The Superintending Engineer.

(1) பக்கங்களின் எண்ணிக்கை 8

(2) புதுக்கித் திருப்பிய நாள் Oct – 1990

(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம்

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

PWD துறை

105

அரசு எண்.
மு. கோப்புத் தாள் எண். 154

அச்சகம்
பலவகை

நாள் : 16-1-1992

198 .

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

4 Sheets

ஆவண. கா-1—18,006—15-6-87.

Statement of Proposal for revision of Establishment to accompany Letter No. 5247, dated 31 - 12 - 1891.

Order Sanctioning present Establishment.		Office to which the proposition relates.	Nature of Change.										Proposal.						Remarks.
			Present Scale.					Proposed Scale.					Permanent.		Temporary.				
					Pay.					Pay.			Increase per month.	Decrease per month.	Increase per month.		Decrease per month.		
No.	Date.		No.	Designation.	Minimum.	Increment.	Maximum.	Average or fixed.	No.	Designation.	Minimum.	Increment.	Maximum.	Average or fixed.	Amount.	Amount.	Period.	Amount.	Period.	Amount.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
G.O No 29610	6th November 1891	Chingleput Division		Divisional Office	Rs.	Rs.	Rs.	Rs.		Divisional Office	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.		Rs.	
			1	Clerk	-	-	-	45	1	Clerk	.	.	.	20							Has been split into 3 appointments Vide G.O No 2388W dated 29-10-9
									1	Clerk	.	.	.	14							
									1	Clerk	.	.	.	11							
			2	Clerks at Rs20	-	-	-	40	2	Clerks at Rs20	.	.	.	40							
			1	Clerk	-	-	-	14	1	Clerk	.	.	.	14							
			1	Clerk	-	-	-	10	1	Clerk	.	.	.	10							
				Trivellore Sub Divn						Trivellore Sub Divn											
			2	Clerks at Rs15	-	-	-	30	1	Clerk										30	Not required
				Chingleput Sub Divn						Chingleput Sub Divn											
			1	Clerk at Rs14	-	-	-	14	1	Clerk										14	Do
				Mount Sub Divn						Mount Sub Divn											
			1	Clerk at Rs12				12	1	Clerk										12	Do
				Total per Annum				165						109							1/54
										For 3 Months				327							

Station, St Thomas Mount

Dated 31 - 12 - 1891.

Signature and rank of Head of Office.

Executive Engineer C&D

31/12/91

NOTES.

REFERENCE TO MADRAS P. W. D. CODE, EDITION OF 1886.

PARAS. 25 & 26.

1. The column headed "present scale" should invariably show the *sanctioned scale for the time being* and not the strength of the actual (whether above or below sanctioned) establishment as it happens to stand at the time. The "present scale" should be verified by the examiner before the proposal is submitted to government for sanction (paras. 25 and 26).

2. In the column "average or fixed pay," financial value, not mean value, should be given.

3. The financial value should in the case of progressive appointments be calculated as follows:—

(1) If the period of rise from minimum to maximum is 5 years, the average will be the minimum *plus* two-thirds, or if the appointment is a ministerial one, *plus* three-fourths, of the difference between the minimum and maximum (C. S. R., Art. 164).

(2) If the period of growth exceeds five years (as in the case of accountants) the $\frac{3}{4}$th fraction should be decreased by $\frac{1}{60}$th of the difference for every year by which the period exceeds five; the fraction for periods in excess of five years will therefore be as follows:—

6 years = $\frac{3}{4} - \frac{1}{60} = \frac{44}{60}$
7 years = $\frac{3}{4} - \frac{2}{60} = \frac{43}{60}$
8 years = $\frac{3}{4} - \frac{3}{60} = \frac{42}{60}$

and so on; so that when the period of growth is 20 years the financial value will be the exact mean.

P. W. D. FORM, No. M 184.

PUBLIC WORKS DEPARTMENT, MADRAS.

Tabular Statement showing the proposed Changes in the Establishment of the P. W. Department, Madras Presidency.

The entries within under the head, "Present scale" have been checked and found correct [subject to exceptions noted below *].

Examiner of P. W Accounts, Madras.

* The words in brackets should be scored out when there are no exceptions to be noted.

400—6-5-91.

Chingleput Division Office
St Thomas Mount
31st December 1891.

No. 5247.

From

The Executive Engineer
Chingleput Division

To

The Superintending Engineer
V Circle
Chepauk
Madras.

Sir

With reference to your No 12475 C.N dated 10th November 1891 Communicating sanction of Government to the continued employment of the temporary establishment up to 31st instant. I have the honor to submit herewith a statement of proposals for the continued employment of the temporary establishment for the Divisional Office only till the 31st March 1892.

The Famine Relief Works in the Chingleput Sub Division were closed

closed on the 3rd instant- and those of the Mount and Trivellore have been recently ordered to be closed. So no work will be going on there either

The accounts of the month of January 1892 will therefore be submitted to the Examiner on or about the 20th February 1892 but to wind up the whole famine affairs it will take another month Viz the end of March 1892 and I have therefore the honor to request that you will be good enough to obtain the sanction of Government as early as possible The services of the 4 temporary clerks for the three Sub Divisions have been ordered to be dispensed with from the 31st instant- as per GO No 2960 W of 6th November 91

I have &c

(Signed) C. A. B Burlton

Executive Engineer Chingleput Division

No: 22

Encls 1
Proposition
Statement

Forwarded to the Chief Engineer P.W. Department for sanction

J.W. Campbell Lt. Col. RE
Superintending Engineer
Trichy

5 January 1892

154/7

P. W. CURRENT No. 166

From

The Supty: Engineer
Fifth Circle

To

The Chief Engineer
P. W. Deptt.

Dated 5th
Recd 7th } January 1892

Encls 1.

No. 807 W d/ 19-3-91
" 917 W - 3-4-91
" 1300 W - 12-5-91
" 3473 C - 28-7-91
" 2023 W - 28-7-91
" 3868 C - 28-8-91
" 2577 W - 24-9-91
" 2707 W - 13-10-91
" 2880 W - 29-10-91
" 2960 W - 6-11-91
" 3041 W - 13-11-91

No 154 W d/ 16.1.92

No 2 W.

Temporary Establish-
-ment for the Chingle-
-put Division Office.

Submits for Sanction
a Statement of propo-
-sals for the continued
employment of the —

No 154 W PUBLIC WORKS DEPARTMENT.

20/

PROCEEDINGS OF THE MADRAS GOVERNMENT.

January 16. 1892

READ the following

From the Supty. Engineer V circle No: 2 W d/ 5th Jan. 1892.

Sanction is accorded to the continued employment, till the 31st March 1892, of the temporary establishment in the Chingleput Division, shown in the column "Proposed scale" of the statement submitted by the Supty. Engineer with his endorsement recorded above.

2. This sanction has been registered as Provincial No: 67 W of 1891-92 and classified as Establishment, Temporary.

To

The S. E. V circle
" Exar. P. W. Accts.
with copy of the Statement.

D 1891

Cir

Dm

✓

№ 154 Wdj 16.1.92

Bi Dm

Dc

(4)

Dr 21/1 Dc. 18/1

1-1-92.

(4)

Govt. of {1892} Madras.

EDUCATIONAL.

Issued

Recd. Encl.

G.O., 13th June 1892, No. 449.

JUNE.

College of Engineering.

Reviewing the report upon the working of the — during the year 1891–92, and forwarding copy of proceedings to the Secretary of State.

1874 W

No. 1874 W dt/28th June/92

Commd. to

Officers of the

P.W.D. for infn.

(5) 30. W

1829 W

C/fn 1

55

CA

5 W PP

GOVERNMENT OF MADRAS.

EDUCATIONAL DEPARTMENT.

READ—the following paper :—

From D. DUNCAN, Esq., M.A., D.Sc., Acting Director of Public Instruction, to the Chief Secretary to Government, dated Madras, 13th May 1892, No. 6647.

I have the honour to submit, for the information of Government, a copy of my Proceedings, No. 6545, dated 11th instant, reviewing reports on the working of the College of Engineering for 1891–92, and in doing so beg to draw the attention of Government to paragraph 14 of my review in which certain suggestions made by the Principal, College of Engineering, regarding the employment of passed students, is considered.

ENCLOSURE.

PROCEEDINGS of the Director of Public Instruction, dated 11th May 1892, No. 6545.

Read—the following papers :—

From Major A. W. SMART, R.E., Acting Principal, College of Engineering, to the Director of Public Instruction, dated Madras, 25th January 1892 :—

I have the honour to submit the Annual Report of the year 1891 on the working of the College of Engineering. A supplemental report will be forwarded in April next so as to complete the review of the official year.

2. *Establishment.*—The Principal, Captain (now Major) H. D. Love, proceeded to England on duty and was relieved by me on the 27th February 1891. On the 18th January M.R.Ry. R. A. Bhakya Mudaliyar was confirmed as Assistant Instructor in Surveying. M.R.Ry. T. Rangaswami Aiyangar, B.A., Vernacular Assistant, was permanently transferred to the Presidency College on 8th February 1891. M.R.Ry. M. R. Vaidyanatha Sastri, B.A., was appointed Vernacular Assistant of this College, but was directed to continue to act at the Calicut College, 18th February: meanwhile, M.R.Ry. Bhavaniswami Rau remains as sub. *pro tem.* Vernacular Assistant.

Conductor W. Cames and Sergeant W. H. Goddard were transferred to the Upper Subordinate Educational Service on 9th May.

In September occurred the death of C. Varadaraja Aiyangar, Librarian and Storekeeper. He did good work in his capacity, and I much regret the loss of his services.

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

Class.	Practical Course.		In College.			Total.
	Second year.	First year.	First Division.	Second Division.	Third Division.	
Engineer Classes	8	4	5	4	2	23
Engineer Subordinate Classes	4	6	18	18	29	75
Military Probationers	...	..	..	..	..	4
Draftsman Class	..	..	13	27	..	40
Surveyor Class	..	..	14	18	..	32
Artisan Class	..	..	..	..	..	35
Victoria Technical Institute Students	..	..	..	..	..	2
Total ..	..	..	..	..	..	211

Excluding the students undergoing the practical courses in workshops and on works, the total number actually in the College on 31st December 1891 was 189. The numbers arranged by classes of the community were—

Europeans and Eurasians	20
Brahmans	84
Other Hindus	65
Native Christians	16
Mussalmans	2
Others	2
Total	189

The corresponding totals in the four previous years were—1890, 136; 1889, 109; 1888, 102; 1887, 106. The numbers applying for admission to all classes, with the exception of the Engineer class, are rapidly increasing. For the Engineer Subordinate class formed last July and now consisting of 25 students, exclusive of Military, there were 47 applications. For the new Draftsman, Surveyor and Maistry classes, which will be formed shortly, the numbers of applications were 76, 58 and 102: the numbers admitted will be 37, 31 and 40, respectively. For the new Engineering class 5 candidates presented themselves for examination, and all passed; it is doubtful, however, if all will join. As long as the prospects of the class remain as bad as they are at present, there is no likelihood of any increase in the number of Engineer students.

4. *Examinations.*—The Board of Examiners appointed by the Director (under the sanction of the Government), conducted the final and term examinations of all classes in December 1891, and the entrance examinations of May and December. A brief abstract of the results is given below.

5. *Engineer Classes.*—Eight students completed their final year's practical course on December 31st 1891, viz., G. R. Venkatarama Aiyar, B.C.E., V. T. Srinivasa Aiyangar, B.C.E., R. Everard, S. K. Ramaswami Aiyar, C. S. Venkatarama Aiyar, V. Rangaswami Aiyangar, B.C.E., P. A. Venkatarama Aiyar, and A. Anantanarayana Aiyar. G. R. Venkatarama Aiyar, as the 1st of his class, has been appointed an Assistant Engineer in the Public Works Department. V. Rungaswami Aiyangar spent his two years' practical course in the Madras Railway workshops.

The next batch of Engineer students, four in number, have completed their year in workshops, and have now been sent to works—one to the Periyár I, two to Periyár II, and one to the II Circle.

Of the three divisions of the Engineer class actually in the College, the senior, consisting of five students, underwent the final examination in December last: four of them passed. The average percentages of marks for the division in the various subject-heads, were as follow:—

	Per cent.
Mathematics	49
Science	44
Engineering	59
Drawing	71
Surveying	72
Vernacular Language	52
Drills and Exercises	67
Total	59

This is a slight improvement on last year, but the class, as a whole, cannot be considered to be a good one. The senior student is L. D. Venkatarama Aiyar, who is first with 1,966 out of 3,000, or 65 per cent. of the total marks, and who receives the gold medal awarded to the most distinguished student, and a prize consisting of an aneroid barometer and an ivory rule for *Mathematics*, *Drawing* and *Surveying*. He will, at the end of his practical course, provided he passes the B.C.E. degree examination, be appointed to the Engineer establishment of the Public Works Department. He is,

however, very closely followed by J. Kuriyan, who is only 26 marks behind, and I would suggest that this may be taken into consideration by Government, and that some suitable appointment may be offered to the latter. Kuriyan is first in *Engineering*, *Science*, *Vernacular Language* and *Drills and Exercises*, and receives a prize consisting of a field glass, and an ivory rule. S. Rajagopalaswami Mudaliyar again wins the "Sir Madhava Rau" prize, a magnetic compass, for workshop practice.

One independent candidate, a former College student, presented himself for examination, but has failed to pass.

The second division of the Engineer class, four in number, has undergone a term examination, the marks of which count towards the final total. The average of the division was 56 per cent. The scholarship of the year, Rs. 30 per mensem, remains with Rama Aiyar. The third division of two students made an average of 73 per cent. of the total marks at the late term examination. The scholarship of Rs. 30 is held and retained by A. W. King.

Five candidates passed the entrance examination for the Engineer class, and four of these have joined.

6. *Engineer Subordinate Class.*—Three students completed their final year's practical course on works on 31st December last; and have been gazetted Overseers, 3rd Grade, of the Public Works Department.

The next batch of six have just completed their first year's practical course, and have been posted to different Circles for their second year on works. Their work in the shops will be referred to later.

Of the three divisions of the Engineer Subordinate class in the College proper, the senior, consisting of 17 students (one had previously resigned) underwent their final examination in December last; eleven passed and six failed. The average percentages of marks gained by the whole division were—

	Per cent.
Mathematics	45
Engineering	45
Drawing	61
Surveying	59
Vernacular Language	50
Drills and Exercises	76
Total	54

The class is a poor one compared with the one that passed out in 1890.

Lance Sergeant Blake, 21st Hussars, passes first with just over 75 per cent. of the total marks, which entitles him to a first-class certificate. He gains the silver medal, and prizes for *Engineering*, a lever watch, and for *Drawing* and *Surveying*, an optical square. He also carries off the "Rogers" prize, consisting of books. S. Dakshnamurti, the second of the class, takes the prize in *Mathematics*, a parallel rule. A prize for *Vernacular Language* and *Drills and Exercises*, consisting of a clinometer rule, is awarded to E. Ramaswami Aiyar; and a "Sir Madhava Rau" prize of a set of spring bows is carried off by P. N. Ramachandra Rau for workshop practice. One independent candidate, a former student of the College, appeared and passed the examination.

The second division of the Subordinate class contains 18 students. They obtained 54 per cent. of the total marks at the term examination of December 1891. Tiruvambalam Pillai and Chittambalam Pillai obtain the scholarships of Rs. 10 per mensem. A prize in *Engineering*, consisting of a set of architect's scales, is awarded to Tiruvambalam Pillai, the student who has done best in Engineering, Drawing, and Surveying.

The third division, containing 29 students, of whom 4 are military, joined in August 1891, and obtained an average of 59 per cent. of the marks at the term examination. As the number of applications for this class was considerably greater than the number admitted, it is hoped that the class will turn out an improvement on

the two senior divisions, which cannot be held to be satisfactory in point of intelligence. The two scholarships of Rs. 12½ (under the new rule) are taken by M. R. Natesa Aiyar and M. S. Narayanaswami Aiyar.

7. *Draftsman Class.*—The first division, consisting of 13 students, appeared for the final examination in December. Ten passed and three failed. Besides these there were seven independent candidates, of whom three passed. The first College student is P. S. Tiruchelvam Pillai, with 83 per cent. of the total marks. He obtains the College bronze medal with a prize of a colour-box. A prize, consisting of a pillar compass, is also awarded to the second student, M. Kanakasabhai Mudaliyar, for general proficiency. The class has produced four in the "first-class;" there are also two "first-class" from the independent candidates.

The percentages of marks gained by the division in the various subject-heads were—

	Per cent.
Practical Geometry	76
Freehand, Perspective, and Model Drawing	62
Building Drawing	63
Machine Drawing	53
Estimating	57
Topographical drawing	56
Drills and Exercises	76
Total	61

The figure last year was 65 per cent., but it is believed that the present class is no way inferior to the one that passed then; and there has been some improvement in *Estimating*, though not so much as is desirable.

The Second division of the draftsman class contains 27 students. The percentage of marks obtained was 40 in the total awarded at the term examination. With two or three exceptions the class did exceedingly badly in *Building Drawing* (buildings), and the prospects of many of passing the final examination next year are not bright. The two scholarships of Rs. 8 were obtained by P. S. Jambulinga Mudaliyar and T. C. Ananta Aiyar.

There were 76 applications for the new class to be formed in January 1892, of which 37 have been accepted, but it is improbable that all those selected will join.

8. *Surveyor Class.*—The senior division consisted of twelve students, all of whom passed with one exception. Only one, however, C. Muttukrishna Mudaliyar, was placed in the "first class"; he is awarded the College bronze medal and a prize of an optical square. The second student, P. S. Vasudeva Aiyar, also obtains a prize, consisting of a magnetic compass.

The percentages gained by the division in the various subjects were as follow:—

	Per cent.
Chain, compass, and plane table surveying	63
Levelling	68
Theodolite surveying	64
Topographical drawing	62
Drills and exercises	76
Total	64

The class on the whole may be considered a good one.

Four independent candidates came up for the examination; two obtained "third-class" certificates, the other two failed.

The second division of the Surveyor class contains 18 students. The average percentage of marks gained at the term examination was 62. The scholarships of Rs. 8 are obtained by D. Francis and M. V. Sivasubrahmanya Aiyar. Thirty-one out of fifty-eight applications have been accepted for admission to the new division which will be formed in January 1892.

9. *Maistry and Artisan Class.*—Entry into this class is eagerly sought after, and there were 102 applications this year, of which 40 have been accepted for admission. The class evidently meets a decided want. Besides instruction in Arithmetic, Mensuration, Building Construction, and Plan Drawing, teaching was given to the class twice a week in the mornings in elementary Surveying and Levelling. The proposal to still further develop this class is under reference and need not be more particularly referred to here. The number who have just completed the year's course is 35. These students obtain certificates of attendance only, but they are expected to present themselves for examination in Mensuration, Building Construction, and Plan Drawing, under the Lower Secondary standard. This examination is not held till April. The candidates who sought admission to this class in 1891 and 1892 may be classed as follows.

According to classes of the community—	1891.	1892.
Brahmans	15	35
Rajputs	1	3
Vellalas	37	30
Chetties	4	3
Yathavas	3	1
Native Christians	6	10
Visvakarma	6	1
Balijas (Nayudus)	11	8
Vanniahs (Nayakars)	5	2
Karnam	1	2
Mussalmans	2	7
Total	91	102

According to the occupations of condidates—		
Maistry, Sub-Overseer, Municipal Overseer, Apprentice, School of Arts, &c.	20	18
Bricklayer		5
Draughtsman		3
Clerk, &c.	11	19
Students—		
Engineering College	10	3
School of Arts	9	1
Others	20	24
Teachers	4	7
Engraver	1	2
Goldsmith	1	..
Landholder	1	1
Contractor	1	1
Messenger	1	..
Nil	12	18
Total	91	102

According to the occupations of parents—		
Landholder	8	20
Clerk, &c.	19	6
Teacher	..	1
Pleader	..	1
Merchant	6	5
Draftsman, Maistry or Contractor	26	20
Bricklayer Maistry, Carpenter, or Mason	7	14
Engineer, Overseer, Public Works Department or Municipality	10	10
Bookbinder, Painter, &c.	4	..
Village Karnam	..	1
Sepoy	..	2
Peon	..	1
Nil	11	21
Total	91	102

10. *Military Students.*—The total number of soldier students in the College on the 31st December was 11, exclusive of two now in their second year's practical course. One of the students, not of the number given above, had to be remanded to his regiment as he showed signs of mental derangement. The conduct of the men has been uniformly good, and they all appear to take decided interest in their work. The eleven men are distributed as follow:—two in the first division, Engineer Subordinate class; one in the second; four in the third; and four probationers.

11. *Victoria Technical Institute Students.*—Two scholarshipholders were admitted in January 1891, and they attended the Surveyor and Draftsman classes. At the May examinations in Science, Art, and Industries, they obtained first-class certificates in Mensuration. Of the regular students of the College, many also appeared at these examinations and obtained certificates as given below: in *Practical Plane and Solid Geometry*, one first class and three second; in *Statics and Kinetics* one first class; in *Pure Mathematics*, first stage, one first class and one second; in *Hydraulics*, one first class; in *Earthwork and Road work* one second class; in *Building Materials and Construction*, two first class. In *Surveying and Levelling*, twelve first class and one second class. In *Surveying and Levelling* (advanced) one second class.

12. *Surveying.*—The following table shows the outturn of work by the College in Surveying in 1891:—

Number of squads.	Description of work.	Total length in miles of Traverses, Levels, &c.	Total area in acres completely filled in.	Remarks.
	First Half-year.			
3	Chain Survey	..	274	
9	Compass Survey	..	3,444	
2	Plane Table	24	516	
9	Levelling	53	..	
7	Theodolite Traverse	2	..	
2	Setting out Curves	..	..	
	Second Half-year.			Average number of students is 7 per squad.
7	Chain Survey	..	840	
8	Compass Survey	..	7,326	
10	Plane Table	28	5,592	
24	Levelling	11	..	
31	Contouring	..	1,477	
35	Do.	..	1,440	
	Hill Sketching	..	5,490	
	Trigonometrical Survey	..	..	
	Setting out Curves	3	..	

In February the two senior divisions of the Engineer class were taken out beyond Municipal limits for a fortnight's continuous work in Surveying, and again in July the three Engineer divisions passed a fortnight in field-work under the superintendence of Mr. Goddard. It is considered that work done in this way is more valuable to the student than when the same instruction is extended over a number of College attendances. In the latter case the work done must be more or less scrappy, and the student cannot be taken to any great distance away from the College. The system may, it is thought, be usefully extended to the other classes of the College.

13. *Inspections of Works.*—Besides the usual inspections of works made by the Engineer and Engineer Subordinate classes of works in, or in the neighbourhood of, Madras, such as the Government Brickfields, High Court buildings, Railway girder bridges, Massey's works, the Public Works Department Workshops, the Buckingham mills, &c., the Engineer students, or as many of them as could be induced to go, were sent, with the permission of Government, to inspect the Periyár main works, and the Kistna railway bridge now under construction at Bezváda. Notes and sketches were submitted by all the students, and there can be no doubt that much valuable instruction was imparted in this way.

14. *College Workshop.*—The small workshop, which can only accommodate 12 students at a time, has been as fully utilised as possible under the circumstances. It is hoped that the new workshop, the construction of which has been recently sanctioned by Government, will be constructed and bein use in the beginning of 1893. The average attendance in the present workshop is 3½ hours per week per student. This time should be very considerably extended when the new workshop is made available.

15. *Laboratory and Experimental Work.*—Instruction in Practical Chemistry (qualitative and quantitative) was given as usual to the Engineer students of the senior division. The students have also made use of the cement-testing machine and of several machines designed and put up by Mr. Chatterton for teaching experimental mechanics. The instruction imparted in this way is most valuable, and brings home to the student the theories that he has learnt and perhaps imperfectly understood in the class lectures.

16. *Apparatus.*—The College was enriched during the year by several pieces of valuable apparatus, amongst which may be mentioned Harlacher's electric current meter, Thurston's autographic testing machine, and Bailey's patent wire tester. It is hoped that full use will be made of these during the coming year.

17. *Practical Course, Mechanical Engineers.*—Under the rules in force only one student, V. Rangaswami Aiyangar, has undergone the two years' practical course in workshops. He joined the Perambúr Locomotive workshops in January 1890, and has now just completed the course. He worked during the past year as follows:—From January to April in the Fitting shop; from May to July in the Foundry; from August to October in the Smithy; and from November to December in the Boiler shop. He is thus spoken of by Mr. Phipps, the Locomotive Superintendent—"I am very glad to be able to speak in the highest terms of this young man, and to state that he takes a keen interest in, and gives promise of succeeding in the profession he has selected."

Of the Engineer students who are now passing out of the College, two are desirous of becoming Mechanical Engineers. The arrangements necessary to meet their wishes will have to be made.

18. *Workshop Course, Civil Engineers and Subordinates.*—Four Engineer and six Engineer Subordinate students underwent their first year's practical course in the Public Works Department workshops. The Superintendent reports as follows on the work done:—"All the students commenced their workshop course in the Smiths' shop where they remained for the first three months. They then passed by terms of a month through each of the Lathe, Filers,' and Carpenters' shops, Instrument Department, and the Foundry, and completed the year's course with the working of a stationary engine. I have endeavoured, as much as possible, to give them work which involves fitting and erecting, at the same time giving them easy machine work; all work that required skill was done by the workmen, leaving only the easy work for the students. In this way they have been mixed with the other workmen, doing real work and not model-making as formerly." The system adopted of giving practical instruction to the students appears a good one, and is certainly a great improvement on previous methods.

19. *Works Course, Civil Engineers and Subordinates.*—Eight Engineer and three Engineer Subordinate students completed their second year's course on works. An abstract of the progress reports received from the Public Works Department is given below. Too much importance cannot be attached to this course, and it is hoped that Executive Engineers will personally interest themselves in the welfare of the young men placed under their charge, and that they will give each student every opportunity possible of acquiring a knowledge of the details of the profession, without which a general theoretical knowledge is absolutely valueless. As far as possible, each student should be made to undertake some small work for which he should be held personally responsible.

Names.	Abstract of Progress Report.
G. R. Venkatarama Aiyer, B.C.E. V. T. Srinivasa Aiyangar, B.C.E.	*In Periyár Divisions, 1 & 2.*—The late Mr. Taylor reported: "They take an intelligent interest in what is going on, but I do not think their notes are sufficiently practical. It seems to me these would be more useful to them in after life if they contained more detail in the description of how the constantly-occurring difficulties, such as they are at any time likely to meet with, are overcome, rather than elaborate drawings of machines which they will, in all probability, never use. I should prefer to see a general knowledge of the principles of the various machines with a closer attention to the details of dealing with water and materials, to rates and labour and such subjects, experience in which must be of the greatest value to them in whatever branch of the profession they may serve."
R. Everard	*Periyar, No. 2.*—Levelling and Setting out the 9th Branch Channel, and has made considerable progress. Designed and estimated for the sluices on the line. He seems an accurate leveller.
S. K. Ramasawmi Aiyar.	*Periyar, No. 2.*—Set out and levelled, 5th Branch Channel, and has drawn out, in a satisfactory manner, the drop and other plans for the first two miles.
C. S. Venkatarama Aiyar.	*Chingleput Division.*—Superintended the construction of three sluices and a weir, of revetments of a tank, of a head-sluice. The Executive Engineer says: "The masonry works are nearly finished and I consider them well built. The revetment work is decidedly above the average."
P. A. Venkatarama Aiyar.	*Madura Division.*—Visited important works and was then employed on Tank Restoration works. The Executive Engineer states that the student will make a good subordinate.
A. Anatanarayana Aiyar.	*North Arcot Division.*—Employed first in checking and preparing plans and estimates in the Division office; superintended the construction of a surplus weir and head sluice; also on various tanks and channels. Is said to have displayed much intelligence.
C. J. Mani ..	*Consulting Architect's Division.*—Worked in Government Brick and Lime kilns, Lying-in Hospital and other buildings under construction in Madras. "He draws very neatly. He has acquired much useful practical knowledge."
C. L. Venkatanarasayya.	*Coimbatore Division.*—Employed in the Erode sub-division, but on insignificant works. Has not had good opportunities of gaining much practical experience.
P. Subramanya Aiyar.	*South Arcot Division.*—Employed on the construction of buildings at Chidambaram; also on Brickfields. Has learnt to keep Sub-divisional accounts. Was given latterly independent charge of a small work which he has completed satisfactorily.

20. *Revision of Rules.*—During the past year there have been only two alterations of any importance in the Rules. Candidates, otherwise qualified, are not now barred by the age rule from entering the College, but may be admitted with the sanction of the Director of Public Instruction, if the strength of the several classes permit. Students so admitted are not, however, eligible for the guaranteed appointments, nor for prizes and scholarships. The second alteration is in the award of the two scholarships in the Engineer Subordinate class, third division, by the result of the first term examination instead of the entrance examination as formerly.

21. *Library and Reading Room.*—The total of books in the Library is now 2,828, 128 having been added during the year. During the year 502 books were taken out by the staff, and 3,358 by the students; and 934 references were made to the Consulting Library. The library is daily closed at 5-30 and on Wednesdays at 4 P.M.; on Sundays it is not opened at all. It is worth consideration whether the hours should not be considerably extended; during the day the student has little leisure for independent reading and, unless the evenings are made available, he can be hardly expected to spend much time in the library.

22. *Physical Training.*—Regular instruction is given in Gymnastics to all the students, with the exception of the Maistry class; and Drills are conducted by the military students, the tennis courts have been used to a certain extent by the senior

students. After some correspondence a cricket field has now been set apart for the use of the College; a cricket club has been formed, and play commenced, though not as yet with any regularity.

23. *Attendance.*—The percentage of numbers present to numbers on the rolls was 93 in the College and 94 in the School department.

24. *Conduct.*—The conduct of the students was on the whole good. Several cases, however, of loss of instruments were reported, but no detection followed on enquiry. There is a tendency among the students to ask for leave on the most frivolous pretexts, although the hours of study are not excessive.

25. *B.C.E. Degree Examination.*—Eleven candidates registered their names for the examination in January 1891, but one of them, an ex-student, did not appear. Of the ten who underwent examination only one, A. V. Ramalinga Aiyar, B.A., succeeded in passing: he was placed in the third class.

For the examination of 1892, fourteen candidates appeared; one in the Mechanical branch. The result will not be known till the end of February.

26. *Prizes and Endowments.*—There has been no change in this respect, save that there is no prize this year presented by M.R.Ry. Narayana Oonythan. The prizes are of the usual kind. The steel plate for striking off the certificates and diplomas has been received from England, and will be shortly put into use.

27. *Employment of Passed Students.*—With the exception of the Engineer students, and perhaps a few of the less intelligent students of the Engineer Subordinate classes, the men who pass out from the College find no difficulty in obtaining suitable work. The large number of applications for the various classes, with the exception of the Engineer class, shows this conclusively. It has been found most difficult to keep up a register of passed students and of their actual employments. The men themselves do not supply the necessary information, some emigrate to Ceylon, Burma, and the Straits Settlements, and their whereabouts cannot be traced, and others die or disappear. From the register, as now kept up, little or no useful information can be obtained.

The vacancies notified during the year have been as follows:—

—	Local Governments.			Local Fund Boards, Municipalities, &c.			Railways.		Native States.	Military works.				
	150 to 175.	100-150	30-50	100-150	50-100	25-50	25-40	—	40-50	20-30	10-20	7-10	Total.
Assistant Engineer ..	1	..	..	1 Rs. 175	1	..	..	..	..	..	..	..	3 2 15
Supervisor	1	..	..	1	..	..	..	..	..	..	..	..	16
Overseer	..	..	2	9	4	..	..	2	1	1	..	..	3
Draftsman	..	..	8	..	..	2	2	..	..	..	..	..	1
Surveyor	..	..	2	..	1	..	..	2	..	..	..	..	3
Sub-Overseer	..	..	..	..	..	1	..	..	..	..	..	..	
Maistries	..	..	1 Rs. 10	..	..	2 Rs. 12-15	..	..	..	..	..	..	1
						1	..	..	..	..	..	..	1
Sanitary Inspector	..	..	..	..	..	..	..	..	..	..	..	..	3
Sanitary Superintendent ..	..	..	1	..	..	..	..	..	..	..	..	..	
Channel Superintendent ..	..	..	3 Rs. 20	..	..	..	..	..	..	..	..	..	1
Teacher in Survey ..	1 Rs. 75	..	..	..	..	..	..	..	..	..	..	..	1
Straits Settlement Overseer.	1 150 dollars.			..	..	..	..	..	..	..	..	..	1
District Forest-officer, Cuddapah.	1 Draftsman, Rs. 30.			..	..	..	..	..	..	..	..	..	

The case of the Engineer students requires and merits serious consideration. The number in the College is now four in the senior division, two in the second and four in the third. From the time that the Government Notification appeared in 1887 that

only one guaranteed appointment a year would be given to the first student of the class, and when the promise to the others of posts as Second-Grade Supervisor was withdrawn, the class has gradually dwindled, till, as we see now, there are only three or four in each class of the College department. Considering then the impossibility of passed men obtaining high employment under Government, they are reduced to taking temporary posts in the Public Works Department in the lower grades of Overseers. In fact, their position is worse than if they had entered the Engineer Subordinate class, whence, at all events, they would have been certain of securing the permanent Overseer appointments yearly guaranteed by Government. No doubt, this question will receive adequate attention elsewhere, so that it is needless for me to enter further into it here.

To the Engineer Subordinate class now leaving the College, of whom eleven have passed the examination, four appointments as Overseer, 3rd grade, in the Public Works Department, have been guaranteed, and I have no doubt that the others, at the end of their second year's practical course, will find suitable employment either in the Public Works Department, or under Local Fund Boards and Municipalities.

28. *General Remarks.*—In order to make the instruction given at the College more practically useful to the students in their future career, which is almost certain in the vast majority of cases to be within the limits of the Madras Presidency, I consider certain small changes to be required in the methods and subjects of instruction, especially in estimating, tracing of plans, and hydraulic works, as distinguished from hydraulics. The Board of Examiners will, I have no doubt, deal with certain suggestions I have made on this subject, and of which it is unnecessary for me to say anything further here.

From Major H. D. LOVE, R.E., Principal, College of Engineering, Madras, to the Director of Public Instruction, Madras, dated 18th April 1892, No. 118 C.

In continuation of my No. 1058-C, dated 16th February 1892, furnishing the Acting Principal's annual report on the working of the College for the year 1891, I have now the honour to supply the supplementary matter which is needed to bring the record down to the close of the official year 1891–92.

2. *Establishment.*—On 26th January 1892, I returned from the course of instruction at the School of Military Engineering, Chatham, which is prescribed for continuous service officers of Royal Engineers, and assumed charge of the College from the Acting Principal, Major Smart, R.E. Mr. Chatterton, the Professor of Engineering, left the College temporarily on 30th January for the Public Works Department, in order to gain practical experience of engineering work in this country. His place was filled by Mr. J. J. Whiteley, Executive Engineer, Public Works Department. On 1st February 1892, Mr. W. C. H. Littlewood, Second Assistant Instructor in Drawing, resigned his post in order to take up a better-paid appointment in Burma. He was succeeded by Mr. R. Everard, a qualified Engineer of this College, who was appointed temporarily.

3. *Numbers.*—The numbers on the rolls on 31st March 1892 were—

Classes.	Practical courses.		In College.			Total.
	Second year.	First year.	First division.	Second division.	Third division.	
Engineer classes	4	4	4	2	4	18
Engineer Subordinate class	6	9	19	28	..	62
Military Probationers	..	..	..	..	..	4
Draftsman class	..	..	26	28	..	54
Surveyor class	..	..	18	*22	..	40
Artisan class	..	..	..	..	..	40
Total	..	..	..	..	..	218

* Includes one Victoria Technical Institute student.

Deducting the numbers undergoing practical courses, the actual number of students in the College on 31st March 1892 was 195. The corresponding figures on 31st March 1891 and 1890 were 168 and 126, respectively. These numbers arranged by classes of the community are—

—	31st March 1890.	31st March 1891.	31st March 1892.
Europeans and Eurasians	13	15	12
Brahmins	47	71	98
Other Hindus	53	63	64
Native Christians	12	15	12
Muhammadans	..	2	8
Others	1	2	1
Total	126	168	195

I take this opportunity of pointing out that the above totals do not furnish the average number of students attending the College. The course of study in the Engineer Subordinate class commences in July and lasts two years and a half. On the 31st March, therefore, there are only two divisions of the class in the College, while from July to December there are three divisions. Moreover, great changes take place during December and January in the *personnel* of all the classes. For these reasons, it would require some calculation to arrive at the average number of students during the official year. The numbers for the calendar year, however, can be obtained by taking the mean of the numbers on the rolls on 31st March and 31st December of that year.

The numbers joining the different classes in January 1892 were—

	No.
Engineer class	4
Draftsman ,,	31
Surveyor ,,	25
Artisan ,,	40

The differences between these numbers and those shown in the appropriate columns of the table at the commencement of this paragraph represent resignations from various causes.

An examination is about to be held for admission to the Engineer Subordinate class. Sixty-six applications have been received against forty-eight last year and twenty-six the year before, so that there will be keen competition for the existing vacancies. Of the sixty-six applicants, five have passed the First Arts examination, and the remainder the Matriculation examination. No candidate has passed the Upper Secondary examination. Several of the candidates are students of the Junior divisions of the Draftsman and Surveyor classes.

I estimate that from July next, the total numbers in the College will be about 215.

4. *Military Students.*—One student of the Second division of the Engineer Subordinate class was remanded to his regiment in March for insufficient progress in his studies. Four probationers will join the new division of the class about to be formed, and five admissions of probationers are expected.

5. *Practical Courses.*—Four Engineer and six Engineer Subordinate students proceeded from the workshop to the works course in January 1892, while four Engineer and nine Subordinate students joined the Public Works Workshops. The remaining three subordinates of the twelve who passed the examination of December 1891 have elected not to proceed to the practical course.

6. *B.C.E. Degree Examinations.*—The five students who comprised in 1891 the Senior division of the Engineer class presented themselves for examination in January 1892, and four passed, viz., three in the second class and one in the third. The remaining student failed in Drawing. Nine independent candidates, former students of the College, also presented themselves, and two passed in the third class.

7. *Employment of Passed Men.*—Of the eight Engineers who completed their practical course in December 1891, one has been appointed Assistant Engineer in the Public Works Department, one a Supervisor permanent, and two Supervisors temporary; one has become a Supervisor under the Travancore Government, while the

remainder have been offered temporary Overseerships in the Public Works Department. Two appointments as temporary Overseer on the East Coast Railway have also been offered.

Of the three Engineer subordinates, all have been posted to the Public Works Department permanently.

Of the twelve Draftsmen who obtained certificates at the examination of December 1891, nine are employed or have been offered appointments.

Of the thirteen Surveyors, one is known to be employed as such, while two have been offered Sub-overseerships in the Public Works Department.

Considering the short period which has elapsed since all these men completed their training, these results are very favorable. Much pains are taken to assist qualified men in obtaining employment.

8. *Engineer Class.*—The continued smallness of this class has received my careful consideration. It appears that the guarantee of one appointment to the Engineer establishment of the Public Works Department, valuable as it is, does not suffice to attract more than four or five students per annum—about half of whom are graduates in Arts—to compete for it. The passed men who do not secure the guarantee certainly obtain remunerative employment, but not the kind of employment they desire. They aim at Assistant Engineerships under Local Boards, or permanent employment in the subordinate establishment of the Public Works Department. The first they rarely secure; the Local Boards like men of ample experience rather than of high-class training. It is true that the temporary employment which the passed Engineers obtain gives experience, and may lead to permanent entertainment eventually; but the Engineers feel that in regard to such employment, even in the Public Works Department, they are worse off than the posted Engineer subordinates whose attainments are in every way inferior. A permanent overseership is regarded as better than a temporary supervisorship.

If Government could require Local Boards to entertain none but qualified Engineers and subordinates in their superior and inferior establishments, respectively, I believe the change would be of substantial advantage to the College as well as to the Boards. If, in addition, the Public Works Department could see its way, without serious detriment to the prospects of its subordinate establishment, to sanction one appointment annually of a qualified Engineer to the Supervisor grades, a further substantial encouragement to the Engineer class would be provided. The ordinary recruiting ground for the subordinate establishment of the Public Works Department is the Engineer subordinate class; but the College rules, Article X, Clause (1), provide that appointments as Supervisor *may* be made from the passed men of the Engineer class; and one such appointment has been conferred on the Engineer class of December 1891. In the year 1886, the word "will" stood in place of "may," and to this I attribute the comparatively large size of that year's batch of students.

The recent modification of Article IV (2) by which candidates above the limit of age may be admitted to the College under certain restrictions may tend slightly to augment the class; but there is another direction in which more substantial encouragement may be given—I allude to the reduction of the tuition fees. There can be no doubt that the cost, to the student, of Engineering training is, comparatively speaking, high. The tuition fees in the Engineer class are Rs. 16 per month, or Rs. 85 per half-year, or Rs. 400 for the theoretical course. In addition there are examination fees both for the entrance and final tests, there is a deposit of Rs. 100 for books and instruments, the fee for the B. C. E. degree examination, and the cost of living in Madras, the majority of the students coming from up-country. In the case of Mechanical Engineers at Perambore, there is a further premium of Rs. 250 or Rs. 500 according to the number under instruction, to be paid by the student. I confine my proposals to tuition fees. At Rurki, native students of the Engineer class pay no tuition fees whatever. At Poona, the fee is or was Rs. 5; while at Calcutta, it is Rs 8 per month. It is clear from these figures, that the charge in this College is abnormally high. I suggest that the following scale be adopted:—Rs. 10 a month, or Rs. 50 a term of six months, or Rs. 250 for the theoretical course. If this reduction is considered to be too heavy, Rs. 12, Rs. 60 and Rs. 300, respectively, might be adopted. Taking the lower rates, the loss per student would be Rs. 400—250 = 150, amounting, with a class averaging four students, to Rs. 600 per annum. This loss would be fully recouped if the reduction induced an increase of students averaging $2\frac{1}{2}$ per annum.

9. *Financial Position of the College.*—The total expenditure, including scholarships, during the official year 1891–92, amounted approximately to Rs. 56,800, and the income from fees, &c., to Rs. 10,300. The net cost of educating each student, taking the total number at 195, was Rs. 238. In the annual returns, these totals are, under the letter of the Educational rules, divided between the so-called College and School departments of the institution, whence the net cost per student in each department can be calculated. Such figures are misleading. In an Arts college, students who have matriculated, and who are proceeding to the next higher examination, are classed as belonging to the College department. In the College of Engineering, such students are classed under the "School department," because the next higher examination for which they study is unconnected with the University. The civilian members of the Engineer Subordinate class are picked matriculates, and they do not appear for the College final examination until three years after matriculating. An ordinary Matriculate proceeding to the First in Arts examination can pass in two years. Of the two examinations then, so far as they can be compared, it appears that the College examination should take the higher rank. To preserve the parallelism between this institution and Arts colleges, which is presumably the object of the classification ordered in the rules of the Educational Department, the Engineer Subordinate class should be included in the so-called College department. At present, the cost of every article, from tuition to dusters, has to be divided between the two departments. It would save much time and trouble if this division, which seems to be of little use in this college, were altogether discontinued. Should there be serious objection, however, to this course, I would ask that the division be made on a better basis than at present.

From the Board of Examiners, College of Engineering, Madras, to the Chief Secretary to Government (through the Director of Public Instruction), dated Madras, 30th January 1892.

We have the honour to submit the report called for in Article II of the "Rules relating to the constitution of the College of Engineering."

2. The first division of the Engineer class consists of five students, four of whom have passed in the second class of merit, and one who, while qualifying in each subject separately, has failed to obtain the minimum total marks necessary to pass. This class appears to be of average merit, and no papers showing exceptional ability have been received. L. D. Venkatarama Aiyar secured the first place by the narrow margin of 26 marks from J. Kuriyam—a result which would have been reversed but for the poor paper submitted by the latter in Differential and Integral Calculus. The work of this class calls for but little criticism, though it may be remarked that in Chemistry the practical attainments of the students were not on a par with their theoretical knowledge. Some of the questions were answered in too general a manner, as, for instance, that regarding the manufacture of sulphuric acid on a large scale. In this case the answers did not exhibit that knowledge of the detail processes of manufacture which the students should possess concerning such a well-known subject.

3. The second division of the Engineer class consists of four students, three of whom have obtained nearly equal marks. In "Analytical Geometry," V. Gopala Aiyar and G. S. Rama Aiyar did extremely well. In "Heat," important and well-known subjects were treated in the general manner referred to under "Chemistry." The papers in "Building and Bridge construction" were generally not at all satisfactory, the answers being characterized by considerable confusion of ideas, want of clearness and precise knowledge. The hand-sketches were generally very poor, and the figured dimensions asked for were in many cases omitted. In "Road and Railway construction" the sections sent in were, as a rule, not good. Question 1 seems to have not been carefully read, or, if so, not attended to. In some cases ground levels were not entered; in others, formation levels, depths of cuttings, or heights of banks were omitted. Only one correct section, by P. Ramachandra Aiyar (independent

candidate) was received. In "Freehand perspective and model drawing," the students showed a good knowledge of theoretical perspective, but appeared quite ignorant regarding the application of theory to practice. In "Levelling" the answers were fairly good, but we consider that the examination should be supplemented by a practical one involving levelling over a short distance. This examination could be conducted under the direct supervision of the College staff, care being taken to prevent the students assisting each other.

4. The two students composing the third division of the Engineer class appear to possess a fair knowledge of Mathematics, especially of Trigonometry. The examination in Arithmetic might, we consider, be discontinued, as it appears quite unnecessary to test the knowledge of Engineer students in such a subject. In this class two students are competing for the one appointment to the Engineering staff of the Public Works Department, and, as the competition is so restricted and the qualifying minimum comparatively low, the contingency might occur of the post being secured by a student whose attainments are not up to Government requirements, and are also far below those of unsuccessful candidates in years where the competition is more severe. It would be well to meet such a case by raising the minimum qualifying percentage of marks for Engineer students eligible for appointment to the Public Works Department above the limit for the ordinary College certificate, and we recommend that this should be done.

5. The independent candidate, Engineer class, though obtaining 4 marks above the limiting total to qualify, has failed by 19 marks in Science.

6. In the Engineer Subordinate class, First division, Lance-Serjeant G. Blake has passed in the first class of merit, ten students passed in the second class, and six failed. Serjeant Blake submitted good papers throughout, and he should develop into a useful subordinate. The two next best men were S. Dakshanamurti and P. M. Ramachandra Aiyar, who both passed very creditable examinations. The papers submitted in "Elementary Statics" and "Applied Mechanics" were on the whole poor. In "Machine Drawing," the time originally fixed for the paper was three hours, but was subsequently extended to five hours. Even under these circumstances none of the drawings were finished, and the class appear to be very slow draftsmen. In "Levelling," the questions were as a rule well answered, and the papers submitted in "Trigonometry" were satisfactory.

7. The papers received from the Second division, Engineer Subordinate class, were, on the whole, unsatisfactory, especially in "Mensuration, Earthwork and Roads" and "Building drawing (buildings)." M. V. Venkatrama Aiyar and S. Chitambala Pillai sent in excellent papers in "Geometry" and "Mensuration." In "Earthwork and Roads" the sections were not good; some were plotted to different scales to those specified in the question, and the ground levels were often omitted. Formation levels, depths of cuttings, and height of banks were wrong in nearly every case. Question 4 in this paper required a sketch showing how to widen a road on a particular side; some sketches showed the widening on the opposite side to that asked, others showed it done on both sides. The class did very fairly in Surveying subjects, and "Freehand perspective and model drawing."

8. The Engineer Subordinate class, Third division, have done well in "Arithmetic" and "Algebra," but the papers sent in in "Building Materials" were not at all good, many of the answers being very confused.

9. The independent candidate, Engineer Subordinate class, has passed in the second class of merit.

10. Of the thirteen students composing the first division of the Draftsmen's class, four obtained first-class, three second-class, three third-class, and three failed. This class, though uneven, contains some very good material, the papers submitted by P. S. Tiruchelvam Pillai and M. Kanakasabbai Mudaliyar being of high merit, while those of N. Appaya Rau and S. Venkatachalam were very good.

11. The second division of the Draftsmen class have done moderately well in "Geometrical drawing," but have sent in very poor papers in "Building drawing (buildings)." The marks obtained by many of the candidates are so low that they

can hardly hope to qualify in the main head "Building drawing" unless they obtain high marks next year in the remaining paper.

12. Of the 7 independent Draftsmen students, two have obtained first-class, one third-class, and the remainder failed. The papers received from S. Subramanya Aiyar show him to be a draftsman of altogether exceptional ability. His work is characterized by neatness, rapidity, accuracy and artistic finish, and despite his being somewhat weak in estimating, he most thoroughly deserves the first-class he has taken.

13. With respect to the training of draftsmen, we consider that the College course should include a large amount of tracing and making finished drawings from rough hand sketches with figured dimensions. A draftsman is mainly employed on this class of work in the Public Works Department, and the practice given by the College seems insufficient for proper training.

14. The Surveyors' class, first division, contains 12 students, of whom one has passed in the first class, eight in the second class, two in the third, and one has failed. T. S. Vasudeva Aiyar obtained the total marks required for the first class, but failed to get the prescribed limit in "Topographical drawing." The general knowledge of English possessed by this class of student is so defective that it would seem advisable to supplement the paper examination by *viva voce* questioning.

15. The papers submitted by the second division of the Surveyors' class were of very unequal merit. D. Francis did well in "Chain compass and Plane-table surveying."

16. Four candidates were examined in the Surveyors' class, Independent section; two passed in the third class and two failed.

17. The following general remarks are offered in regard to the work of the students at the College:—

(*a*) In the matter of printing, the present laborious practice of ruling an infinity of guiding lines should be discouraged, and the employment of compasses to form the circular portions of letters be prohibited. In actual work a man who is unable to print without these aids would necessarily be a slow draftsman.

(*b*) The general failure to enter on sections of ground the necessary levels and other information necessary for the drawing to be of use (*vide* paragraphs 3 and 7) appears to be largely due to the instruction imparted at the College. In examining the drawings executed as session work, similar faults were noticed.

(*c*) The students should be cautioned to read questions carefully and to invariably adhere to instructions regarding the scale to be adopted. In several instances printing an inch high and over was sent in, when a height of a quarter of an inch was specified in the question. Again, sections were plotted to a different scale to that asked, thus adding to the labour of examiners in marking.

18. The usual tabular statements of marks are enclosed.

(Signed) A. D. G. SHELLEY, Captain, R.E., *President, Board of Examiners.*
(,,) E. W. STONEY, M.E., M. INST. C.E., } *Members of the Board of*
(,,) R. Ll. JONES, B.A., } *Examiners.*

ENCLOSURES.

From Major H. D. LOVE, R.E., Principal, College of Engineering, to the Director of Public Instruction, Madras, dated 18th February 1892, No. 1075-C.

Adverting to your official memorandum, No. 1499, dated 8th February 1892, I have the honour to return the papers which accompanied it, and to forward as requested the remarks of the Professor of Mathematics and Acting Professor of Engineering on the points noted by the Board of Examiners.

2. On those points which seem to require notice in the Board's letter, I report as follows:—

Para. 3. *Proposal to examine practically in Levelling.*—Each student is fully practised in levelling during the course, and receives marks from the College for his work. The object of the Board's proposal is probably to apply a test of the students' rapidity and accuracy. I think this test might conveniently be applied by the College during the course, and I shall be happy to arrange for it and allot marks from the College allowance. If, however, the test is to form part

of the final examination, it must be conducted by the Board, and not as they propose. The Board's recommendation is made under the head "Engineer class," but it must, if adopted, be applied to the "Engineer Subordinate class" and "Survey class" also.

Para. 4. *Proposal to exclude Arithmetic from Examination for Engineer Class.*—In the original draft rules I omitted arithmetic. It was afterwards inserted contrary to my express recommendation. Now that it is in the rules, I consider it should for the present remain. To remove it will necessitate a redistribution of the marks—a course which is attended with many inconveniences. Some revision of the marks may become necessary when the new College workshops are in operation; so the question may lie over until then.

Para. 4. *Proposal to raise the minimum qualifying percentage for the Engineer Class.*—The Board's remarks under this head are as follow:—

"In this class two students are competing for the one appointment to the Engineering staff of the Public Works Department, and, as the competition is so restricted and the qualifying minimum comparatively low, the contingency might occur of the post being secured by a student whose attainments are not up to Government requirements, and are also far below those of unsuccessful candidates in years when the competition is more severe. It would be well to meet such a case by raising the minimum qualifying percentage of marks for Engineer students eligible for appointment to the Public Works Department above the limit for the ordinary College certificate, and we recommend that this should be done."

I submit that it is not competent to the Board to make these remarks. Article II of the College Code provides that the Board "may record in the report any observations of a general nature bearing on the working of the College, or make any suggestions they consider expedient, provided such observation or suggestion arise naturally out of the examination work which the Board have to perform" In making the remarks I have quoted, the Board have, I consider, passed quite outside their legitimate rights as defined in the rules, and have assumed the functions of a Board of control. Should you agree with me, I have the honour to request that the Board be asked to delete from their report the portion to which exception is taken. Should a proposal similar to that made by the Board eventually reach me from another source, I shall be able to give strong reasons why it should not be entertained.

Para. 11. *Work in Building Drawing of the Draftsman Class, 2nd Division.*—The Board remark that the marks obtained by many of the candidates are so low that the men can hardly hope to qualify in the main head "Building drawing" unless they obtain high marks next year in the remaining paper. These observations are just, but I learn from Major Smart that the cause of the failure was due to the introduction of an experimental standard of examination. The independent draftsman candidates take the papers issued for both divisions of the regular draftsman class. Thus it happens that men who entered the College three or four years ago, who passed perhaps successfully, but who are now desirous of taking a higher class of certificate, receive certain examination papers which are set for green students who have been in the College only a year. The examiners do not distinguish between the College students and the independent candidates and mark all by the same standard. At the examination of December last an independent candidate, who was probably one of the best draftsmen that ever left the College, was examined in Building drawing with the Junior division. Of this man, S. Subramaniya Aiyar, the Board say that his "papers show him to be a draftsman of altogether exceptional ability. His work is characterised by neatness, rapidity, accuracy and artistic finish." Subramaniya Aiyar's work no doubt constituted the standard by which the second division students were judged. I recommend—and I believe the Board will raise no objection—that the class be re-examined in Building drawing (buildings) next December, the marks for that subject secured in December 1891 being struck out. It might be well, too, if the Board's attention were drawn to the difference of conditions between an independent candidate of not less than three years' practice and a college student of only one year.

Para. 13. *Course for Draftsman to include a large amount of Tracing and making finished Drawings from rough hand sketches.*—The classes are exercised in tracing on cloth. The work is purely mechanical, and any increase in its amount would be prejudicial to more important subjects. The practice of making finished drawings from rough sketches is an excellent one, and is largely practised in all the College classes.

Para. 14. *Examination of the Surveyor Class.*—I see no objection to the examination of the Surveyor class being partly *viva voce*.

Para. 17. *General Remarks*—

(*a*) I agree with the Board.
(*b*) Attention will be paid to these points.
(*c*) Cautions on these matters are regularly issued to students before every examination.

No. 2312.

Referred to the Board of Examiners, the College of Engineering, for favour of remarks.

MADRAS,
20*th February* 1892.

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

From E. W. STONEY, Esq., to the Chairman, Board of Examiners, College of Engineering, dated Madras, 29th February 1892.

I have the honour to return letter, No. 1075 C., from the Principal, College of Engineering, to the Director of Public Instruction, with its enclosures, and beg to offer the following remarks thereon for transmission to the Director of Public Instruction:—

1. *Para.* 4.—As the observations made by the Board alluded to in paragraph 4 arose from circumstances brought to their notice in the course of the recent examinations, and as the recommendation was made in good faith, it may be left to the Director of Public Instruction to say whether the Board exceeded their powers in making the recommendation to which Major Love objects, and if it should be withdrawn.

2. *Building Drawing Draftsmen II; Para. II.*—I do not understand what is meant by an "Experimental standard of examination" or on what grounds it is assumed that "Subrahmania Aiyar's work *no doubt* constituted the standard by which the 2nd division students were judged.'

3. Nothing was known of the antecedents of the candidates by the examiner when their papers were marked, and no directions were given to examiners to distinguish in any way between College and independent candidates when marking their papers.

4. The questions set in Building drawing were of as simple a description as could well be given under the heads of the syllabus; and the method of marking, &c., the same as that of previous years.

5. In the syllabus it is stated "the main object to be kept in view throughout the course is that students should be made intelligent draftsmen, not mere copyists;" and this was kept in view when setting the paper.

6. Only one man in the class drew, with any degree of accuracy, the half-opened door of Question 1, and the papers were on the whole very poor.

7. There were 5 independent draftsmen, and in several other branches independent candidates were examined with College students, so that if this be objectionable for draftsmen, it should be equally so in other subjects, and it might with equal reason be assumed that these independents fixed the standard for their respective classes.

8. The standard of marking was not, however, fixed by Subrahmania Aiyar's paper; the full marks allotted to the paper being 60, 34 were apportioned to Question 1, 8 to 2, and 18 to 3, and these were again sub-divided into so many for plans and elevations; accuracy, neatness of drawing, inking, &c., having each so many marks set apart to them in each question.

9. An engineering drawing if not accurate is useless, and most of those sent in were extremely incorrect, so that if there had been no Subrahmania Aiyar, the results would have been the same.

The drawings received can be shown to the Director of Public Instruction should he desire to see them.

10. Draftsmen certificates are, it is presumed, granted for and represent equal qualifications whether obtained by College students or independent ones, so that it does not seem desirable to allow the former to obtain these on a lower standard of marking, or for less proficiency, than the latter.

11. It is true that independent candidates may have the advantage of several years' practice, which is all the better for those who employ them, but when they are examined together under existing rules with College students for the same certificates, their knowledge is what has to be marked and valued by the examiners, irrespective of all considerations as to how, or where, that was acquired.

12. The proposal to re-examine the class in December next, cancelling the marks already given, is, I consider, most objectionable for the following reasons:—

1*st*. Because the paper already set was an easy one, well within the syllabus, and which an intelligent draftsman, such as an engineer would care to employ, should answer well in the time that was given.

2*nd*. The work sent in by College students was fully valued, irrespective of the independent candidates examined at the same time, and the conditions I believe the same as in the previous years when independent candidates were also similarly examined.

3*rd*. Such a re-examination would establish a bad precedent, and open the way in future for any class which did not obtain good marks from the Board being re-examined at another time, so that students might argue that it was not of much consequence if they did badly, as they could be re-examined in the event of the Board's marks being unsatisfactory or unfavorable to them.

4*th*. Such a re-examination would, it seems to me, destroy the independence of the Board as an examining body, and this, it is believed, is not desirable.

From Captain A. D. G. SHELLEY, R.E., President, Board of Examiners, College of Engineering, Madras, to the Director of Public Instruction, dated Madras, 1st March 1892.

With reference to your endorsement, No. 2312, dated 20th February 1892, I have the honour to forward, in original, letters from Messrs. Stoney and Jones, and to offer the following remarks :—

2. With reference to paragraph 2 of Major Love's letter, the practical examination in levelling should, I consider, be conducted by the College authorities.

3. I am extremely sorry that Major Love should have felt it necessary to make the very strong remarks on our recommendation to raise the minimum qualifying marks of Engineer students eligible for appointment to the Public Works Department. Our observations were made in all good faith, and there was no intention to usurp any powers beyond those legitimately possessed by the Board. It is, of course, debatable whether the restricted interpretation placed on the College Rules is right, but I have no wish to raise this question, as I feel sure that Major Love's knowledge of the spirit of the rules is more correct than mine can be.

4. While fully sharing Mr. Stoney's views on the re-examination of the Draftsmen's class, II Division, I consider that, accepting Major Love's opinion on our restricted powers, it is quite beyond our province to put forward any views on the subject.

5. If Major Smart's suggestions are approved, I should be glad to be informed, for future guidance, in what way the distinction between College and independent candidates is to be made. Is it desired that easier papers should be given to the College students, or are they to be more liberally marked ?

6. The remarks made in our report as to increasing the amount of tracing work in the Draftsmen's class were entered at Major Smart's suggestion.

7. As Mr. Stoney has dealt so thoroughly with the other questions raised, there is no need for me to say more than that I quite agree with him.

8. The enclosures to your letter are herewith returned.

The first paper is the report of the College for the calendar year 1891, and the second is the supplementary report furnishing additional information regarding the working of the College up to the end of the official year 1891–92. The reports are exhaustive and carefully prepared.

2. *Changes in Staff.*—Major Love, who left for England at the beginning of March 1891, to undergo a course of instruction at the School of Military Engineering, Chatham, assumed charge of the office of Principal on the 30th January 1892, and during his absence Major Smart carried on the duties of Principal with marked ability. The changes in the staff during the calendar year were not of any importance. The permission of the Secretary of State was obtained for the temporary transfer to the Public Works Department of Mr. Chatterton, Professor of Engineering, with a view to his acquiring practical engineering experience (G.O., No. 3432 W., Public Works, dated 18th December 1891). Mr. Chatterton, who left on the 30th January last, will be absent for a period of two years, and his place has been taken by Mr. J. J. Whiteley, Executive Engineer, Public Works Department. The post of Second Assistant Instructor in Drawing, which fell vacant in February last by the resignation of Mr. Littlewood, has been filled temporarily by Mr. R. Everard.

3. *Strength.*—The figures relating to strength are most encouraging. Excluding the students undergoing the practical courses, there were 189 pupils at the close of 1891 against 136 in the previous year, and at the end of the official year the strength stood at 195 against 168 in 1891. These figures compare favorably even with those of 1886–87, and thus clearly show that the College has recovered from the effects of the depression of the years 1887, 1888 and 1889. Major Love anticipates even a further increase in strength in July next, when a new Engineer Subordinate class will be formed. It is evident from the steady increase that has taken place in the attendance since 1889 that the reorganization of the College, though it affected temporarily the strength, has placed the institution on a more satisfactory footing and has thus increased its popularity considerably. In paragraph 3 of the supplementary report Major Love alludes to the difficulty of arriving at the average number of students during the official year. Considering that there is not the same number of classes at work throughout

the year, the information as regards the average number of students is only of value for purposes of comparison with the figures of the previous year. It will suffice if the averages for the previous two calendar years are given in future reports.

4. *Distribution of Students.*—In the margin the numbers of pupils in the different departments are compared. The strength of the Engineering classes decreased by two. Major Love attributes the smallness of this department to two causes mainly, viz., the limited prospects of employment and the high cost of education. The first point will be referred to further on ; as regards the second the Principal has shown conclusively that the rates are high compared with those levied at other institutions, and the Acting Director would be inclined to recommend to Government a reduction in the tuition fees for the Engineer class, were he satisfied that such a reduction would result in an increase in attendance. Major Love is requested to address him on the subject in a separate communication, giving, if possible, fuller details as to the rates of fees both for practical and theoretical courses charged in other colleges. It is evident that the Engineer Subordinate class has regained its former popularity, the number seeking admission being far in excess of the maximum number admissible under the rules. It is observed that several of the candidates of the junior divisions are candidates for admission into this class. The Acting Director doubts the expediency of encouraging such admissions before the candidates complete their courses in their own departments. He would like to have Major Love's opinion on the subject. The increase in the Draftsman and Surveyor classes was also satisfactory, and the Sub-Overseer or Artisan class is being worked at more than the maximum strength allowed under the rules. The very large increase in the number of Brahman applicants is noteworthy as indicating the extent to which even the lower industrial professions are being taken advantage of by this enterprising community. Considering the useful work turned out by the Maistry and Artisan class, and the very large number of applicants for admission, it will be necessary ere long to enlarge its scope so as to admit of a larger number being trained in it.

Department.	Strength on 31st March 1891.	Strength on 31st March 1892.
Engineer classes	12	10
Engineer Subordinate classes ..	38	47
Military Probationers	5	4
Draftsman classes	43	54
Surveyor classes	35	40
Sub-Overseer class	35	40
Total ..	168	195

5. *Classes of community represented.*—The figures relating to distribution of pupils according to race and creed given in the margin demand a passing notice. The Brahman element, as usual, predominates. The perceptible increase in the number of Muhammadan pupils is encouraging. It is hoped that this advance in numbers is not merely temporary, and that the special concessions allowed to Muhammadan pupils in the College rules will tend to increase further the attendance of pupils of this community. The classification of students according to occupation of their parents calls for no special remarks. The artisan element continues to be poorly represented, the majority of pupils belonging to the official and landholding classes.

	1891.	1892.
Europeans and Eurasians	15	12
Native Christians	15	12
Muhammadans	2	8
Brahmans	71	98
Non-Brahman Hindus	63	64
Others	2	1

6. *University Examinations.*—The results of the last B.C.E. Degree examination were very satisfactory. Five appeared direct from the College and four passed, three being placed in the second class. Out of nine independent candidates that appeared for the same examination, only two passed, and that in the third class. These results show the marked superiority of those appearing directly from the College. According to the revised bye-laws relating to the examination for the Degree of Bachelor of Engineering which come into force in the year 1894, candidates will be required to pass two examinations and the degree examination will have two branches—a civil and a mechanical. The Principal has not alluded to these changes in his report. He will be required to state whether any changes either in the rules or in the curricula are needed in order to meet the requirements of the revised bye-laws.

7. *Examinations conducted by the College Board.*—There were some changes in the *personnel* of the Board of Examiners that conducted the final, term and admission examinations. The Board consisted of the following members appointed by Government:—

Captain A. D. G. Shelley, R.E.	*President.*
Mr. E. W. Stoney, M.E., M. INST. C.E.	*Members.*
„ R. Ll. Jones, B.A.	
„ Lewis	*Assistant Examiners.*
„ Phipps	

The reports of the Board, and of the individual Examiners, were referred to the Principal for remarks. The report of the Board is exhaustive, and contains important suggestions, some of which have already been given effect to. Since the submission of the reports, the question of higher remuneration to the members of the Board has been raised and is now under consideration. Government will be addressed on the subject shortly.

Engineer Class.—The results of the first division of this class were creditable, four passing out of five examined. In Practical Chemistry the students did not acquit themselves satisfactorily, but the Acting Director is glad to learn that this branch of the subject is receiving the attention of the Professor concerned. The percentage of marks obtained in Mathematics was also low. The second division does not appear to have satisfied the Board in some important subjects, such as "Building and Bridge Construction," "Road and Railway Construction," and in Drawing. The proposal for a supplemental practical test in Levelling is approved, but this test, for the present, as suggested by Major Love, can be applied by the College, not only for the Engineer class, but also for the Engineer Subordinate and Surveyor classes. This point, as well as the proposal to omit Arithmetic from the examination for the Engineer class, should be brought up when the question of a redistribution of the marks comes up again for consideration. The Acting Director does not consider that the Board exceeded its powers in suggesting the raising of the minimum qualifying percentage for the Engineer class, though the suggestion itself is one which he cannot support. The present minimum is comparatively high, and the fact that the successful candidates have also to qualify for the B.C.E. Degree examination is a sufficient safeguard against the admission of incompetent men into the Engineering staff of the Public Works Department.

Engineer Subordinate Class.—The proportion of failures in the first division of the Engineer Subordinate class—6 out of 17—was rather high, and the average percentages of marks gained in Mathematics and Engineering were poor. The defects pointed out in paragraphs 6, 7 and 8 of the report of the Board should receive the attention of the teaching staff. The third, the present second division, seems to contain some promising students.

Draftsman Class.—The first division consisted of 13 students, and at the final examination in December ten passed, four being placed in the first class. The Acting Director is glad to note an improvement in the subject of Estimating, the average percentage gained in this subject being 57 against 46 secured by the senior division in 1890. The second division did not do well and needs working up, especially in Building Drawing. The very low marks obtained in this subject at the examination is attributed by Major Love to the Board not distinguishing between the College students and the independent candidates, and marking all by the same standard. The examination seems, however, to have been conducted quite in accordance with the syllabus, which does not recognize any such distinction. So long as the examination for independent and for College candidates is the same, there should be only one definite standard. The proposal, therefore, to re-examine the class in December next in this subject cannot be entertained. The suggestion of the Board that the Draftsman course should include a larger amount of tracing work and making finished drawings from rough hand sketches is a good one, and the Acting Director is glad to know that Major Love has been in the habit of following the course recommended.

Surveyor Class.—As in the previous year, the senior division did well at the final examination; out of twelve that appeared eleven passed, with one in the first class. The

general knowledge of the students is reported to be defective, and the Board suggests that the examination should be held partly *vivâ voce*. The Acting Director sees no objection to this, though he doubts whether it will have the particular effect desired. A far better course would be to have a separate entrance examination with a view to test the general educational qualifications of the applicants, the number of which has been increasing considerably of late. Major Love is requested to report on this point. The general remarks offered by the Board in paragraph 17 of its report have, it is noted, received the attention of the Principal.

Independent Candidates.—The results of the independent candidates are given below and compared with those of 1890:—

Examinations.	1890.		1891.	
	Number registered.	Number passed.	Number registered.	Number passed.
For Engineers	2	1	1	..
„ Engineer subordinates	5	1	1	1
„ Draftsmen	6	6	7	3
„ Surveyors	3	1	4	2

It is evident from the above table that the higher examinations are not attracting the same number of independent candidates as in the previous years. This is not surprising considering the improvement in the standard of these examinations and the special training needed for them.

8. *Government Technical Examinations.*—The Acting Director is glad to learn that several of the regular students appeared for the Government Technical Examinations. As many as fourteen secured certificates in Surveying and Levelling. It is hoped that a larger number will take up such allied special subjects as Hydraulics, Hydraulic Engineering, Earthwork, Roadwork and Railway work, Bridge-making, Steam and the Steam Engine. The two scholarship-holders of the Victoria Technical Institute obtained first-class certificates in Mensuration.

9. *Maistry and Artisan Class.*—The work done in the Maistry and Artisan class is not tested at present by any public examination conducted by the Board, and hence the students passing out possess no College diploma. In reorganizing the work of the class, the question of the introduction of a final test should be considered. Twenty-four candidates have appeared for the Government Elementary Technical Examination in Mensuration, Building Construction and Plan-drawing held last month, of whom fourteen were old students, but the results have not been published as yet.

10. *Practical Courses.*—The practical training of the students has received considerable attention of late from the College authorities. Paragraph 12 of the Principal's report contains a detailed statement of survey work of the College for 1891 and the outturn is satisfactory. A new feature was the engagement of the Engineer classes in continuous field work beyond municipal limits. The Acting Director endorses what Major Smart says in his report as to the value of such field work, and is glad that the system is proposed to be extended to the Engineer Subordinate and Surveyor classes. The sanction of Government has already been applied for for sending out in July next all the divisions of the Engineer class and the first divisions of the Engineer Subordinate and Surveyor classes for a fortnight's field work at Gúdaváncheri. Separate provision should be made in future in the budget for meeting the cost of such tours. Some of the Engineer students had an opportunity of visiting the Periyár Main works and the Kistna Railway bridge under construction at Bezváda. Visits to such important works are of considerable educational value and should be encouraged.

In G.O., No. 61, dated 25th March 1892, Government has sanctioned the erection of a permanent workshop at a cost of Rs. 21,901. It would be well if in future reports a detailed account were given of the nature of the work the students do in the workshop. The time devoted at present seems insufficient. The instruction in Experimental Mechanics will be of considerable use to the students in the Engineer class. Owing to the absence of Mr. Chatterton, arrangements have been suggested for the

students receiving instruction in Practical Chemistry at the Presidency College. The successful termination of V. Rangaswami Aiyangar's practical course in Mechanical Engineering is very creditable, considering that India has developed so few professionally trained Mechanical Engineers. It is hoped that his example will be followed by others, more especially as Mechanical Engineering is now recognized as one of the branches of the Degree examination.

The system of training pursued in the Public Works Department Workshops is reported to be a great improvement on that adopted in former years. The progress reports on the work of each student are on the whole satisfactory. It is desirable, however, as suggested by Major Smart, that each student should be given some small work for which he should be held personally responsible.

11. *Revision of Rules.*—The important changes made in the rules during the calendar year are mentioned in paragraph 20 of the report. The question of extending the period of the practical course and of redistributing the work during that period, which arose in connection with the Hon'ble Mr. J. H. Garstin's minute, dated 19th April 1890, led to certain important changes being proposed; and in its order No. 588, dated 31st July 1891, Government decided that any extension of the practical course beyond two years would be undesirable. In view, however, of the opening of the College workshop it was decided that the scheme for the practical course should be revised. This has necessitated some important changes being made in the rules which are now under the consideration of Government. The most important change is that requiring Civil Engineering students to spend six months in the Public Works Workshops, nine months in Building divisions (preferably the Consulting Architect's Division), and the remaining nine months in Irrigation divisions. The rules when they come into force will place the practical training of the students on even a more satisfactory footing than it is at present.

12. *Library and Physical Education.*—The library seems to have been better used by the students than in the previous year. The Acting Director sees no objection to extending the library hours so as to afford greater facilities to the students for independent reading. Physical education continues to receive systematic attention in the College.

13. *Conduct of the Students.*—The conduct of the students is reported to be good on the whole. The tendency on the part of the students to take frequent leave should be checked. It would be well to insist on a certain number of attendances each session in order to entitle students to College certificates.

14. *Employment of Passed Students.*—The prospects of the College students, with the exception of those of the Engineer class, seem to be brighter now than they were before. This shows unmistakably that the men now turned out by the College are more eagerly sought after by employers of labour on account of their superior attainments. As for the Engineer students, it is true the prospects are not so encouraging. Major Love suggests that Government should require Local Boards to entertain none but qualified Engineers and subordinates in their superior and inferior establishments respectively, and that the Public Works Department should be made to sanction one appointment annually of a qualified Engineer to the Supervisor grade. With reference to the first suggestion, Government might not be willing to pass any hard-and-fast rule such as the one proposed, but at the same time it is only reasonable that greater encouragement should be expected from Local Boards now that a superior class of men are available. Government will be addressed on the subject. The second proposal is not likely to meet with the support of Government.

15. *Financial position of the College.*—The fee-income of both the College and School departments increased from Rs. 8,138 to Rs. 10,300, whilst the total expenditure rose slightly from Rs. 55,445 to Rs. 56,800. Owing to the perceptible increase in fee-income, the net cost of educating each student, taking both the departments into consideration, diminished from Rs. 282 to 238. As the strength of the College is likely to increase during the current year, the net cost will be diminished further. Major Love looks upon the present principle of distinguishing the School from the

College department as rather anomalous, inasmuch as the School department also consists of pupils who have matriculated and proceed to higher examinations. But so long as the final test is not a University test, students preparing for such tests cannot be regarded as belonging to the College department. This is the principle on which the classification into College and School departments is made in other special institutions, as, for example, the Medical College.

16. It is no doubt true that the progress of an institution such as this depends to a great extent on the prospects of employment of the successful students of the College in the public service, but still there is scope for further development, especially on the mechanical side. The Locomotive Engineering service is at present recruited direct from England owing to want of Indian trained men. With the rapid development of Indian Railways there has been a great demand for professionally trained Mechanical Engineers, and this demand the College has not as yet attempted to supply. But, notwithstanding this, there is no doubt of the fact that the College is adapting itself more and more to modern and practical requirements, and, taking all things into consideration, the year under review has been one of steady and substantial progress.

(A true Extract.)

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

To the Principal, College of Engineering.
" Principals of other Government Colleges.
" Inspectors of Schools.
" Superintendent, School of Arts.
" Honorary Secretary, Anjuman Mufidi-Ali-Islam.
" Secretary, Victoria Technical Institute.
" Editor, Madras Journal of Education.
" Government, with covering letter.

ORDER—dated 13th June 1892, No. 449, Educational.

Recorded.

2. The Government concurs with the Director of Public Instruction in regarding the report as decidedly encouraging, and particularly so in respect of the strength of the College, which has been increasing rapidly during the last three years, as the following figures show:—

Class.	Strength on the 31st March.			
	1889.	1890.	1891.	1892.
Engineer	17	13	12	10
Engineer subordinate	17	28	38	47
Military probationers	2	1	5	4
Draughtsman	18	25	43	54
Surveyor	13	29	* 33	† 39
Maistry and artizan	26	30	35	40
Total ..	93	126	166	194

* Excludes 2 Victoria Technical Institute Scholars.
† " 1 " " "

3. Now that the College has regained its popularity, it would probably be advantageous to arrange for subjecting candidates for admission into the Draughtsman, Surveyor and Maistry and Artizan classes to an entrance examination in elementary mathematics as is done in the case of the superior classes. The Director will report his views on the subject.

4. The proposal to guarantee one appointment as Supervisor annually to the passed Engineer class students, to which reference is made in paragraph 14 of the Director's review, does not commend itself to Government; the question of revising Article X of the College rules is at present under consideration and orders will issue shortly on the subject. The other suggestion referred to in the same paragraph of Dr. Duncan's review will be disposed of in the Local and Municipal Department on receipt of the communication promised.

5. The statement in paragraph 10 of the Director's review to the effect that Government has sanctioned the construction of a permanent workshop is incorrect; the Government has merely called for plans and estimates of such a structure, and the submission of these should be expedited.

6. A copy of this Proceedings will be forwarded to the Right Honorable the Secretary of State.

(True Extract.)

J. F. PRICE,
Chief Secretary.

To the Director of Public Instruction.
" Public Works Department.
" Military Department.
" Local and Municipal Department.
Editors' Table.

Exd. A. Raitt.

Govt. of {1892} Madras.

EDUCATIONAL.

1874 W

Issued

Recd. *Encl.*

No. 1874 W dt/28th June/92

Comm^r. to Heads of the P.W.D. for info^n

(Sd) J.P.W

G.O., 13th June 1892, No. 449.

JUNE.

1829 W

C.E. 1
S.E.
C.A.
S.W.D.

College of Engineering.

Reviewing the report upon the working of the — during the year 1891–92, and forwarding copy of proceedings to the Secretary of State.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following Proceedings of the Board of Revenue (Revenue Settlement, Land Records and Agriculture), dated 2nd January 1892, No. 2:—

MR. CLOGSTOUN.

Read—the following letter from W. J. H. LE FANU, Esq., Collector of North Arcot, to the Secretary to the Commissioner of Revenue Settlement and Director of the Department of Land Records and Agriculture, dated Chittoor, 21st December 1891, Ref. Board No. 3667:—

With reference to Board's telegram, dated 14th instant, asking me to report fully the effect of the recent rainfall and whether the Special Deputy Collectors are any longer required, I have the honour to report as follows.

The December rainfall up to date has been very partial and unevenly distributed. It benefited the coast and eastern tracts—generally speaking—most, was only moderate in the centre of the district, and almost *nil* in the western line.

2. The Kálahasti zemindari and Wandiwash had the best of it, Puttur, Tirutani and Arkónam coming in for a good share. The rainfall in this tract was as below:—

	INS.
Kálahasti	9·07
Maderpak	8·20
Puttur	4·68
Tirutani	4·60
Arkónam	5·02
Wandiwash	7·11

I think that certainly as regards the whole of the Kálahasti zemindari and as regards the Wandiwash dry crop the whole is now safe and will be a good crop. The anticipated amount of wet shavi in Wandiwash will probably be much reduced. It will be seen, however, that there was no rain to set the Cheyár going, and so the anicut chain has not materially benefited. It is certain too that the fall in the west of the taluk must have been lighter than at the registering station. The last reports show a rise in all dry grains, and I doubt if this will be at all affected—or if at all for more than a brief period—by the recent rains. The failure has been far too wide-spread to be materially touched by local rainfall. It is fortunate that Arkónam shared in this downpour, Wálajápet being less fortunate, for rain was specially wanted in Arkónam. It will be observed that though Tirupati was in the line of the rain it was left only 1·1 inch having been registered there on two days; Tirupati had only 4·75 inches—registered on seven days—in October; 4·65 inches were registered in November days. It has, therefore, not had a fair share of rain, even allowing for the Sept ·4 inches, registered five days. Scattered rain like this does not fill tanks. therefore gives cause for anxiety, as still does Arkónam and in fact all Wálajáp.

3. Taking the centre of the district there was, speaking roughly, about 2½ inches of rain over the tract. The figures are as follow:—

	INS.
Chandragiri	2·05 on 4 days.
Chittoor	2·49 on 4 „
Wálajápet	3·36 on 6 „
Vellore	3·00 on 6 „
Arcot	2·97 on 6 „
Arni	2·75 on 3 „

It is plain therefore that, though in this central tract, counting from north to south, the rain has been very timely, and of immense benefit to the dry crops, it has not been such rain as fills tanks. No freshes are reported * in any of the three anicut rivers. The Chittoor tank, which was empty till the 24th October from the beginning of the year, held some water for about a month and was perfectly dry up to the 13th instant. It has now got about 10 days' water. It is a certainty therefore that, failing further rains, its whole ayacut, except a trifle under wells, will be shavi. In my telegram to Government for Monday last, I stated that out of 5,756 tanks 360 were absolutely empty, 4,097 had an insufficient supply to mature the crops and only 1,299 had enough to bring the crops under them to maturity. To this latter number some 500 tanks may be added as a consequence of the recent rains. Kálahasti and Wandiwash will absorb the bulk of the improvement.

* Light fresh since reported in Cheyár.

4. The western tract has received little or nothing, Pólúr being the most favored. The rainfall registered was—

	INS.
Pólúr	1·85 on 3 days.
Kangundi	0 55 on 2 „
Palmanér	0·60 on 1 day.
Venkatagirikóta	0·43 on 3 days.
Punganúr	0·20 on 2 „

It is plain, therefore, that Pólúr is not out of the wood and that the other tracts are more or less getting into it. Pólúr had 12·50 inches in October, but these fell on 14 days, only one fall being of the kind which fills tanks: it had 2·86 on 6 days in November, and has now had a further supply which, though most beneficial to the dry crops, will not supplement failing supply in tanks. Kangundi had no rain worth mentioning till October, in which month it had 11·10 inches divided between 11 days. On only 3 days was the rain such as supplies tanks. The larger tanks did not get more than quarter supply and many were empty, *e.g.*, the Kuppam tank. The fall in November was 1·35 divided between 4 days, and good only to refresh dry crops: between the 10th November and 30th not a drop fell. On the 1st December there were 4 ounces and now there has been two drizzles aggregating 0 55. Kangundi is in a precarious state. Venkatagirikóta has had two bad seasons now followed by a third. The October rains were scanty—8·59 on 13 days. In November there was 0 52 divided between 3 days, and now December has brought 1·03 in 4 days. This division is badly off. Palmanér had only 2·27 inches in November followed by 0·60 in December. There will be failure of crop and short crop there to a considerable extent. Things are even worse as we go north to the Cuddapah frontier. There was no rain of any use in Punganúr before October. That month brought only 4·80 inches in 8 days, which has done no good to tanks. All west of Chondepalli are empty and the dry crops are withering. The total rainfall of November was just half an inch. The December fall is 4 ounces divided between 3 days. The position of this zemindari is therefore critical.

5. *As to the Board's questions.*—The Board is aware that 1889 was only touch and go for Kálahasti: 1890 was almost as bad as it could be. The whole first crop of 1891 was lost. The second crop is now on the ground, but will not be reaped for some time to come. If we turn our paupers out of the kitchens, there is no private charity for them to fall back on. When the crops are reaped we could turn them out with impunity but for one fact, viz., the famine prices which are now prevailing. I am strongly of opinion that gratuitous relief should be kept open till the standing crops are harvested, when a fall in the prices may probably be expected. Mr. Buckley has already reported that the works must go on till the 15th January 1892 or so, there being no employment available for non-agricultural labourers. Till then Mr. Buckley will have enough of work in Kálahasti. While Kálahasti is gradually improving, things are by no means satisfactory in other parts of the district. Punganúr, Wálajápet, Arkónam and Tirupati are at the present moment giving cause for anxiety. Dr. Scudder of the Ranipet hospital has informed me that already one person has

died there of famine diarrhœa and that there is a pressure for admission more for food than anything else. I have instructed the Tahsildar for the present to watch the state of things carefully. The state of the division is such that Mr. Buckley could not take up its ordinary work and look after relief, not to speak of the coming jamabandi. Not only has the Special Deputy Collector had the ordinary heavy work of the division accentuated by the continual call for reports and inspections of the state of the season, but he has for the last 2½ months been harassed by Tirupati disputes. The quarrel between the *ex* and present Mahants began on the 5th October and they have been litigating in the Deputy Magistrate's Court ever since. First there was the security case; then followed the possession case, in which the Magistrate sat for a fortnight daily from 7 A.M. to 9 P.M. Now there is the riot case. The work of the division has, for no fault of the Deputy Collector, fallen into heavy arrears for the past two months, and he must be kept on to work it off. I fear by that time we may, as a preliminary step, have to transfer one of the Special Deputy Tahsildars and a couple of Stock Inspectors for village inspections, &c., in Punganúr zemindari. The figures for cultivation and harvest in this zemindari will shortly be submitted which will show that the condition there is very critical.

6. For the same reason as in Kálahasti, it is impossible to close our kitchens in Wandiwash or Pólúr. Notwithstanding the favorable turn the season has taken, there must be distress in Wandiwash from the high prices. The extent of wet waste at the end of November 1891 was 16,824 acres or 38·5 per cent. of the total holdings. Pólúr will require watching till next August. Besides the 316 wells finished, there are 992 applications for wells sanctioned and under construction in Wandiwash and 193 applications more pending sanction. The figures for Pólúr are 202 sanctioned and 352 pending sanction. The work of inquiry into the applications and watching the execution of the works, the state of the season, the azamoish of shavi, which will be considerable in Pólúr, and of waste in both and the coming jamabandi—all these things together make it impossible for me to recommend that relief should close or that the special officers should be dispensed with. It is true that in 1877–78 some districts shut their doors on relief notwithstanding that high prices were fairly equalized all over the Presidency, but those were not districts which had suffered for nearly two years from failure of crops more or less. With every grain—dry and wet—dearer than scarcity rates, I would not be doing my duty to the district if I consented to part with a single man that I have got.

Resolution—dated 2nd January 1892, No. 2.

Submitted to Government in continuation of Board's Proceedings, dated 18th December 1891, No. 817, and in reference to G.O., dated 15th December No. 6373.

2. Mr. LeFanu objects on general grounds to part with any special establishments in the present, as he regards it, critical state of the season, and thinks that with the present high prices the kitchens should not be closed.

3. The Commissioner is prepared to admit that the work during the next few months in Wandiwash and Pólúr and in the Head Assistant's division and indeed in the district generally is likely to be abnormally heavy as the state of the season will require that inspection of crops shall be unusually extended and minute, but in view of the requirements of other districts he is unable to recommend that the Special Executive Engineer for Kálahasti and the Special Deputy Collectors appointed to Wandiwash and to the Revenue and Magisterial charge of the Head Assistant's division shall be allowed further to continue on their special duty. They should be at once relieved, and Mr. Buckley should resume charge of the Head Assistant's division.

4. Relief works other than ordinary budget works have already been discontinued in Wandiwash and Pólúr and should now be discontinued in Kálahasti, where the Executive Engineer reports, in his letter to the Collector, No. 173, of 29th December, a copy of which has been submitted to the Board and in his last weekly statement of the numbers on works, that the numbers have increased owing to the

excessive amount of food given to the children under seven, and that the people now on the works come mainly for the purpose of getting their children fed, and will not do proper tasks. If it should be necessary hereafter to re-open works on a small scale they may be carried out under the supervision of the Local Fund Engineer.

5. The Commissioner also considers that kitchens in Wandiwash, Pólúr and Kálahasti may be closed as they have been in the Chingleput district. The season has given the usual agricultural employment, and the special measures of relief sanctioned when labourers were unable to find employment should now be discontinued.

Any old persons or children whose present condition renders it impossible to discharge them from a kitchen with safety should be sent to a dispensary. The Commissioner will be prepared, if necessary, to recommend a grant from Provincial funds for their maintenance till their condition improves.

(A true Copy and Extract.)

(Signed) P. RAJARATNA MUDALIAR,
Secretary.

To the Secretary to Government, Revenue Department.
" Collector of North Arcot.
Copy to the Government of India, Revenue and Agricultural Department.

ORDER—dated 12th January 1892, No. 36, Revenue.

Miscellaneous.

The Board's instructions are approved and must be carried out at once.

(True Extract.)

(Signed) C. A. GALTON,
Secretary to Government.

To the Commissioner of Revenue Settlement, Land Records and Agriculture.
" the Collector of North Arcot.
" the Public Works Department (W).
" the Financial Department.
" the Local and Municipal Department.
" the Accountant-General.
Copy to the Commissioners of Land Revenue.

Exd. A. Aubert.

110 Copies.

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Govt. of {1892} Madras.

REVENUE.

Issued

Recd. Encl.

G.O., 12th January 1892, No. 36.

JANUARY.

Season, North Arcot.

The instructions issued by the Board of Revenue for dispensing with the special establishments and for closing relief kitchens in the district, approved and ordered to be carried out at once.

S E F Circle
C E for J.

Rc 238 Rr dy 25 January 1892

Communicated to the
S & W Circle.

(Sd) OVB
Ar

P. W. CURRENT No. 458

For orders.

Recd: 16.1.92

Division

Summary of Inspection Notes dated

Item No.	Para. of Inspection Notes.	Irregularity noticed.	Code or other order bearing on the subject.	Examiner's Remarks.

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(C. No. 93.)

Item No.	Para. of Inspection Notes.	Irregularity noticed.	Code or other order bearing on the subject.	Examiner's Remarks.

Division

Summary of Inspection Notes dated

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Rec'd 7-7-91
676
EXAMINER
No. 7656
17 DEC 1991
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P. W. ACCOUNTS