O., No. 2733 W., dated 4th November 1881, the maximum number is fixed at ten. It is believed that the upper subordinate establishment of the Public Works department is, at this moment, in excess of its normal strength; but I trust that it may be found possible shortly to nominate to the public service a few of the civilians now passing out in addition to the two military students who are guaranteed employment by the rules under which they entered the college.

25. The chief desideratum for the second department is that *all* its students should undergo a practical course on works, so that they may become serviceable overseers when permanently appointed to an establishment. The College Committee have laid stress on this point.

26. *Surveyors and Draftsmen.*—These men are appointed, as required, by Superintending and Executive Engineers in the Public Works department, and by other officers in want of their services. It is not possible, therefore, to furnish precise statistics of the numbers employed during the year. Efforts are made to induce the men to communicate particulars regarding themselves; but there exists an unwillingness to do so, which is probably due to a fear that a man known to be employed might fail to be recommended for the vacancies which are from time to time referred to the college.

27. To become aware that present prospects of employment generally are good, it is only necessary to refer to the public press, where advertisements for engineers, for supervisors, overseers, surveyors, and draftsmen are of frequent occurrence. With the view of assisting students, and their friends, these advertisements are collected and posted at the college. In addition, applications from officers for the services of passed men are occasionally received, and recommendations are made to them. In response to such requests, seven overseers, seventeen surveyors, and fifteen draftsmen have been recommended during the year; and I have no doubt that the services of a fair proportion of these have been retained.

28. Allusion was made in last year's report to the fact that the engineering establishments of the Local Fund boards contained many individuals who would not be eligible for corresponding positions in the Public Works department. It is hoped that the recommendations of the Local Self-Government Committee, which has been sitting during the year, will result in the employment of uncertificated men being prohibited.

29. *Model Room.*—Several useful models have been added to the collection. Chief among them are—

A plate girder bridge (admirably constructed in zinc under the supervision of Mr. E. W. Stoney of the Madras Railway).
Working models of Stoney's excavators.
Pile-driver.
Apparatus illustrating shearing stress in beams.
Four model steam engines (from Public Workshops, Dowlaishweram).

30. *Library.*—During the year under review, 56 works have been added to the library, making a total of 1,580 volumes. The library is now freely utilized, 931 books having been issued to masters and students, as against 290 in 1880-81, and 647 in 1881-82.

31. It has not been found possible to effect any development of physical training for the students. This question is one of the numerous matters which must await the passing of final orders on the College Committee's report.

32. The conduct of the students has been uniformly good, and their attendance regular. I trust that the relaxation of the coming vacation will enable both them and the staff to return to their duties with fresh vigor at the commencement of the ensuing session.

There were not many changes in the staff during the year. Mr. McAleese was transferred to the Military department in March last, and on the occasion of the two temporary vacancies which preceded this transfer, a re-arrangement of the work among the existing staff was effected in one case, and Mr. Pope was brought in in the other. The Principal's remark that "during the greater part of the year the staff has been one under its full complement," is not understood. The remark would seem to apply only to the short period that Mr. McAleese was absent on furlough, viz., from the commencement of August session to 31st October 1882.

2. *First Department.*—The Director is glad to observe that the first department is becoming more and more popular every year. The first and second divisions had eight and thirteen pupils respectively, while in 1881-82 there were no students in the first class, and only nine in the second—a number which was said to be the largest attained for many years. Very good results are expected from the fact of several of the students being already graduates in arts. The fact that graduates in arts are entering college is a most hopeful feature in the year's report, as it indicates that classes of natives of Madras who have not hitherto taken to engineering as a profession are, in the present demand among graduates in arts, for suitable employment, tending to do so now. The Director is persuaded that the time is not far distant when it will be possible to secure for even the lower subordinate establishments men who have added to a degree in arts, a degree in civil engineering, as the remuneration granted in the lower subordinate establishment is, on the whole, more favorable than that attainable in several departments to which graduates now flock. To render this change, however, an unmixed benefit to the great employers of engineering labor in this country, it is essential that such men, by the time they leave the institution, shall have obtained not merely a good theoretical but also a thoroughly practical knowledge of the mechanical and industrial arts which it will be their duty to guide and exercise. The Principal does not name the classes of the community to which the students belong, but from the returns it appears that, as contrasted with 1881-82, the figures are as follow for all departments:—

	1881-82.	1882-83.
Europeans and Eurasians	11	11
Brahmans	11	33
Hindus (not Brahmans)	17	15
Native Christians	9	7
Muhammadans	1	1
Others	3	3
Total	51	70

The absence of any students in the first division last year accounts for the college not having sent up any students for the last B.C.E. Degree Examination. The Director trusts that the impetus given by the admission of natives to the grade of apprentice supervisor and the prospect of employment afforded by Local Fund boards and Municipalities will conduce to the department improving in strength and supplying candidates for the B.C.E. degree hereafter.

3. *Second Department.*—There were (10) ten students in the first class of this department, who all underwent examinations for certificates as overseers. Five obtained certificates as

supervisor, Public Works department, and the remaining, certificates as overseer. The results of the examination were, on the whole, good, and the five men who head the list are said to possess exceptional merit. In "Earth-work and Roads," the results were poor, and "Building Materials and Construction" only moderate. The partial failure in these two practical subjects, as against the almost uniform success in those of more theoretical character, is noted. Compared with 1881, in some cases marked increase appears in the average percentage of marks obtained in the several subjects, but "the unintentional relaxation of the usual standard on the part of one or two of the examiners," is noted by the Principal as one of the causes of this improvement:—

	Increase 2 per cent.
Mathematics	7
Engineering	6
Surveying	9
Drawing	10
Language	—
Total Increase	9

The strength of the class would have been greater but for the panic caused by the reductions in the Public Works department two years ago, when these students entered the college. Now that it has subsided, greater numbers are expected to enter the college.

4. The second class was twenty strong. Nineteen of these are reported to have passed a fair examination and all twenty have been promoted to the first class. The circumstances under which one of the number did not undergo examination and yet obtained promotion should have been explained. The first six students are said to have acquitted themselves very creditably at the examination, but only five obtained scholarships. Driver Huson occupied the third place and obtained prizes for engineering and language. He does not appear to have been awarded a scholarship, although the three who stand below him obtained one each.

5. *Drawing Class.*—The numbers in the two divisions show decline—

	Present strength.
First division	8 against 10 in the preceding year.
Second do.	3 do. 5 do. do.

A marked improvement appears in the first division, to having secured first-class certificates, two second class, and four third class. These results are very creditable. Two of the pupils appear to have had more than two years' training.

The results of the second division are disappointing. None of the three forming the class succeeded in securing a scholarship.

The Drawing Class Examination was open also to candidates other than college students. There were forty of these. The results of their examination are not known.

6. *Surveying Class.*—The first division consisted of only three students, who have been examined for certificates. One obtained a first class, another a third class, and the third failed. The second division, with five students, did fairly at the examination.

7. Regarding the poor strength of the drawing and surveying classes, it is remarked that the pay of the lower grades of draftsmen is still small; and until their condition is ameliorated, improved attainments in this class, or increase of numbers, cannot be looked for. If a proposal to create a graded establishment of surveyors for the Public Works department is carried out, this department will doubtless improve in number and in the calibre of the students. A photographic class was formed during the year of twelve selected students of the college. Creditable work is reported to have been done with wet plates, and the dry plate process is now being introduced.

8. *Military Students.*—There were three students in the first class of the second department and two in the second, when the session commenced. Ill-health compelled one of the former to return to his battery.

In the vernacular class at Bangalore, four men were expected to pass in language, with the object of joining the college in August, eight non-commissioned officers and men passed the entrance examination in April, and five of these were expected to join the vernacular class in June. The reservation to military students of a considerable portion of the openings annually available in the Departments of Public Works must unquestionably prejudicially affect the progress of education in engineering and kindred subjects among the natives of the Presidency, however necessary such reservation may be to the interests of the department itself.

9. *Employment of Passed Students.*—The Principal has forcibly explained the causes which have prevented natives from taking full advantage of the engineering instruction given to them, and the gradual increase from 1881 is pointed out. The notification of the Government of India proposing to reserve certain appointments to the engineer establishment of the Public

Works department for the different Civil Engineering Colleges of India will, with the policy of decentralization and local self-government, doubtless tend to enlarge the prospects of employment to the college students; but the Director is persuaded that the institution, in all its branches, will never take its proper position in the educational scheme of the country, until it ceases to educate men for a few reserved Government appointments, but has, instead, the permanently assured prospects of admission to the subordinate ranks of the Public Works department by means of some system of open competition.

10. It is reported that seven overseers, seventeen surveyors, and fifteen draftsmen have been recommended for employment to various departments.

11. The model room and the library have received valuable additions during the year.

12. As to development of physical training of the students, the Principal reports that it has not been found possible to effect any arrangements. The Director does not understand what difficulty there is in doing so, and why final orders on the College Committee's report should be awaited before taking action in the matter.

(A true Copy and Extract.)

(Signed) H. B. GRIGG,
Director of Public Instruction.

To the Principal, Civil Engineering College.

ORDER—dated 1st October 1883, No. 652, Educational.

Ordered that the report be forwarded to the India office.

(True Extract.)

E. F. WEBSTER,
Acting Chief Secretary.

To the Director of Public Instruction.
„ Public Works department.

Exd. J. Wright.

Govt. of (1883) Madras.

EDUCATIONAL.

Issued

Recd.

Encl.

G.O., 1st October 1883, No. 652.

Bk. 3021W of 24-10-83

OCTOBER.

Civil Engineering College.

Forwarding to the India office report on the
working of the — during the year 1882-83.