

REPORT OF THE
RAILWAY DEPARTMENT

1857

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No. LIII a.

REPORT

OF THE

RAILWAY DEPARTMENT,

FOR

1857.

MADRAS:

PRINTED AND PUBLISHED BY H. SMITH, AT THE FORT ST. GEORGE GAZETTE PRESS.
1858.

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FINANCIAL (RAILWAY) DEPARTMENT.

No. 386.

Extract from the Minutes of Consultation, under date the 12th July 1858.

Read the following letter from the Officiating Consulting Engineer for Railways.

Submits a copy of the Agent's Annual Report for 1857 to the Railway Board, together with its several enclosures, with remarks thereon. } (Dated 21st May 1858, No. 133.)

The Officiating Consulting Engineer submits copies of a letter from the Agent and Manager to the Directors of the Madras Railway Company and of the usual reports of the Heads of Departments which accompanied it, detailing the operations of the past year 1857. In the report with which these documents have been laid before Government, Captain Johnston furnishes a summary of the several points treated of in them, and the important subjects which have come under consideration during the above period. These latter, it is observed, have either been disposed of by the Government or referred for decision to the Honorable the Court of Directors. It is unnecessary therefore to notice them further in this place.

2. The expenditure on account of construction on the South West Line has been Rupees 28,55,865 during the past year, and that on account of Superintendence, Rupees 3,67,250, or nearly 13 per cent. on the expenditure. The progress of work in 1857 contrasts favorably with that executed in the previous year 1856, both in earth-work and masonry.

3. With respect to the scheme for obtaining supplies of timber from the Salem forests for Railway sleepers and other purposes, the Officiating Consulting Engineer adverts in para: 12 of his report to the opinion already expressed by him, that with the permission of Government to work those and the Malabar forests, no further difficulty will be experienced in obtaining any number of sleepers that may be required, and at a cost considerably lower than that hitherto paid. It is observed that the whole correspondence on the subject of this project, together with the Proceedings of Government, was brought to the notice of the Honorable the Court of Directors in para: 32 to 36 of the despatch from this Department, dated 11th May, No. 7 of 1858, and it will be for them to determine whether such an establishment as that proposed by Captain Johnston for working the forests should be maintained by the Government.

4. In paras: 23 to 26 the Locomotive Superintendent furnishes some interesting information regarding the consumption of fuel, which he thinks will be found to contrast favorably with most other Railways. As it will be necessary to keep always on hand a large stock of fuel when the line is open to the Western Coast, Mr. Wright considers that Coke, as the least liable to deterioration, would be the most suitable fuel for keeping in stock, as well as, so far as his experience has shown, the best adapted for Locomotive purposes.

5. In the Revenue Account the total receipts during the year by Coaching and Goods amounted to Rupees 3,58,102-9-8, and the total working expenses, including Rupees 1,607-8-6 paid in England chargeable to this account, to Rupees 2,29,043-8-0, showing a balance of Rupees 1,29,059-1-8 to be credited to the Railway Company in payment of interest already advanced on the capital.

6. The Traffic Manager states in his report, para: 6 that mixed Trains of passengers and Goods have been run with marked and decided success; but on this point Captain Johnston promises to report more fully in submitting the analysis of Traffic operations for the first half of the current year.

7. The other points touched upon in the several reports submitted with the Agent's letter have been so fully noticed by the Officiating Consulting Engineer that no further remark seems to be necessary in this place, the questions having been already before Government and most of them brought under the notice of the Honorable the Court of Directors.

8. The Governor in Council regards with much satisfaction the testimony borne to the efficiency of the Engineering staff and the manner in which their duties have been conducted. The existing satisfactory state of the department is considered to be principally due to the able management of the Chief Engineer Mr. Heppel. Great credit is also due to the Traffic Manager, Mr. Fletcher, and the Locomotive Superintendent, Mr. Wright, for the efficiency and economy with which the duties of their respective departments have been conducted.

9. Ordered that copies of the reports and statements submitted by the Officiating Consulting Engineer and of these proceedings be forwarded to the Honorable the Court of Directors for their information.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 133.

To T. PYCROFT Esq.,

Chief Secretary to Government, Fort St. George.

Sir,

I have the honor to submit, for the information of Government, copy of a letter No. 272, dated the 17th instant, from the Agent and Manager, to the Directors of the Railway Company, and of the several reports for the year 1857, which accompanied that letter.

2. The points to be noticed connected with the operations of the past year, on the South West line are:—

1st. The changes that have taken place in the several departments, with the total strength and monthly cost of the establishments as they stood at the close of the year.

2nd. The aggregate amount of estimates, in force to the 1st January 1857, with those sanctioned during the year.

3rd. The work executed.

4th. The expenditure incurred.

5th. The charge for Superintendence.

6th. The per centage of Superintendence on expenditure.

3. Information on these points for the convenience of reference, and of comparison in some instances with former years, has been tabulated in the Statements numbered from 1 to 6.

4. From Statement No. 1, it will be seen that the strength of the several Departments has been increased as follows:

Agent's from 4 to 5.

Engineer's „ 84 „ 107.

Locomotive „ 22 „ 25.

From Statement No. 2, that the aggregate amount of estimates sanctioned amounts to Rupees 12,76,826.

From Statement No. 3, that the average monthly amount of work done was:—

	C. yards.	C. yards.
Earthwork.....	6,13,643	as compared with 5,24,382 in 1856.
Masonry.....	8,418	„ 5,293 „
Ballasting.....	43,466	„ 35,399 „
Stations.....	112	„ 301 „

Lin. Yards.

Fencing.	{ Permanent.....	31,244	„	43,368	„
	{ Temporary.....	0	„	17,638	„

From Statement No. 4, that the expenditure has been Rupees 28,55,865.

From Statement No. 5, that the charge for Superintendence has been Rupees 3,67,250.

From Statement No. 6, that the charge for Superintendence is nearly 13 per cent on the expenditure.

5. The North West or Cuddapah line, will be referred to separately.
6. The important subjects under consideration during the year, and which have either been disposed of by this Government or referred for decision to the Honorable Court of Directors, or to the Supreme Government are the following :
 - I. The running of special Trains, left to the discretion of the Agent and Manager.
 - II. New Pettah at Vellore station, sanctioned.
 - III. Construction at the cost of the Railway Company of a short branch line of road to connect the Trivellum station with the old Pioneer road.
 - IV. Question respecting the division of "Capital" and "Revenue" accounts—referred to the Honorable Court.
 - V. Projects for connecting the Neilgherry Hills stations with the Railway, either by a road by Kotagherry, or a rail by Coonoor. Further investigations are required, but in the meanwhile Rupees 5,000, have been sanctioned for widening the trace by the Kotagherrey Road.
 - VI. Question of rates and fares—referred to the Honorable Court.
 - VII. Conveyance of Government stores by Rail—finally settled by the decision of the Supreme Government.
 - VIII. Construction of road from Cauveripauk to the Sholinghur, and from Pullicondah to the Goriattum station—ordered in the Public Works Department.
 - IX. Question respecting the weight of stock constructed, and now in use on the line of Rail—referred to the Honorable Court.
 - X. The direction of the North West line of Railway determined as far as Cuddapah—and the selection of the country *via* Naggery approved by the Supreme Government.
 - XI. Authority granted for bringing into operation the rules for furlough and sick leave to the Officers of the Railway Company, as laid down by the Board of Directors.
 - XII. The proposal from the Traffic Manager to purchase bullocks and carts for the purpose of entering into the business of carrying and delivering goods—referred to the Honorable Court.*
 - XIII. The approval of Government accorded to the establishment of a goods station at the junction of the proposed branch rail from the Madras Salt Cotaurs, with the main line of Railway, and to the arrangement that the Railway Company should undertake the execution of that portion of the branch line which lies within the limits of their ground.
For the construction of the remaining portion of the branch a sum of Rupees 78,000 is entered in the Public Works Department Budget for 1858-9.
 - XIV. The modification of the Inspector General of Ordnance and Magazines of the conditions proposed by the late Agent for the conveyance by Rail of consignments of Gunpowder, and other combustible stores—approved by Government.
 - XV. The proposal of the Great Southern of India Company to establish lines South of the present Railway, was forwarded with a Report to the Supreme Government in November, and the recommendation of this Government that the proposed lines be given to the new Company provided their terms are approved by the Honorable Court—acquiesced in by the Supreme Government.
 - XVI. Scheme for obtaining supplies of Timber from the Salem forests for Railway Sleepers and other purposes—nothing definite yet determined on.
 - XVII. The running of mixed Trains authorized from 30th November.
 - XVIII. Proposal from the late Railway Agent that Government should guarantee a paid annual grant of Rupees 2,500, for the use of the way over the Poinay bridge, not acceded to, and referred to the Honorable Court.
 - XIX. Question of the manner in which supervision over Railway works is to be exercised by Government, as also the audit of accounts—referred to the Honorable Court.

* Since sanctioned Ex. Min. Con., Financial Railway Department, No. 289, dated 11th May 1856.

7. In the Public Works Department Budget for the year 1858-9, provision is made for constructing the following roads, affecting immediately the interests of the Railway.

Chingleput District, Poonthamallee to Avady station.—Madras *via* Trivellore and Ramunjary to Cuddapah.

North Arcot.

Arnee to Vellore.

Goriattum to Pullicondah.

Mysore frontier to Vencatagherry Cottah and Sautghur, (whence Pioneer road to Goriattum station).

Tritany to Companypett Station.

Wallajunggur to Sholinghur Station.

South Arcot.

Chengamah to Salem.

Trichinopoly.

Trichinopoly to Salem limit.

Coimbatore.

Coimbatore to Tadacum.

Salem.

Cuddalore to Salem.

Vaniembaddy to Bowany.

Adamancottah to Mullaporam station.

Yercaud to do.

Mooganqor to Darampoory, and Morapoor station.

Trichinopoly limit to Salem.

Vaniembaddy town to station.

Malabar.

Calicut to Paulghat.

8. Colonel Pears in para : 19 of his report for 1856: observed that the supply of sleepers fell somewhat short of that obtained during the previous year, the number being in 1855, 107,977, and in 1856—81,702—the average cost of the latter being Rupees 2-11-7.

9. During last year the number of sleepers supplied exceeds that of 1855, being 1,28,926, at an aggregate cost of Rupees 2,92,208-13-5, the average rate per sleeper being Rupees 2-4-3.

10. The sealed tender system has not been found to lead to anything approaching to a spirit of competition in the supply of sleepers, and its failure may be attributed mainly to the terms of the advertisements not being strictly adhered to; I allude to sleepers having been received from contractors subsequent to the dates on which the contracts should have ceased—a practice which at once nullified the object of the system adopted, by Colonel Pears, and which it may be said has never been fairly tested.

11. While on the subject of Sleepers it may be as well to anticipate dates, and to observe that in the current year on the 10th February, on a representation from the present Agent, Government ruled in their order No. 119 of 6th March, that though they considered the proper course to be pursued was the one advocated by Colonel Pears—they would not oppose the Agent if he chose on his own responsibility, to again try the system of independent purchase.

12. My own opinion, as expressed in the letters marginally noted,* is that with the Government permission to work the Salem and Malabar forests no further difficulty will be experienced in obtaining any number of sleepers that may be required, and at a cost considerably lower than that hitherto paid.

* No. 398, dated 27th November 1857.
No. 87, dated 9th April 1858.

13. The value of stores received from England during the year falls far short of that received in 1856, as given in para 23, of Colonel Pears' report; the comparison being as follows:—

	Value of stores.	Length of rails in feet.	Chairs No.	Aggregate weight of rails & chairs in Ton.
1856	56,91,168 0-2	14,21,572	6,30,784	19,413
1857	11,54,042-5-3	73,460	1,75,379	2,402

14. The amount advanced from the Public Treasury to the Agent during the year was:

Engineer Department.....	33,64,000
Locomotive.....	1,10,000
Stores.....	18,32,000
Sleepers.....	2,80,000

Total Rupees...50,84,000

15. In the Revenue Department the total receipts during the year were.....3,58,202-9-8

Total working expenses.....2,27,435-15-6

Sums paid in England chargeable to this account.....1,607-8-6 2,29,043-8-0

Balance...1,29,159-1-8

to be credited to the Railway Company in payment of interest already advanced on the capital.

16. Having so lately submitted observations on the entire line of Railway, to Beypoor, to a date very little subsequent to that of the Chief Engineer's report, it appears unnecessary to follow that Gentleman through his remarks on the several districts.

17. At the Madras terminal station Mr. Heppel reports that the building appointed for the various departmental officers has been completed with the exception of the iron balustrade to the upper verandah, and is now in use.

That the passengers station is nearly completed and likely to be available for the traffic about the end of May.

That the temporary arrangements for working the line have prevented anything being done to the Permanent Goods Warehouse, but that during its construction eventually, a portion of the large passenger shed will be appropriated for the Goods traffic—and,

That the bridge over the neck of the station has been finished, and made over to the Municipal Authorities.

18. The slow progress in the buildings for the Locomotive department at Perambore, is attributed to the difficulty* experienced in obtaining land for brick making, and in those at the Vellore station to scarcity of labor, and difficulty in procuring bricks.

* Vide Ex. Mins. of Cons. Financial (Railway) Department No. 165, dated 30th March 1858.

* With observation No. 122, dated 11th May 1858.

19. The estimate referred to in para: 13, for securing the safety of the works on the open portion of the line has since been submitted* to Government.

20. Of the roads referred to in para: 16, Government are aware that a supplemental estimate is required for completing the one from Goriattum to Palmanair, but in its present state it is I believe, available in the dry season for cart traffic; the road to Pullicondah is likely to be completed by the 1st June next.

* Letters from Agent, No. 23rd, dated 17th March 1857.

Letter to Agent, No. 234, dated 26th March 1857.

Letter from Agent, No. 568, dated 18th July 1857.

Letter from Agent, No. 771, dated 12th October 1857.

Obsn. to Govt. No. 358, dated 19th October 1857.

Further Orders No. 24, dated 9th Jan'y. 1858.

21. With reference to para: 31, I would merely observe that from the correspondence noted in the margin,* on which, the orders of Government were passed in Extract Minutes of Consultation, No. 536, dated 11th November 1857, it is evident that the delay in commencing the station buildings at Vaniembaddy and Trippatore was not owing to any discussions with the Government, but entirely to neglect on the part of the late Agent.

22. In para: 117, Mr. Heppel states his reasons for not having yet submitted any plans for the Beypoor station, and in the following para; observes that the questions affecting this Station will shortly be the subject of a special report.

23. The analysis submitted by Colonel Pears, for the first half year of 1857, with that lately submitted by me for the second half, will have kept Government informed of the results attending the traffic operations.

24. The working of mixed Trains during December shows favorably; but on this point, I will report more fully in submitting the analysis for the current half year.

25. Statement No. 7, shows that since April 1857, there has been an increase in the traffic on the high Western road, and it remains to be seen what will be the effect of the establishment of bullocks and carts now allowed to be entertained by the Traffic Manager.

26. The Locomotive Superintendent in his report notices the assistance his department was able to render to Government, by constructing a number of platform carts and arm chests for the Ordnance and Commissariat Departments.

27. The progress made by the men, under training in the various trades connected with the Locomotive department is favorably reported on.

28. In para: 23 Mr. Wright expresses an opinion that the consumption of fuel—on the line will be found to compare favorably with most other Railways, and believes that had the coke purchased at Madras been equal in quality to that sent out by the Railway Board, that his consumption of fuel would have been fully 10 per cent. less than it has been during the past year.

29. The results attending the manufacture of coke may be considered satisfactory, but Mr. Wright considers that it should not be continued unless coking coal can be purchased in the country.

30. In my letter No. 87, dated 9th April 1858. I expressed my opinion of the efficiency of the Engineering staff and of the manner in which their duties have been conducted, and I am glad to observe that that opinion is concurred in by the Chief Engineer Mr. Heppel, to whose able management the existing satisfactory state of the department is principally due.

31. The reports of the Traffic Manager Mr. Fletcher, and the Locomotive Superintendent Mr. Wright, as also of the Head Accountant Mr. Church, will no doubt be read with interest by Government, and there is every reason to believe that the duties of the departments under the immediate control of these Gentlemen have been conducted with efficiency and economy.

32. The important question of rates and fares and classification of Goods has been so fully discussed, that but little remains for remark beyond the fact, that the result of another year's experience proves the necessity of some revisions being made, and the sooner they are introduced, the better will it be for the interests of all concerned. A lighter charge in some instances for Goods, the abolition of the terminal charge, a more convenient standard weight than the Bengal maund, and a reduction in the 3rd Class Passenger fares, appear to me to be the most essential points.

33. The opening of the South West line 15½ miles from Arcot to Vellore, on the 7th May, and the running of mixed trains from the 30th November, are the only two important events of the past year:

34. Accidents.

There has been no accident connected with the running of the Trains, on one occasion several wagons belonging to a Ballast Train were thrown on the main line, by a rail in a Ballast siding giving way. The cause of this was traced to the breaking of the Trenails. No one was injured.

35. North West Line.

The direction of this line having been determined, as far as Cuddapah, authority for staking out the ground was conveyed to the Agent on the 2nd February 1858.

36. The Engineering Staff employed consisted of:—

- 1 Resident Engineer,
Mr. Smart and
3 Assistant Engineers.

37. The expenditure during the year amounts to:— Rs. 28,886 6 10
Vizt. Salaries..... „ 25,617 4 11
Contingencies..... „ 3,269 1 11

38. Full particulars connected with the North West line having been laid before Government with my observations No. 344, dated 5th October 1858, and no actual work having been commenced before the close of the year, no further remarks appear to be called for.

39. The Agent in his letter to the Board of Directors explains the cause of the late date at which the reports for the past year have been forwarded, and states his intention of attending to their future more punctual submission.

I have, &c.,

(Signed) C. C. JOHNSTON CAPTAIN,

Offg. Consulting Engineer for Railways.

Madras, 21st May 1858.

No. 1.—Statement shewing the strength of the Railway Department as it stood on the 31st December 1857 with the Salaries of the several Offices.

			Agents Department.			Amount of each.			Total.		
						Rs.	As.	P.	Rs.	As.	P.
1	Agent and Manager.....		0	0	0	1,818	2	11			
1	Chief Accountant.....		0	0	0	545	7	3			
2	Chief Clerk and Cashier.....at...	454	8	9		909	1	6			
1	General Storekeeper.....	0	0	0		363	10	2			
1	Deputy Accountant.....	0	0	0		272	11	8			
	Establishment as sanctioned by Government, including the Medical Department.....	0	0	0		771	9	7			
		Rupees...	0	0	0	4,680	11	1			
<i>Engineer Department.</i>											
1	Chief Engineer.....		0	0	0	1,818	2	11			
4	1st Class Resident Engineers..... at...	772	11	8		3,090	14	8			
7	2nd Do. do. do. at...	590	14	6		4,136	5	6			
13	3rd do. Assistant Engineer..... at...	409	1	5		5,318	2	5			
1	Sub-Assistant Engineer.....	0	0	0		300	0	0			
3	Do. do. at...	150	0	0		450	0	0			
1	Inspector of Rock and Earthwork.....	0	0	0		330	14	7			
2	Do. do. do. at...	283	10	2		567	4	4			
1	Draughtsman.....	0	0	0		318	2	11			
1	Inspector of Permanent way.....	0	0	0		283	10	2			
3	Do. do. at...	236	5	10		709	1	6			
6	Do. of Masonry..... at...	236	5	10		1,418	3	0			
10	Platelayers..... at...	141	13	1		1,418	2	10			
6	Inspectors..... at...	160	0	0		960	0	0			
5	do. at...	130	0	0		650	0	0			
19	do. at...	100	0	0		1,900	0	0			
1	Engineering Assistant.....	0	0	0		100	0	0			
2	Do. do. at...	90	0	0		180	0	0			
3	Do. do. at...	75	0	0		225	0	0			
1	Surveyor.....	0	0	0		30	0	0			
1	Engineering Pupil.....	0	0	0		50	0	0			
8	Do. do. at...	35	0	0		280	0	0			
4	Do. do. at...	20	0	0		80	0	0			
4	Do. do. at...	10	0	0		40	0	0			
	Establishment as sanctioned by Government including the Chief Engineer Cuddapah line and Medical Department.....	0	0	0		7,342	0	0			
		Rupees...	0	0	0	31,996	0	10			
<i>Locomotive Department.</i>											
1	Locomotive Superintendent.....	0	0	0		772	11	8			
1	Coke burner.....	0	0	0		236	5	10			
1	Locomotive Foreman.....	0	0	0		272	11	8			
1	Carriage do.	0	0	0		272	11	8			
2	Engine Drivers..... at...	218	2	11		436	5	10			
1	do.	0	0	0		196	5	10			
4	do.	174	8	9		698	3	0			
2	Drivers and Fitters..... at...	218	2	11		436	5	10			
1	Superintendent of Carriage and Wagon building.....	0	0	0		196	5	10			
2	Lathemen..... at...	189	1	5		378	2	10			
2	Boiler Smiths..... at...	189	1	5		378	2	10			
1	Engine Fitter.....	0	0	0		189	1	5			
1	Working Fireman.....	0	0	0		189	1	5			

No. 1.—Statement shewing the strength of the Railway Department, &c.

		Amount of each.			Total.		
		Rs.	As.	P.	Rs.	As.	P.
1	Erector and Fitter.....	0	0	0	189	1	5
1	Coach Builder.....	0	0	0	189	1	5
1	Fireman.....	0	0	0	109	1	5
1	Locomotive Pupil.....	0	0	0	50	0	0
1	do.	0	0	0	35	0	0
1	Establishment including the Medical Department.....	0	0	0	480	0	0
	Rupees...	0	0	0	5,704	15	11
Traffic Department.							
1	Traffic Manager.....	0	0	0	818	2	11
1	Assistant do.	0	0	0	318	2	11
2	Chief Guard.....	0	0	0	218	2	10
1	Head Porter.....	0	0	0	109	1	5
2	Peons.....	7	0	0	14	0	0
	Rupees...	0	0	0	1,477	10	1

Officers and employees who have joined the Railway Department during the year.
Agent's Department.

N. B. Acworth, Esqr., Agent and Manager.
F. Underdown, Esqr., Chief Clerk and Cashier.
J. Longhurst, Esqr., General Storekeeper.
F. Peele, Esqr., Deputy Accountant.

Engineer Department.

J. M. Heppel, Esqr., Chief Engineer.
J. O. Macdonald, Esqr., Assist. Engineer 3rd Class.
G. Barclay, Esqr., do. do.
R. H. Coe, Esq. do. do.
J. S. Whitlock, Esqr. do. do.
B. Anderson, Esqr. do. do.
E. Johnston, Esqr. do. do.
T. B. French, Esqr. do. do.
J. H. Going, Esqr. do. do.
J. M. Span, Esqr. do. do.
J. L. Koe, Esqr. do. do.
A. Fraser, Esqr. do. do.

Mr. E. A. B. Crockett, Draughtsman.
Mr. W. Moran, Inspector of Permanent way.
Mr. H. Mathews, do. do.
Mr. J. Turner, Inspector of Rock and Earthwork.
Mr. R. Maynard, Platelayer.
Mr. G. Bosworth, do.
Mr. R. Cosby, do.
Mr. J. Mays, do.

Locomotive Department.

Mr. G. Leggett, Working Foreman.
Mr. J. Broadbent, Engine Driver.
Mr. J. Rankin, do.

Officers and Employe's whose connection with the Railway Department has ceased during the year.
Agents Department.

Major. Jenkins, Agent and Manager.
T. Peachy, Esqr., Chief Accountant.

Engineer Department.

G. Barclay, Esqr., 3rd, Class Assistant Engineer.
C. Dixon, Esqr., do. do.
R. Rowlands, Esqr., do. do.
D. Parker, Esqr., 1st Class Resident Engineer.
Mr. C. Coates, Superintendent.
Mr. G. Levien, do.
Mr. F. Forshaw, Platelayer.
Mr. G. Gilbert, do.

Traffic Department.

Mr. J. Fairweather, Head Porter.
On Furlough.

Engineer Department.

A. H. Macnair, Esqr., 3rd Class Asst. Engineer.
Deaths during the year.

Engineer Department.

Mr. E. Jones, Inspector of Rock and Earthwork.
Mr. J. Richardson, Platelayer.

C. C. JOHNSTON, CAPTAIN,

Madras, 21st May 1858.

Officiating Consulting Engineer for Railways.

No. 2. MADRAS RAILWAY.

Abstract Statement of the Estimates sanctioned by Government up to, and during the year 1857.

Districts.	Sanctioned up to 1857.	During 1857.	Total.	Remarks.
1	2,89,516	...	1	
2	3,32,747	...	...	
3	5,57,334	...	...	
4	5,37,432	...	...	
5	63,880	...	...	
7	4,66,524	4,60,276	...	
8	...	5,30,868	...	
11	...	a 1,91,670	...	a Cauvery Bridge.
16	...	b 14,903	...	b Temporary wooden bridge over the Thootha river.
17	...	c 12,447	...	c Do. do. bridges over the Kuddulhoondy Estuary and Terour River.
Madras Terminal Station &c., &c.....	5,63,907	5 10	5 10	
Small Stations, &c., on the line.....	1,63,011	3 3	3 3	
Workshops at Perambore.....	72,380	...	72,380	
Total.....	30,46,731	10 1	43,25,557	10 1

Consulting Engineer's Office,
Madras,
21st May, 1858.

(Signed) C. C. JOHNSTON, Captain,
Officiating Consulting Engineer for Railways.

No. 3.
Statement shewing the progress of work on the Madras Railway, S. W. Line.

Earthwork.				Masonry.			Stations.							
Districts.	Up to 1855.	In 1856.	In 1857.	Total up to 1857.	District.	Up to 1855.	In 1856.	In 1857.	Total up to 1857.	Districts.	Up to 1855.	In 1856.	In 1857.	Total up to 1857.
	C. Yds.	Cub. Yards.	Cub. Yards.	Cub. Yards.		C. Yds.	C. Yds.	C. Yds.	C. Yds.		C. Yds.	C. Yds.	C. Yds.	C. Yds.
1	14,81,875	14,145	...	14,96,020	1	11,522	1,398	...	12,920	1	1,707	1,196	111	3,014
2	8,44,904	16,859	...	8,61,763	2	25,092	...	82	25,174	2	900	1,760	732	3,392
3	14,24,979	1,76,064	5,075	16,06,118	3	35,297	8,239	376	43,912	3	...	661	23	684
4	2,59,314	7,06,457	5,26,172	14,91,943	4	893	14,568	12,106	27,567	4	...	...	479	479
5	...	4,57,462	5,08,469	9,65,931	5	...	2,252	14,050	16,302					
6	13,879	6,56,263	9,37,664	16,07,806	6	...	1,890	13,829	15,719	Total...	2,607	3,617	1,345	7,569
7	2,84,018	4,56,327	4,50,572	11,90,917	7	533	6,917	9,818	17,268					
8	5,71,192	2,32,152	1,31,501	9,34,845	8	6,513	10,793	6,414	23,720	Monthly	Average.	301	112	
9	...	5,08,280	6,25,786	11,34,066	9	...	...	6,086	6,086					
10	...	89,425	5,16,825	6,06,250	10	...	...	120	120					
11	...	5,15,757	4,13,952	9,29,709	11	...	...	865	5,544					
12	...	...	3,59,038	3,59,038	12	...	...	...	...					
13	4,81,537	5,25,825	3,73,805	13,81,167	13	5,729	12,521	15,037	33,287					
14	26,341	9,36,087	10,42,060	20,04,488	14	...	341	4,013	4,354					
15	...	1,96,710	4,39,262	6,35,972	15	...	...	433	433					
16	...	3,46,844	6,99,046	10,45,890	16	...	211	8,949	9,160					
17	...	4,25,109	3,31,157	7,56,266	17	...	...	4,504	4,504					
Madras Station.	97,697	32,822	3,325	1,33,845	Madras Station.	13,954	3,521	515	17,990					
					Total.....	99,535	63,514	1,01,014	2,64,063					
Monthly average.	54,85,737	62,92,588	73,63,710	1,91,42,035	Monthly average.	5,293	8,418							
		5,24,382	6,13,643											

Statement shewing the Progress of work on the Madras Railway, S. W. Line.

Permanent way.				Ballasting.					
Districts.	Up to 1855.	In 1856.	In 1857.	Total up to 1857.	Districts.	Up to 1855.	In 1856.	In 1857.	Total up to 1857.
	C. Yds.	Cub. Yards.	Cub. Yards.	Cub. Yards.		C. Yds.	C. Yds.	C. Yds.	C. Yds.
1	47,404	...	...	47,404	1	1,07,350	33,670	19,187	1,60,207
2	34,566	...	...	34,566	2	32,763	68,638	19,662	1,21,063
3	15,750	26,704	...	42,454	3	24,687	2,13,182	77,340	3,15,209
4	...	31,439	19,451	50,890	4	...	37,619	1,25,308	1,62,927
5	...	...	792	792	5	...	...	1,920	1,920
6	...	1,011	5,542	6,553	6	...	5,337	2,136	8,773
17	...	...	2,538	2,538	7	...	21,386	10,160	31,546
Mad. Ter. Statn.	5,767	6,379	1,621	13,767	8	...	23,235	9,824	33,059
					9	...	...	20,789	20,789
					11	...	...	34,141	34,141
					13	...	6,076	79,009	85,085
					14	...	...	607	607
					15	...	...	20,429	20,429
					16	...	...	57,122	57,122
					17	...	...	14,730	14,730
					Mad. Ter. Statn.	9,715	15,638	28,929	53,282
Total.....	1,03,487	65,533	29,944	1,98,964	Total.....	1,74,515	4,24,782	5,21,593	11,20,890
					Monthly average.		35,399	43,466	

Statement shewing the Progress of work on the Madras Railway, S. W. Line.

Fencing.									
Permanent.					Temporary.				
Districts.	Up to 1855.	In 1856.	In 1857.	Total up to 1857.	Districts.	Up to 1855.	In 1856.	In 1857.	Total up to 1857.
	Lin. Yds.	Lin. Yards.	Lin. Yards.	Lin. Yards.		L. Yds.	L. Yds.	L. Yds.	Lin. Yds.
1	37,242	1,53,977	39,203	2,30,422	1	9,468	8,327	...	17,795
2	36,678	1,07,758	15,214	1,59,660	2	12,698	9,240	...	21,938
3	...	2,07,995	58,450	2,66,445	8	25,204	...	...	25,204
4	...	...	49,180	49,180	13	...	121	...	121
5	...	...	16,122	16,122					
6	...	5,074	9,884	14,958					
7	...	5,121	55,282	60,403					
8	4,473	2,351	46,641	53,465					
9	...	1,983	27,945	29,928					
10	...	...	3,648	3,648					
11	...	...	12,726	12,726					
13	11,216	35,599	24,612	71,457					
14	...	354	7,134	7,488					
15	...	...	2,266	2,266					
16	...	...	6,617	6,617					
Mad. Ter. Statn.	...	200	...	200					
Total.....	89,639	5,20,412	3,74,924	9,84,975	Total.....	47,370	17,688	...	65,058
Monthly average.		43,368	31,244						

Rolling Stock.

Particulars.	Completed up to 1857.	During 1857.	Total.
" Passenger Stock."			
1st Class Carriages.....	3	...	3
Composite do.	8	...	8
2nd Class do.	4	...	4
3rd do. do.	21	2	23
Carriage Trucks	4	...	4
Break Vans.	3	2	5
Horse Boxes	5	...	5
Total... ..	48	4	52
" Goods Stock."			
Ballast wagons.	60	...	60
Open do.	90	10	100
Coke do.	20	10	30
Hopper do.	5	...	5
Covered do.	50	...	50
Cattle do.	10	20	30
Break vans	6	3	9
Plat-form Trucks	20	...	20
Timber do.	10	...	10
Gun Powder van	1	...	1
Total... ..	272	43	315

C. C. JOHNSTON, CAPTAIN,

Offg. Cong. Engr. for Railways.

Madras, 21st May 1858.

No. 4.—Statement showing the expenditure on account of construction on the South West Line.

Districts.	Up to December 1855.		During 1856.		During 1857.		Up to 1857.	
1	1,04,146	7 6	2,42,787	11	66,044	6 5	4,12,977	14 10
2	2,89,031	7 7	79,328	7 2	52,062	2 5	4,20,422	1 2
3	3,67,492	3 1	1,99,231	10 0	96,955	3 11	6,63,679	1 1
4	34,128	14 9	2,32,708	6 0	4,13,534	...	6,80,371	4 9
5	7,630	5 4	1,05,159	14 2	2,40,455	12 5	3,53,245	15 11
6	8,956	...	1,50,770	5 4	2,65,502	2 7	4,25,228	8 4
7	68,876	13 6	1,37,294	8 0	1,87,390	...	3,93,561	6 2
8	1,44,218	5 9	1,16,270	6 1	99,640	4 2	3,60,129	...
9	133	2 10	80,096	12 9	1,58,646	13 0	2,38,846	12 7
10	...	...	13,685	13 3	78,222	7 1	91,908	4 4
11	...	...	86,811	13 3	1,77,447	7 7	2,64,259	4 10
12	...	...	3,817	4 8	36,556	5 5	40,373	10 1
13	95,835	15 1	1,28,941	8 10	1,54,652	...	3,79,429	8 6
14	27,893	2 9	1,46,305	3 5	2,75,852	4 4	4,50,050	10 6
15	3,041	...	23,111	4 6	99,379	13 6	1,25,532	2 2
16	2,260	10	46,253	12 10	1,44,076	11 0	1,92,590	8 8
17	2,153	6 2	46,907	6 8	1,41,125	4 1	1,90,186	11
M S.	1,10,815	8 5	94,078	5 3	1,68,351	13 11	3,73,245	11 7
Total...	12,66,612	14 2	19,33,559	15 1	28,55,865	1 1	60,56,037	14 4

The rates at which the Earth and Masonry works have been executed from the commencement to the end of 1857 are as follows.

Earthwork.	Rate per cubic yard.	Masonry.	Rate per cubic yard.
Districts.		Districts.	
3	2 6	3	4 14 11
4	3 3	4	7 4 8
5	2 5	5	6 8 8
6	2 5	6	5 4 10
7	3 3	7	4 11 10
8	3 6	8	3 12 9
9	2 7	9	5 2 4
10	2 1	10	18 6 7
11	3 1	11	12 7 8
12	1 6	12	...
13	2 3	13	3 6 1
14	2 8	14	12 4 1
15	1 10	15	15 3 10
16	1 9	16	5 4 6
17	1 7	17	9 8 9

These rates cannot be correctly ascertained, until the masonry works are completed, and the materials remaining on hand used up, at present there being nothing in the accounts to show what materials remain the whole expenditure is charged against the No. of cubic yards of work completed.

Consulting Engineers Office,
Madras, 21st May 1858.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

STATEMENT No. 5.

Construction.....	28,55,865	1 1 a
Superintendence.....	3,67,250	8 9 b

Total Rupees.....32,23,115 9 10

STATEMENT No. 6.

The Cost of Superintendence is nearly 13 per cent. on the expenditure.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 21st May 1858.

No. 7.—Statement showing the Traffic Passing on No. 1 Western Trunk Road from July to December 1857.

Year.	Month.	Distance.	Elephants.		Cattle.		Camels.		Horses.		Donkeys or Mules.		Horned Cattle.		Sheep or Goats.		Porters.		Europeans foot passengers.		Native foot passengers.		Palanquins or Litters.		Spring Carriages.		Artillery Equipage.		Women.		Remarks.
			Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	
1857.	July.	Poonamallee 13 miles.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Taken for the whole month.
	Aug.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Taken 1, 8, 15 and 22 of each month.
	Sept.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Nov.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Dec.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1857.	Jan.	Tanjore 40 miles.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Feb.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Mar.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Apr.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	May.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	June.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	July.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Aug.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sept.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Nov.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Dec.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1857.	Jan.	Palanquins 50 miles.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Feb.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Mar.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Apr.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	May.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	June.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	July.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Aug.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sept.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Nov.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Dec.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1857.	Jan.	Vaniambadi 125 miles.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Feb.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Mar.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Apr.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	May.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	June.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	July.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Aug.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sept.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Nov.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Dec.	do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Central Office of P. W. Fort Saint George, 26th February 1858.

(Signed) C. E. FABER, Colonel, Chief Engineer.

C. C. JOHNSTON, Captain, Officiating Consulting Engineer for Railways.

APPENDIX NO. I.

MADRAS RAILWAY.

No. 381.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

Sir,

I have the honor to transmit for the information of Government, a copy of a letter this day addressed by me to the Board of Directors of this Company, together with copies of the reports which accompanied it, from the several Heads of Departments, stating the operations of the company under their respective charges, for the year ending 31st December 1857.

I have, &c.,

N. B. ACWORTH,

Agent and Manager.

Madras, 17th May 1858.

MADRAS RAILWAY.

No. 272.

To JAMES WALKER, Esq.,

Managing Director, Madras Railway Company, London.

Sir,

I have the honor to send you for the information of the Board, the usual annual reports of the Heads of Departments for the year ending the 31st December 1857, as follows:—

From the Chief Engineer addressed to the Board, dated 6th May 1858.

„ The Traffic Manager to my address No. 86, dated 15th May 1858.

„ The Locomotive Superintendent „ „ 59, „ 4th May „

„ The Chief Accountant „ „ 158, „ „ „

„ The General Store keeper „ „ „ 26th April „

„ The Consulting Physician „ (not dated) being a statement of sick treated

during the year.

2. The Board will hardly expect that I should offer any observations upon the operations of the Company during the period embraced in these reports viz., for the year ending the 31st December last, since I assumed charge of this office only on the 26th of the same month. It is right however that I should remind the Board that the Resident Engineers have now the power of purchasing Sleepers, and of paying for them immediately, and my belief is, (derived from the communications I have had with the Consulting Engineer on the subject) that the Government would readily sanction any well considered scheme which promised to give a more abundant and earlier supply. But on some districts the distance from which they must be supplied, the want of roads from the jungles, of cartage, and even of labor, present far greater obstacles to a ready supply than would at first sight appear. I can only assure the Board that no fair means will be left untried to procure what is so necessary.

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3. I regret that these reports have come in so late, for by this time their interest has very much passed by. From the great quantity of work which has been always pressing upon me, I did not become aware of their being required until the end of February. At that time the Chief Engineer was preparing for his tour of inspection, and his report was necessarily postponed until after his return, which did not take place until the 23rd April last. I will try to have them furnished in future as soon as possible after the close of the year.

I have &c.,

(Signed) N. B. ACWORTH,

Agent and Manager.

(True copy.)

N. B. ACWORTH,

Agent and Manager.

Madras, 17th May 1858.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE.
MADRAS, 6TH MAY 1858.

TO THE CHAIRMAN AND DIRECTORS OF THE MADRAS RAILWAY COMPANY.
GENTLEMEN,

I beg to lay before you a report of the progress made in the works during the year ending the 31st of December 1857.

2. At the Madras Terminal Station the building appointed to the Officers of the various departments has been completed, and is now fully occupied by them. It presents a very handsome appearance and answers its purpose extremely well. The Iron balustrade for the upper verandah has however not yet been received from Porto Novo, and a temporary wooden one has been in the mean time put up.

3. The passenger station is nearly completed and may be expected to be available for the Traffic about the end of May. This building is of a more ornamental character than any of the other station buildings. It is generally considered both handsome and suitable to its purpose and being the principal terminus of an important line, the amount expended on decoration will it is hoped be considered not to have been misapplied. To the Permanent goods Warehouse nothing has been done during the year as it is not possible to proceed with it without interfering with the temporary arrangement for working the line, and I am unwilling to interfere with this until the permanent Passenger shed is ready. A portion of the large Passenger shed will be appropriated to the goods traffic during the construction of the Permanent Warehouse.

4. The bridge over the neck of the station is finished and placed at the disposal of the municipal authorities. This bridge is a very handsome and substantial structure, and a graceful finish to its appearance is given by the cast Iron lamps and standards manufactured at the Port Novo Iron works.

5. The works of the Perambore establishment have been brought nearly to a stand still from the difficulty experienced in obtaining the requisite land for the purpose of brickmaking. Negotiations are going on through the Collector for this purpose, but until they shall have been brought to a satisfactory close it is impossible to say what amount of hindrance to the progress of these works may ensue.

6. The timber shed has been completed and is in part now temporarily appropriated as a smithy for the Locomotive Department.

7. The large Carriage Building shed is ready for the roof, as is also the smithy and wheel Fire furnace shop, and Carriage and Engine Machinery Shop.

8. The opening of the line from Arcot to Vellore took place on the 7th May 1857, since which time the trains have been regularly running.

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6. It has been found necessary in order to meet the requirements of the Traffic Department to construct the following additional works at stations.

At Trivellore.—A goods Shed.

At Chinamapett.—A goods Shed and a second Passenger Platform on the North side, and an additional tank house on South side.

At Companypett.—A goods Shed and additional Platform on South side of line,

At Sholingur.—A goods Shed. Of these the goods shed at Trivellore, Chinamapett, and Companypett are completed, and the completion of the one at Sholingur may be expected by the end of April. At Vellore the Passenger station is carried up above ground. Its progress has been a good deal hindered by difficulty in obtaining bricks. The permanent goods shed is ready for tiling. The foundations of the permanent Engine Shed are got in and carried up to ground level.

10. The progress of these works altogether seems to have been slow, but besides the difficulty in obtaining bricks they were a good deal retarded by the severity of the late monsoon. The Resident Engineer assures me that no exertions are being spared to carry them forward consistent with the progress of the works on the line between Vellore and Goriattum, but there being only a limited amount of labour on the district, it is hardly possible to increase the amount on the station except at the expense of the bridges.

11. Much damage was done to the works on the open part of the line by the late monsoon for the particulars of which I beg to refer to my report to the Agent and Manager, dated 9th November 1857.

12. Very considerable charges for the maintenance and repair both of Earthworks and Masonry have in consequence had to be made against the last half year's revenue. Added to this the removal of decayed Sleepers has been a considerable item of expenditure.

13. I wish it were in my power now to report whole of these works in a satisfactory condition. The late monsoon however has clearly shown that there are but few of the bridges on districts 1 and 2 which can be considered fully adequate to contend with a similar assault. In nearly all of them however the work though at present insufficient may be made secure by the addition of protective works in the way of pitched aprons between the wings, and sunk walls across their ends, besides these additions to existing works the necessity has become apparent of constructing a certain number of new bridges and culverts to give a greater amount of flood waterway. An Estimate of these additional works for the first three districts is in course of preparation by Mr. Henderson, Resident Engineer Madras Division, which I propose to submit for sanction of Government, to be charged to the capital account.

14. On District 4 the damage to works has been comparatively trifling and the waterway of the existing bridges appears to be sufficient. The works on the portions of district 4 beyond Vellore have been pushed forward with considerable activity and present, a very satisfactory appearance. The bridges are built almost throughout of granite or more properly gneiss, which is obtained with good flat natural beds, and makes extremely substantial work with a moderate amount of labour.

15. The laying of the Permanent way up to Goriattum station may be expected to be completed in the course of March, and the opening of this portion of the line to the public in the course of the ensuing month.

16. It does not however seem very probable that the road from Goriattum to Palmanair and Policondah now under construction will be opened by that time, and without that it is evident that but very little traffic can come to the station. In any case however the use of the line will be of very great value for transporting our materials.

17. At Goriattum a temporary station house has been erected and the permanent goods shed is commenced.

18. At Goriattum bridge the east abutment and 6 piers are up to the springing level. The foundations for the west abutment are being got out, and 6 piers on that side are in, of which 2 are up to springing level, 11 piers remain to be constructed. It is possible that by great exertion

tion and favorable weather, the Engineer may be able to get all these foundations in before the next monsoon, but it is scarcely to be expected. For the bridge over the western channel of the Gooriattum consisting according to the sanctioned plan of 9 arches of 20 feet—I propose to apply for sanction to substitute 5.30 feet arches believing that waterway to be fully sufficient.

19. It is extremely probable that this will be the last work to complete on the district and in the event of its becoming a cause of delay to the opening of Vaniembaddy, I shall propose to put up a temporary timber bridge pending its construction.

20. There have been executed on this district during the past year 526,172 cubic yards of Earthwork, 12,106 cubic yards of Masonry. The average number of work people employed monthly has been 159,170, and the total amount expended on construction during the year has been Rupees 413,082-12-5.

21. District 5. The Earthwork on this District is complete up to the Palar river and beyond this it is so far advanced as to cease to be a subject of anxiety. The rock cuttings at Patchecoopum and Chinacomeperum are nearly out and the banks on the west side of the Palar fast approaching completion. The ballasting is less advanced, about half a mile is finished, and the permanent way laid east of the Palar, and about the same quantity is laid near Patchecoopum, besides this ballast sufficient for about 3 miles is delivered on the line ready for spreading, and 2 miles of permanent way materials are delivered. Up to the present time the delivery of Sleepers on this district has been almost nothing and has occasioned much anxiety, but we are now getting them from Mr. Sullivan joint Magistrate of North Arcot at a rate which would supply the district in 2 years. This of itself would clearly be insufficient but by laying the rails in the first instance with 4 Sleepers to each rail we shall be able to get a road through, and buy the remainder from Madras or from other points where the supply is better.

22. The chief work on this district the bridge over the Palar has not made any great apparent advance, but much has been done in the way of preparation for taking advantage of the favourable season. The centres are set ready for turning the arches on the west side, and the sheeting is being driven for securing the excavation for the foundations of the first of the eight river piers remaining to be got in. As in the case of the Gooriattum bridge it is possible that under very favorable circumstances the getting in of these foundations may be accomplished before the next monsoon, but it is hardly to be expected.

23. There remain in this district still 20 bridges of various sizes to be commenced but there is no doubt of their completion by the time the Palar is ready.

24. The works on this district are chiefly of brick and are very satisfactory both as to the material and the workmanship.

25. There have been executed on this district in the last year 508,469 cubic yards of Earthwork, and 14,050 cubic yards of Masonry, the average number of work people employed monthly has been 133,533, and the total amount expended on construction during the year has been Rupees 2,39,019-9-4.

26. District 6. The Earthwork on this district is so far advanced as to leave no room for anxiety with the exception of the rock cuttings on the 2nd section, of which the one at the west end near Panperputty will take 10 or 12 months to get out, the whole may be said to be complete, about 5 miles of permanent way is laid.

27. The supply of Sleepers to this district has lately been more abundant than to the adjacent ones, those delivered at present amount to 10,918.

28. I am sorry to observe amongst the latter deliveries a great number which are barely passable but the very great difficulty with which they are obtained at all naturally makes the Engineer reluctant to refuse them. Those however delivered by Mr. Brett the Collector of Salem present an honorable exception being throughout of full scantling and good quality.

29. The masonry works on this district have been carried on with great activity and the execution is most substantial and satisfactory. To avoid the great expense attending the procuring of flat bedded stones which are not found in this district in the neighbourhood of the line, the Engineer has used for his foundations the round boulders which are very abundant. This

kind of work requires very great care in the execution to make it solid, but I am happy to say that the manner in which it is being carried on, leaves me no doubt as to its sufficiency. The piers and superstructure of the bridges are generally carried up in brick, the angles and cut waters being protected with stone quoins, altogether I consider the masonry works on this district as amongst the best on the line, amongst the principle works now in progress are the bridge over the Juintepoorum river near Vaniambaddy 5.15 feet arches. The west abutment and 3 of the piers are got in, and up to the river bed. One pier and the east abutment remain to get in. The bridge over the Godar river 12.20 feet openings, flat timber top. The two abutments and 2 of the piers are got in and up to the river bed, nine piers remain to get in. The bridge over the Cotar river 5.30 feet openings, two abutments and two piers up to river bed, two piers to get in. The bridge over the Godar above its junction with the Colar 3.30 feet arches, abutments and one pier up to river bed. One pier to get in. The bridge over the Pauperputty river 7.33 feet arches, two abutments and two piers up to river bed, 4 piers to get in.

30. There are altogether 22 bridges in progress in this district including those mentioned above, and seven to commence.

31. There are two stations in this district Vaniambaddy and Tripatoor but owing to the protracted discussions with the Government on the subject of the modified plan for the third class station houses, we have not been in a position to proceed with their construction. They will however be commenced now almost immediately.

32. There has been executed in the course of the year 937,665 cubic yards of Earthwork, 3,829 cubic yards of masonry. The average number of workpeople employed monthly has been 150,570, and the total expenditure in construction during the year has been 2,61,804-12-9.

33. District 7. The Earthwork in this district is very nearly finished. One or two rock cuttings require a little cleaning out at the bottom, but it is so far advanced as to give no cause for anxiety, about one mile of permanent way is laid, and 3½ miles more of rails delivered, 17,000 Sleepers are also delivered.

34. There are two large bridges in progress in this district, over the Moocrumputty and Pennar rivers respectively.

35. The former consists of 7.30 feet arches. The abutments are finished and 4 of the piers are carried up to the river bed, two piers remain to be got in.

36. The bridge over the Pennar consists of 18.30 feet arches. The abutments and all the piers are finished, and 6 of the arches turned.

37. Besides the above there are 16 other bridges in progress in the district and two to commence.

38. The character of the masonry works in this district is less satisfactory than that of those in the last, from the fact that flat bedded stone is here still more difficult to procure, so that the Engineer has been obliged to use the round boulder stones not only in his foundations but in his superstructure also.

39. Brick earth is also only scantily procurable and is of decidedly inferior quality to that found on district 6. Fortunately as a set off against these disadvantages the chumam obtained here is excellent, and has enabled the Engineer to produce strong and substantial work out of the somewhat unpromising materials at his command.

40. The Stations in this district are Shamulputty and Morapoor, neither of these are yet commenced.

41. There have been executed in this district during the past year 450,572 cubic yards of Earthwork, 9,818 cubic yards of Masonry. The average number of workpeople employed monthly has been 107,387. The total expenditure in construction during the year has been Rupees 99,519-3-8.

42. District 8. The earthwork in this district is very nearly complete, with the exception of the three rock cuttings at the Moroor ghaut. These are now making rapid progress—Labour very abundant in them, but the unhealthiness of the place makes it always uncertain how long it may continue to be so; under any thing like favourable circumstances they will be finished in 12 months.

43. About 16 miles of ballasting is done in this district, 10,000 Sleepers and $1\frac{1}{2}$ miles of permanent way materials are delivered.

44. There is only one large bridge in progress that over the Ahtoor river having 7-30 feet arches. The abutments and piers are carried up to the springing—ready for the arches, besides this bridge there are 14 others in progress and 8 to commence.

45. Brickwork has been more generally used in this district than in the preceding ones. The piers as well as the arches of the bridges being in most instances built of it. The character of the work is most substantial and durable, and though entirely without ornament the appearance presented is neat and appropriate.

46. The fencing in this district deserves notice from its very efficient condition. It consists chiefly of aloes planted in a raised mound. The plants appear to have taken good root and are coming extremely strong and thick.

47. The only station in this district is Mullapooram. The passenger station is commenced and is carried nearly up to the platform level.

48. There have been executed in this district during the last year 131,501 cubic yards of Earthwork, 6,413 cubic yards of Masonry—The average number of work people employed monthly has been 50,943. The total expenditure on construction during the year has been 99,519-3-8.

49. District 9. On this district the works on the first section have been the object of greater attention than those on the second. On account of their affecting the opening of the line to Salem. On this first section the Earthwork is very nearly finished. With the exception of some rock cuttings which have to be bottomed out, about 9 miles of ballasting are done, and about 12,000 Sleepers and one mile of permanent way materials delivered.

50. The only large bridge in progress is that over the Shevoroy river, 4-30 feet arches. The east abutment and two piers are got in, and the west abutment and one pier remain to get in. The foundations of this bridge have been troublesome from the quantity of water coming through the sand. I hope however that they will all be got in before the commencement of the mango showers.

51. Besides this bridge there are 17 ready for arches, and 4 to commence. Very fair bricks are being made in this district, and the masonry is of a solid and substantial character, more flat bedded stone being obtainable here than on districts 7 and 8.

52. The works at the Salem station are not yet commenced but will be proceeded with as soon as sanction is obtained for them.

53. The completion and opening of the line up to this point should under tolerably favourable circumstances be effected in two years. It is to be hoped that in the meantime the construction of the new road from Salem to the station will be proceeded with, as the town is only now accessible for carriages by an extremely bad road making a detour of two miles.

54. On the remainder of this district little has been done beyond Earthwork but the masonry works being of a very light character will be executed with great rapidity whenever commenced. To commence them at present would be injudicious as the labour for that purpose could only be obtained at the expense of that now employed on the more pressing works on the first section.

55. There have been executed on this district during the past year 625,785 cubic yards of Earthwork, 6,086 cubic yards of masonry. The average number of workpeople employed monthly has been 106,449, and the total amount expended in construction during the year has been Rupees 1,58,616-13-0.

56. District 10. The Earthwork on this district is well forward, about three quarters of it being complete, nothing has been done in the way of masonry beyond collecting materials. Building stone has been obtained in quantity nearly sufficient for the district and of very good quality, having generally flat beds. I have no doubt that by properly selecting it, all the arches may be turned with this material.

57. A similar reason to that which prevents us from pushing the masonry works on the 2nd section of district 9 is applicable to that of this district which could just now only be prosecuted at the expense of the labour engaged on the Cauvery bridge. As soon however as the rising of the Cauvery interrupts the progress of this most important work, a large amount of labour will become available for this district and the other works on District 11.

58. There is no bridge on District 10 of sufficient importance to call for separate notice.

59. There have been executed on this district during the past year 516,825 cubic yards of Earthwork, 120 cubic yards of masonry. The average number of workpeople employed monthly has been 57,175. The expenditure on construction during the year has been Rupees 78,222-7-1.

60. District 11. The Earthwork on this district is very nearly finished and about 15 miles of ballasting is done.

61. The principal work on this district and in fact on the whole line is the bridge over the Cauvery at Errode, great activity has been displayed at this work in the preparations for getting in the foundations of the 19 piers remaining to be commenced.

62. Dams have been run out from either side of the river enclosing on the east side a space for 9 piers and on the west side for 8 piers. The middle space ultimately to be occupied by the remaining 4 piers being in the meantime left open for the discharge of the river.

63. Within these dams the excavations are being carried on with every prospect of success.

64. Temporary Railways have been laid down on these dams, for the conveyance of materials to the several piers.

65. The quarrying and preparation of stone is at the same time going on with the greatest activity.

66. In the event of the adoption of the plan last submitted to the Board, for the completion of this bridge, there is little doubt that the masonry may be got ready for the reception of the girders in about 18 months.

67. A complete set of drawings of the girders having been sent to London it is hoped that they will arrive in this country by the time they are required.

68. Very little has lately been done to the other masonry works on this district it having been thought more advisable to concentrate labour on the Cauvery bridge during the favorable season. Materials however have been collected so that whenever the condition of the Cauvery becomes such as to interrupt the work the labour may be at once made available for carrying them on. These materials consist chiefly of flat bedded stone of excellent quality, and fitted to produce masonry of a character at once economical and substantial.

69. There remain on this district 8 bridges to commence, the others being for the most part ready for the arches.

70. There have been executed on this district during the past year 413,952 cubic yards of earthwork, 4,679 cubic yards of masonry. The average number of work people employed monthly has been 159,848. The total expenditure on construction during the year has been Rupees 1,77,447-7-7.

71. District 12, nothing beyond earthwork has been done on this district, there having been no Engineer available to place in charge of it. The earthwork has been done entirely by taskwork under the superintendence of the section Inspectors, the prices being fixed by the Resident Engineer, about half the total quantity of earthwork is finished, a large quantity of very good material has been collected for the masonry works, which will be of a similar character to those on District 11.

72. There have been executed on this district during the last year 359,038 cubic yards of earthwork. Nothing of masonry. The average number of workpeople employed monthly has been 1,349. The total amount expended on construction during the year has been Rupees 36,556-5-5.

73. District 13. This district is in a very forward state, nearly the whole of the earthwork and ballasting being complete.

74. There are 5 bridges to commence and 7 in progress.

75. Crystalline limestone is found on this district exceedingly well adapted for masonry works, being easily quarried and dressed and producing extremely substantial and solid works. Very good bricks are made, though the material is less favorable to their manufacture than that found on districts 5 and 6.

76. 5 miles of permanent way is laid on this district and about 10 miles more of rails are delivered. There are however at present no sleepers available to lay them.

77. The supply of sleepers to this district as well as to districts 12 and 11 must be looked for chiefly in the Walliar and Annamallay Jungles, in both of which Mr. Ross the Resident Engineer of Palghat Division, has with the permission of Government, made an arrangement with the authorities for cutting timber on advantageous terms. The chief difficulty we shall have to contend with in carrying out this arrangement is the great unhealthiness of these jungles. This difficulty which is an extremely formidable one, we must meet as well as we can. There is no disguising the fact, however, that calculations of the rate of supply are very liable to be deranged by it.

78. Our experience has however indubitably proved that Contractors are still less to be relied on.

79. There is frequently a very fine supply of good timber suited for Sleepers in the bazars at Palghat and Coimbatore, and if the restrictions preventing its purchase for that purpose by the Engineers were removed it would come in as a valuable auxiliary. Hitherto however these restrictions have prevented our deriving any benefit from it.

80. The only proper mode of dealing with this case seems to me obvious. In the first place all hindrances to the procuring of Sleepers by the Engineers should be removed. In the next place we should cut as many as we possibly can in the jungles under our arrangement, we should purchase all eligible Sleepers and all timbers suited for Sleepers wherever we can get them.

81. We should lay the line from Palghat to the Cauvery in the first instance with 4 Sleepers to the rail length having done which, we could easily bring up the remainder from the Western coast if we should fail to procure them in time nearer hand.

82. As these views have already been brought at different times to the notice of the Board it is hoped that some measure may have been already taken in consequence.

83. There have been executed on this district 13, during the past year 573,805 cubic yards of earthwork, 15,039 cubic yards of masonry. The average number of workpeople employed monthly has been 93,405. The total expenditure on construction during the year has been Rupees 1,54,344-15-3.

84. District 14. The earthwork of the 1st section of this district is about half finished, and that on the 2nd section is nearly complete, scarcely any ballasting has yet been done; ballast being very scarce. It will however proceed simultaneously with the laying of the permanent way.

85. The masonry executed in this district is of a very satisfactory character, both as to material and workmanship, but the quantity hitherto executed has not been so great as could have been wished.

86. This has in a great measure arisen from the great unhealthiness of the Walliar jungle. Fever seems to have made this place its home, no one, European or Native, having escaped its attacks. On several occasions it has broken out among the workpeople with such virulence as to occasion the total desertion of the works.

87. There are only two bridges on this district requiring special mention, that over the Walliar river consisting of 3. 30 feet arches, but remarkable for its height, being 33 feet from the river bed at the soffit of the arch. This bridge which lies at the commencement of the district is now being actively carried on under the direction of the Engineer of district 15, to whom it was transferred in order to relieve district 14. The works of the former being so very much more forward. Of this bridge the foundations of the west abutment and the two piers have been got in. The east abutment is yet to be commenced.

88. The other bridge is that over the Katagad river consisting of 15 arches of 30 feet span, one abutment of this bridge and 8 piers have been got in, and are in various stages of progress,

four of them being up to the springing level, 6 piers and the other abutment remain to be commenced.

89. Besides these, there are two bridges each of 30 feet span, 23 bridges with single arches varying from 9 feet to 20 feet, and 39 culverts from 6 feet downwards, to commence. There are 10 culverts and two bridges in various stages of progress, and there are 32 culverts finished, altogether the masonry hitherto completed on this district is less than one-sixth of the whole. It is very greatly to be regretted that in commencing these works, more attention was not paid in the first instance to getting forward the masonry works, whose backward state on this district as well as the following ones has now become a most serious consideration.

90. In the present case the unhealthy locality is a cause whose influence it is impossible either to meet or to foresee. We have however now an active and energetic Engineer in charge who is taking all possible means to advance this backward portion of the work, and although the average rate of progress which he has as yet obtained would give upwards of three years for the completion of the district, I have little doubt that under ordinarily favorable circumstances he will succeed in bringing it up so as to be ready by the same time as district 15.

91. About 13,000 Sleepers have been delivered in this district and about 2 miles of rails.

92. There have been executed during the past year 1,042,060 cubic yards of earthwork, 4,013½ cubic yards of masonry. The average number of workpeople employed monthly has been 221,066. The total amount expended on construction during the year has been Rupees 2,75,632-14-7.

93. District 15. The earthwork on the first section of this district is nearly finished, about 8 miles of ballasting is done, and about half a mile of permanent way laid.

94. In masonry but little has been done but there is nothing very heavy to do, all the small culverts however have been built. The only bridge deserving special mention is that over the Watepoliam river consisting of 3.30 feet arches, the foundations for which are likely to be troublesome, besides this there are 3 bridges to begin, and 4 in progress. The material used for these bridges is chiefly laterite which begins to shew itself on this district, and is found in abundance throughout the remainder of the line. Quoins of cut gneiss have been used in most cases, but they have lately been suppressed where possible on account of their cost.

95. Very good bricks are made on the district with which the arches of the larger bridges will be turned.

96. The chunam stone has all to be carted from district 14, none being found nearer.

97. On the second section the working survey and setting out is not yet completed, but with the assistance which has been placed at the Resident Engineer's disposal for the completion of it, it is to be expected to be finished immediately. The extraordinary delay in completing the setting out of this section seems to have been one of the consequences of the frequent changing of the Engineer in charge. Two years from the date when sanction shall have been obtained would I think be a fair time to give for finishing this section, but I hope by exertion to get it completed in any case before the end of 1859.

98. There are delivered on District 15. 15,000 Sleepers and 8 miles of rails.

99. There have been executed during the past year 4,39,262 cubic yards of earthwork, 433 cubic yards of masonry. The average number of workpeople employed monthly has been 71,706. The total amount expended on construction during the year has been Rupees 98,811-2-6.

100. District 16. The earthwork on this district is nearly completed, there is a rock cutting at miles 5, chains 70, which will in all probability require 8 or 9 months to get opened through. No delay will be caused by this work as it will be completed as soon as the masonry. There are remaining of this portion of the work 12 bridges yet to be founded, 6 of this number will be got in before the burst of the monsoon, the heavy rains on this coast interfere materially with the progress of masonry. This part of the work will require 12 months to bring to completion.

101. A temporary timber bridge consisting of 80-12 feet openings across the Thoota river 45° skew, has yet to be constructed. Sanction for this work was only recently obtained.

102. A portion of the timber for construction of the bridge has been delivered, and the remainder will be brought down as soon as there is water in the river.
103. Besides this bridge there are 7 others in various stages of progress.
104. About two miles of ballasting has been completed, and 5 miles of permanent way laid and partially ballasted.
105. The remaining portion of permanent way to complete this district has been delivered at Ponany, and will be brought up the river, as soon as the water communication is open.
106. The line in this district follows closely the banks of the Ponany river which has in some places eaten away the banks as much as four chains during one monsoon, and threatens portions of the Railway. Groins are being constructed to keep the river in its true course, and protect the line. The changes in the course of this river will be closely watched.
107. The Engineer for this district left for England in November, and with changes consequent thereon, the progress of the works received a check during that portion of the season in which the greatest push requires to be made. The work is now progressing favourably.
108. There have been executed during the past year 6,99,046 cubic yards of earthwork, 8,949 cubic yards of masonry. The average number of workpeople employed monthly has been 78,300. The total expenditure on construction during the year has been Rupees 1,43,071-3-2.
109. District 17. The whole of the earthwork on this district has been completed, with the exception of the alteration of gradient at the crossing of the Tirroor river.
110. The masonry on the first 7 miles from Beypoor is completed, six bridges have been founded and are in hand. An extra Inspector of masonry has been appointed to the second section of this district on purpose to push on with the work on that section, which up to the present has been neglected.
111. The works of importance on this district are the Kuddlehoondy and Tirroor rivers bridges, the former crosses the river 36 chains, in width, the latter 5 chains. Sanction has been obtained for throwing temporary timber bridges across these rivers in the meantime, and favorable contract has been made for the supply of all the timber for the Kuddlehoondy, 1,600 candies have been received. Difficulty is experienced in procuring timber of the size required for piles and girders, but by the time the pile Engines shall have arrived from England, a sufficient quantity of piles will have been prepared to commence and prosecute the pile driving without intermission.
112. The monsoon will affect the progress of this bridge, but I hope it will not entirely stop the work.
113. The timber for the bridge over the Tirroor river will be delivered during the ensuing monsoon, the extent of the bridge is small and I apprehend no delay or difficulty on this work.
114. It need scarcely be remarked that it is greatly to be regretted that a plan for a permanent structure should not in each of these cases as well as in that of the Thoota have been settled, and prepared while the time was yet sufficient to allow of their completion.
115. 5 miles of line are ballasted in parts, and the permanent way has been laid to the 8th mile post from Beypoor.
116. An accurate survey is being made and soundings are being taken of the mouth of the Beypoor river and coast, so as to enable me to make the most convenient arrangements for the terminal station.
117. I have not yet submitted any plans of the station for sanction though I have paid and am still giving much attention to the matter. I think before being able to frame such a plan, it is necessary to form a more distinct idea of what we can and what we cannot expect to do at Beypoor in the way of harbour accommodation, and how the harbour accommodation thus provided will stand in comparison with that existing at the port of Cochin.
118. The amount of Traffic to be expected in this latter place will have an influence not only on the placing of a station at the best point to receive it, but indirectly also on the arrangements of the Beypoor station. Since, if a large amount of the trade from the interior should take the

direction of Cochin the amount of station accommodation required at Beypoor would be proportionately less, as these matters will shortly have to be the subject of special observation. I merely here mention these to shew why the plans for Beypoor have not yet been submitted.

119. There have been executed on district 17 during the past year 3,31,157 cubic yard of earthwork, 4,504 cubic yards of masonry. The average number of workpeople employed monthly has been 36,583. The amount expended on construction during the year has been Rupees 1,40,989-7-4.

120. North West line. The trial surveys and sections of this line along the various routes most suitable for the construction of a line and for developing the resources of the country have now been completed. Sanction was obtained in the month of November 1857 to proceed with the working survey and section as far as Cuddapah, and since the beginning of the year on to Bellary. The trial survey and section of the portion between Bellary and the junction with the East Indian Peninsula Railway is now before Government.

121. The only Engineers at my disposal at the end of the year for this line were Messrs. Smart, Purdon and Going, and these I posted to the first and second divisions, since 5 others have arrived (including two supernumerary Engineers) and these have all been posted to this line.

122. I would earnestly impress upon the Board the desirableness of sending out the remaining Engineers required for this line applied for in my letter No. 309, dated 4th instant, immediately.

123. Having gone through the state and progress of the work on the several districts of the South West line. I may be expected to make a statement with reference to the probable time of opening it. I can only say that I look to the end of 1859, as the time when I hope to have the line open on the one side to Salem and on the other to Coimbatore. I must, however, beg to say that this supposes the occurrence of but few unforeseen difficulties, and further that prompt sanction will be given to any plans or arrangements, I may find it necessary to propose, and that I shall meet with hearty co-operation on the part of other heads of departments where concerned, as well as on that of my own staff, in carrying them out.

124. While hitherto I have had nothing to complain of in the latter particulars, it must be obvious that the discussions and explanations attendant on the obtaining of sanction to a very great number of our plans and proposals, whatever may have been their advantages, have tended to the reverse of expedition. I take for example the supply of Sleepers, in which I take for granted that a change will shortly be made, since otherwise there would be no possibility of predicting the completion of the portions of the line above referred to within 5 years; as another example I take the transport of permanent way materials where the proposal of the Traffic Manager was kept under consideration for a great length of time, delaying in the meantime, my arrangements.

125. The Government having at length determined that "the Chief Engineer must make his own arrangements" for the latter business, I have given Mr. Latham, Resident Engineer, terminal works, who is also in charge of the stores in this department, instructions to establish 100 bandies for this service, which with the assistance we shall obtain from contractors will I think be sufficient to keep the districts supplied.

126. The real hindrance to the completion of the 8th district, as of all the others up to the Cauvery, will be found to be the permanent way, and the rate at which we can convey the rails and chairs from Madras to the up-country terminus, and thence to the place where they are wanted, will be a consideration of paramount importance. I have no doubt however with the arrangements I am now making, of being able to distribute these over the line as far as the Cauvery in about 2 years, and if the supply of Sleepers on the middle districts should improve so as to render a quicker distribution necessary to keep up with them, it would not be difficult to meet it by a corresponding increase in our carrying establishment.

127. While on this point I may mention that it is on every account desirable to get the permanent way materials removed from Madras, where the exposure to the sea air subjects them to corrosion in a remarkable degree.

128. The scarcity of Engine drivers from sickness has been an obstacle to getting trains run for this purpose, but I am now in hopes of making a satisfactory arrangement.

129. As regards the supply of Sleepers however, although a good step has been taken in allowing Mr. Ross to cut them on the Railway Company's account, this step is very far from a sufficient one, and so long as the procuring of Sleepers is encumbered with the present forms and regulations, the supply will continue to be low and defective in comparison with what it might be, were these obstacles removed.

130. I must further be allowed to remark that however right and proper it may be as it unquestionably is for the controlling authorities to require explanations on all matters connected with the conduct of the works, the immense mass of these which I am continually called upon to furnish, many of them relating to proceedings dating from before my connection with them, does in fact very materially interfere with the amount of attention I am at liberty to bestow on current operations, and the planning of future ones, and I would again take the opportunity of respectfully stating to the Board that while doing my best to give every part of the business its due share of attention, my opinion is still the same as to the advantage which might be expected from the appointment of an Engineer to assist me in the general supervision of each of the two main lines.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

P.S.—In forwarding the above report I wish to observe that where the present tense is used it is not to be understood to apply to the date at the head of it, which is that of its despatch from my office, but to the period to which the report is brought down viz. the end of the past year.

I may add that since that time very fair progress has been made with the works amongst which I may particularly mention the bridge over the Cauvery, where the arrangements above described have been attended with great success.

I may be allowed also to mention the gratification lately afforded me by the terms in which the Officiating Consulting Engineer has been pleased to notice the exertions of the Resident and Assistant Engineers, and the more so that I feel that the notice so bestowed was well merited by these gentlemen.

(Signed) J. M. HEPPEL,

(True copy.)

Chief Engineer.

(Signed) N. B. ACWORTH,

Agent and Manager.

MADRAS RAILWAY, TRAFFIC MANAGER'S OFFICE,
15TH MAY 1858.

No. 86.

To N. B. ACWORTH, Esq.,

Agent and Manager, Madras Railway.

SIR,

1. I have the honor to submit to you the following report upon the Traffic and general working of the Traffic Department for the half year ending 31st December 1857, and in doing so shall have to repeat many of the observations made by my letter, No. 67, of the 10th November, when reporting for the information of the Board of Directors upon the traffic and working of the line during the four months from July to October, inclusive of the last half year.

2. *Staff.* The staff have continued to work in a satisfactory manner, and there has been almost a total absence of complaint of any kind against them.

3. *Rolling stock.* The rolling stock has been sufficient for the traffic of the line, and has been maintained in efficient working order by the Locomotive Department. I presume Mr. Wright will have reported to you upon its condition.

4. *Stations.* We continue to occupy the temporary station at Madras, which has sufficed for the requirements of the traffic, although doubtless the permanent station would, if completed, have enabled us to conduct the traffic at this important terminus with greater economy and convenience. The intermediate stations have been completed with the exception of the goods warehouses at Chinnamapet and Sholinghur, which however are in course of construction.

5. I regret to observe that the goods warehouse at Vellore has not been completed, and that I do not now apprehend we shall have possession of it for some time, from the slow progress made in its construction.

6. *Trains.* The trains have been run with regularity and with freedom from accident. From the opening of the line in July 1856 to the 30th November last distinct passenger and goods trains were run in accordance with the orders of Government. On the 30th November we were permitted to run mixed trains of passengers and goods with marked and decided success.

7. With reference to this subject I beg to quote from my letter No. 77, to your address, dated 28th January 1858, para. 96 as follows:—"From July to November 1857, the average number of passengers conveyed by the one passenger train each way daily was as follows (exclusive of soldiers.)"

	No.	Rs.	As.	P.
"Eastward to Madras per train...236.91	236.91	235	6	11.
"Westward to Vellore ,, ,, ...251.50	251.50	230	13	9

"The average number of passengers by the two trains each way daily for the month of December was as follows (exclusive of soldiers.)"

	No.	Rs.	As.	P.
"Eastward to Madras per train....275	275	302	12	4
"Westward to Vellore ,, ,,282	282	288	7	6

"It will be seen that there was an increase in number, conveyed and amount received in December as compared with the five preceeding months from July to November inclusive, as follows:—Eastward and Westward.

	No.	Rs.	As.	P.
"5 months average.....488.41	488.41	466	4	8
"December average.....556	556	591	3	10

"Being an average daily increase of... 67.59 124 15 2"

8. The average number of passengers of each class per train (exclusive of soldiers,) conveyed Eastward by the one train daily, viz. 6.30 A.M. from Vellore, from July to December inclusive, and the average number per train conveyed by the 6.30 A.M. and 3.0 P.M. respectively mixed trains during the month of December, was as follows:—

	First.	Second.	Third.	Total.	Amount.
July to November inclusive 6.30 A.M. train Eastward, during the month of December.....	1.6	6.9	228.3	236.8	235.6.0
6.30 A.M. train Eastward to Madras 3.30 P.M. train Westward do. } Mixed train.	1.25 .59	6.16 3.59	176.80 117.74	184.22 121.92	182.9.8 114.4.3

9. The average number of passengers of each class per train (exclusive of soldiers) conveyed Westward by the one train daily, viz. 3.0 P.M. from Madras from July to November inclusive,

and the average number per train conveyed by the 6.30 A.M. and 3.0 P.M. mixed trains during the month of December was as follows:—

	First.	Second.	Third.	Total.	Amount.
July to November inclusive, 3.0 P.M. train Westward.....	1.6	6.4	243.5	251.5	230.13.10
During the month of December 6.30 } Mixed A.M. train 3.0 P.M. train..... } trains.	70	4.40	144.14	149.2	143.15.3
	1.2	5.4	169.4	176.0	147.14.0

10. The large proportion of the passenger traffic conveyed by the additional trains shews that the change so judiciously sanctioned has been a great convenience to the public, whilst the increase in the receipts, in the month of December, as compared with any other month afford strong grounds for believing that my anticipations will be realized, and that the running of mixed trains will without increasing our expenditure be the means of securing a permanent increase to the receipts from passenger traffic.

11. As a most interesting and satisfactory feature connected with the running of mixed trains, I beg to quote the following (paras. 92 and 93 from my letter No. 77 of the 28th January last.)

"I have said that the mixed trains commenced running on the 30th November last. I find from the Locomotive Superintendent that the cost of running the trains from October to December inclusive were as stated below, during the two months October and November the trains run consisted of one Passenger and one goods train daily each way, the former at 20, the latter at 10 miles per hour. In the month of December two mixed trains one each way daily at 20 miles per hour, and one each way daily at 15 miles per hour were run."

"Cost of running trains in the Locomotive Department for the months of October, November, and December.

1857.	Load, No. of vehicles	Passenger train 20 miles per hour.	Load, No. of vehicles.	Goods train at 10 miles per hour.	
October.....	8.7	A. P. 7.11.17	17.67	A. P. 14.4.64	Locomotive cost per train mile.
November.....	9.	10.4.57	19.15	14.1.04	do. do.
	Load No. of vehicles.	Passenger and few goods 20 miles per hour	Load No. of vehicles.	Mixed train of Passenger and goods at 15 miles per hour.	
December.....	9.03	11.0.22	20.68	A. P. 14.5.49	do. do.

"I submit to you that our views with respect to the additional cost of running the mixed trains at 15 miles per hour instead of a goods train at 10 miles per hour have proved correct, and that Colonel Pears' views as impressed upon the Government from time to time have not been realized, you will not fail to perceive that the mixed trains throughout the month of December at 15 miles per hour with 20.68 vehicles cost only 0.15 of a pie per mile more than the average cost of the goods train at 10 miles per hour with only 17.67 vehicles, and that in the month of November the difference in cost was but very trifling indeed."

12. I may observe that the receipts from the mixed trains during the current half year as well as the cost of running them continues satisfactory, although as regards the former I believe that owing to the scarcity of produce and the high price of provisions the change has not taken place at a favorable time. I am however decidedly of opinion that in adopting the principle of mixed trains under existing circumstances a most judicious and proper course has been pursued, a course which will with the least possible expenditure afford the utmost amount of accommodation to the public, and eventually prove advantageous alike to the public and to the Company.

13. Passenger Traffic. The receipts from the three classes of passengers in the half year ending 31st December 1857, were as follows (exclusive of Soldiers.)

	First class.		Second class.		Third class.		Total.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
July.....	103	612 10 6	515	1,060 9 6	16,550	15,051 8 9	17,168	16,724 12 9
August.....	88	446 11 6	478	1,048 4 3	15,594	13,377 10 7	16,160	14,872 10 4
September.....	97	639 4 6	411	949 14 9	13,899	11,814 15 0	14,407	13,404 2 3
October.....	111	683 7 0	377	1,006 10 3	12,392	11,061 11 6	12,880	12,751 12 9
November.....	96	543 0 0	293	660 4 6	14,287	12,568 9 7	14,676	13,771 14 1
December.....	112	653 10 0	594	1,320 1 6	17,924	15,370 5 2	18,630	17,344 0 8

14. The Soldiers conveyed during the six months ending 31st December 1857, were as follows:—

	First class.		Second class.		Third class.		Total.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
July.....	...	...	19	72 2 3	973	1,639 14 4	992	1,712 0 7
August.....	...	...	14	31 4 3	919	1,143 12 0	933	1,175 0 3
September.....	...	...	24	68 13 0	870	1,002 5 4	894	1,071 2 4
October.....	...	...	2	6 18 6	369	616 11 0	371	622 8 6
November.....	...	...	42	105 12 9	1,510	1,957 11 4	1,552	2,063 8 1
December.....	4	25 8 0	67	190 9 6	1,978	2,493 13 8	2,049	2,709 15 2

15. The average receipt from Passenger Traffic per mensem for the six months ending 31st December 1857, as compared with the six months ending 30th June 1857, was as follows:—

	First class.		Second class.		Third class.		Total.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
6 months from January to June 1857.....	118	539 6 9	527	1016 7 6	14,508	11,010 15 1	15153	12,566 13 4
6 months from July to December 1857.....	101	596 7 3	445	1007 10 1	15,108	13,207 7 5	15654	14,811 8 9
Increase.....	...	57 0 6	...	...	600	2,196 8 4	501	2,244 11 5
Decrease.....	17	...	82	813 5	...	...	...	...

16. The average receipt per mensem for the corresponding half year ending 31st December 1856 and 1857 respectively has been as follows:—

	First class.		Second class.		Third class.		Total.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
6 months from July to December 1856..	65	145 648 1	3582	1014 14 10	11,468	8,963 0 1	12,195	10,626 0 2
6 months from July to December 1857..	81	101 595 7	3445	1007 10 1	15,108	13,207 7 5	15,654	14,811 8 9
Increase.....	...	...	...	...	3,640	4,244 7 4	3,469	4,185 8 7
Decrease.....	44	51 14 0	137	7 4 9	...	...	...	...

17. Shewing a receipt per mile open for passenger traffic, exclusive of soldiers as follows, per mensem.

	Miles open.	First class Amount.	Second class Amount.	Third class Amount.	Total Amount.
6 months from July to December 1856.....	65	9 15	6 15	9 9	137 11 4
4 months from January 1857, to April 1857....	65	7 1	11 15	8 15	14 0 176 15 7
2 months May and June.....	81	8 8	9 15	3 5	157 10 4
6 months from July to December 1857.....	81	7 5	10 12	7 0	163 0 10
					182 13 8

18. The average receipt from passengers per mile open from July 1856 to April 1857, inclusive (the line being open 65 miles to Arcot) was per mensem. Rs. A. P. 170 3 4

19. The average receipt from passengers per mile open from May to December 1857, inclusive (the line being open 81 miles to Vellore) was per mensem. 182 7 10

20. This shews that the passenger receipts have increased per mile to some extent from the opening to Vellore in May last, and as such is a satisfactory feature in this most important branch of our business.

21. The mileage of the three classes of passengers in the half year ending 31st December 1857 was as follows:—

	First class.	Second class.	Third class.
July... ..			
August... ..	59	44	43
September... ..	54	47	41
October... ..	75	48	38
November... ..	63	56	42
December.... ..	59	48	42
	57	46	40

22. The mileage of the three classes of Passengers in the half year ending 31st December 1856, and the half year ending 31st December 1857, (corresponding periods) was as follows:—

	Miles open.	First class.	Second class.	Third class.
Half year ending 31st December 1856.	65	48	37	36
Half year ending 31st December 1857.	81	61	48	41

23. This shews that there was an increase in the mileage of passengers in the half year ending 31st December 1857, when the line was open 81 miles, as compared with the corresponding half year of 1856, when the line was open only 65 miles, which I regard as being a satisfactory feature in this traffic.

24. I need scarcely observe that the fares charged during the half year ending 31st December 1857, were the same as ordered by the Government upon the opening of the line in July 1856. I have no doubt that the passenger receipts would have been higher and consequently more satisfactory under a different arrangement of fares. The great difference in the charge made for the third and second classes in particular has prevented the development of a second class traffic, whilst those who most probably would have travelled in first class carriages have become second class passengers from the fact of so few persons travelling in the latter.

25. As regards the excursion or festival traffic it is to be regretted that the proposal made to issue return tickets to Trivellore and back at a reduced rate was not sanctioned by Government as an experimental measure. I feel assured that it would have been a material step taken towards ascertaining the rate at which we could insure this large though uncertain traffic being transferred from the road to the Railway.

26. *Parcels.* The average receipts for parcels per mensem for the half year ending 31st December 1857, has been as follows (exclusive of treasure included in abstracts of parcels receipts) as compared with the average receipt per mensem of the two preceding half years.

	Miles open.	Receipt per mile open.			Amount.		
		Rs.	As.	P.	Rs.	As.	P.
Half year ending 31st December 1856.	65	1	10	3	106	12	0
Half year ending 30th June 1857.	...	...	...	...	...	...	...
January to April inclusive 4 months.	65	1	15	1	126	8	1
May and June inclusive 2 months.	81	2	1	7	170	3	6
Half year ending 31st December 1857.	81	1	13	7	149	11	0

27. I think that the receipts for parcels cannot be considered satisfactory. The rates at present charged are much too high and are in fact almost prohibitory. The want of arrangements for the collection and delivery of parcels has been a great impediment to this branch of our business.

28. *Horses, carriages and dogs.* The average receipt per mensem for the conveyance of horses, carriages and dogs during the half year ending 31st December 1857, as compared with the two preceding half years has been as follows:—

	Miles open.	Receipt per mile open.			Amount.			
		Rs.	A.	P.	Rs.	A.	P.	
Half year ending 31st December 1856.	65	5	4	7	343	10	8	Per mensem.
Half year ending 30th June 1857.	65	7	5	8	478	2	3	" "
4 months.	81	5	6	1	435	11	0	" "
2 months.	81	8	8	5	690	8	3	" "

29. The average receipt of Rs. 690-8-3, during the last half year has been exclusive of Artillery horses, &c., conveyed for the Government. It is satisfactory to observe that this traffic has increased considerably since the extension of the line to Vellore.

30. In the month of September we received Rs. 610-12-6, for the conveyance of a detachment of Horse Artillery for Government.

31. *Goods traffic.* The weight carried, and receipt from goods traffic (exclusive of materials for the Chief Engineers Department) during the half year ending 31st December 1857 have been as follows:—

	Weight.		Amount.						
	Maunds.	Tons.	Rs.	As.	P.	£.	s.	d.	
July.....	102,850	3,778	12,825	7	4	1,282	10	11	
August.....	103,074	3,786	12,415	2	11	1,241	10	4	
September.....	75,831	2,785	9,547	7	4	954	14	11	
October.....	67,625	2,484	8,614	3	6	861	8	5	
November.....	89,263	3,279	11,285	11	8	1,128	11	5	
December.....	99,853	3,668	12,034	2	10	1,203	8	4	
Total...	538,496	19,780	66,722	3	7	6,672	4	4	

32. Conveyed Eastward and Westward in the following proportions, (exclusive of Engineers materials.)

	Eastward.					Westward including salt.				
	Weight.		Amount.			Weight.		Amount.		
	Maunds.	Tons.	Rs.	As.	P.	Maunds.	Tons.	Rs.	As.	P.
July.....	82,182	3,019	9,847	12	2	20,668	759	2,977	11	2
August.....	78,462	2,882	9,302	9	1	24,612	904	3,112	9	10
September.....	54,546	2,004	6,660	0	7	21,285	782	2,887	6	9
October.....	49,524	1,819	5,994	6	11	18,101	665	2,619	12	9
November.....	59,154	2,173	6,567	8	3	30,108	1,106	4,718	3	5
December.....	69,004	2,535	7,743	10	7	30,818	1,133	4,290	8	3
Total.....	392,872	14,432	46,115	15	7	145,622	5,319	20,606	4	2

33. The quantity of salt carried during the half year ending 31st December 1857, included in the goods carried westward as above, was as follows:—

	Maunds.	Tons.	Amount.
July.....	12,542	461	1,406 0 11
August.....	14,823	544	1,646 10 11
September.....	12,081	444	1,301 10 10
October.....	10,439	385	1,141 9 6
November.....	16,463	605	1,806 4 3
December.....	17,576	646	1,909 13 2
Total.....	83,974	3,085	9,212 1 7

34. The weight carried, and receipt for goods during the three half years respectively has been as follows:—

	Weight		Amount.				
	Maunds.	Tons.	Rs.	A.	P.	£.	s. d.
Half year ending 31st December 1856.....	4,25,078	15,720	38,356	15	4	3,835	13 10 3
Half year ending 30th June 1857.....	3,26,683	12,071	39,967	14	10	3,996	15 10 1
Half year ending 31st December 1857.....	5,38,496	19,780	66,722	3	7	6,672	4 4

35. Shewing an average receipt per mensem, and per mile open per mensem, as follows:—

	Miles open.	Receipt per Mensem.					Receipt per mile open.				
		Rs.	A.	P.	£.	s. d.	Rs.	A.	P.	£.	s. d.
Half year ending 31st Dec. 1856.....	65	6,392	13	3	639	5 6	98	5	8	9 16	9
Half year ending 30th June 1857.....	...	...	...	...	...	...	...	...	...	...	...
January to April 4 months.....	65	5,601	12	4	560	3 6	86	2	2	8 15	4
May and June 2 months.....	81	8,780	6	9	878	0 10	108	6	4	10 16	9
Half year ending 31st Dec. 1857.....	81	11,120	5	11	1,112	0 8	137	4	7	13 14	7

36. The following statement shews the proportion of goods conveyed Eastward and Westward from October 1856 to December 1857, inclusive. The goods conveyed Westward includes salt but is exclusive of materials for the Engineers' department.

	Eastward.					Westward, Including salt but exclusive of Engineers materials				
	Maunds.	Tons.	Rs.	A.	P.	Maunds.	Tons.	Rs.	A.	P.
October 1856.....	1,15,813	4,254	9,337	2	0	5,495	202	935	6	4
November ".....	1,08,876	3,999	8,143	6	1	5,140	189	844	12	1
December ".....	71,338	2,620	5,505	13	0	5,885	216	1,032	9	2
January 1857.....	49,653	1,824	5,465	2	2	6,871	252	988	8	5
February ".....	33,686	1,237	4,025	3	9	10,174	374	1,211	15	4
March ".....	31,710	1,165	3,883	14	10	11,702	430	1,368	2	0
April ".....	33,581	1,233	4,169	10	2	10,229	376	1,294	8	7
May ".....	40,304	1,480	4,796	10	10	13,080	481	1,778	1	10
June ".....	70,766	2,599	8,613	9	8	14,925	523	2,372	7	3
July ".....	82,182	3,019	9,847	12	2	20,668	759	2,977	11	2
August ".....	78,462	2,882	9,302	9	1	24,612	904	3,112	9	10
September ".....	54,546	2,004	6,660	0	7	21,285	782	2,887	6	9
October ".....	49,524	1,819	5,994	6	11	18,101	665	2,619	12	9
November ".....	59,154	2,173	6,567	8	3	30,108	1,106	4,718	3	5
December ".....	69,004	2,535	7,743	10	7	30,848	1,133	4,290	8	8

37. The quantity of salt forwarded by Railway from October 1856 to December 1857 inclusive has been as follows:—

	Maunds.	Tons.	Amount.
October 1856	352	13	26 5 8
November ".....	113	4	7 13 0
December ".....	374	14	24 13 4
January 1857.....	2,859	105	272 0 9
February ".....	6,731	247	665 7 4
March ".....	7,335	269	725 1 6
April ".....	6,924	254	684 4 1
May ".....	6,975	256	761 10 7
June ".....	8,079	296	902 12 9
July ".....	12,542	461	1,406 0 11
August ".....	14,823	544	1,646 10 11
September ".....	12,081	444	1,301 10 10
October ".....	10,489	385	1,141 9 6
November ".....	16,463	605	1,806 4 3
December ".....	17,576	646	1,909 13 2

38. It will be observed that we carried a larger quantity of goods eastward in the month of October and November 1856, than we have carried in that direction in any subsequent month.

39. The great difficulty experienced by the merchants in obtaining bandies to deliver their goods at that time operated most seriously against the development of our goods traffic, and caused the merchants to forward by the road in preference to the Railway whenever they could procure bandies up-country.

40. If this Company had been permitted to collect and deliver goods as was long since suggested by this department, I have no hesitation whatever in giving my decided opinion that in each season of the year a steady increase in our goods traffic as compared with the corresponding periods would have been shewn, instead of this we have the unsatisfactory fact before us that whilst in October and November 1856, we conveyed over the Railway Tons 4,254 and as that whilst in October and November 1857, the average weight conveyed per mensem during the half year ending 31st Decem-

ber 1857, was only tons 2,405, and in the months of October and November 1857, only tons 1,819 and tons 2,173, the greatest weight carried in any month during the year 1857 being in July tons 3,019.

41. During my long connection with Railways it has never fallen to my lot to refer to a similar case, at the same time I may observe that I have never known an instance wherein the facilities so obviously required have been so long withheld.

42. Whilst however the goods traffic eastward has been unsatisfactory it is gratifying to be able to refer to the increase in the quantity of goods conveyed westward. In October 1856, only tons 202 of goods in that direction were conveyed whilst the weight carried in December 1857, was tons 133, having gradually month after month increased as shown in the above statement of goods traffic eastward and westward.

43. A reference to the Statement respecting the salt traffic will shew that the increase is due to that important article. Notwithstanding the delay in connecting the Railway by a branch line to the salt cottars, and the expence and inconvenience attending the use of gunny bags and haulage from the cottars to the Railway terminus, the salt trade has been developed to a considerable extent but by no means I am happy to observe to the extent to which it is capable of being increased, and I trust that measures will be taken to insure the facilities so long sought for by the officers of the Company being afforded.

44. It is worthy of especial notice that the salt traffic has gradually increased notwithstanding the low rates charged for its conveyance as back or return carriage by the bandies on the road.

45. The merchants sending salt by Railway have taken some pains to secure bandies for its cartage to the Railway, they have thus had an establishment for collection of their own. If they had neglected this important matter they would have found it difficult to insure salt being conveyed at all times to our terminus, and thus the salt trade might have been lost to the Railway. The success of our operations with respect to the salt trade are due to a great extent to the arrangements made by the merchants for the haulage in Madras. If we could have insured similar arrangements being made for the delivery of our goods (Eastward) we should have found the result equally satisfactory as regards that traffic.

46. Nearly the whole of the salt we have conveyed has been forwarded by two Firms they have known daily and beforehand how much they would forward and have made their bandy arrangements accordingly, but the merchants sending goods generally in small quantities over the Railway cannot be expected to pursue a plan which a dealer in large quantities of salt could do, hence whilst the salt merchants have been able to secure bandies for hauling their salt to the Railway, the consignees of goods (Eastward) have not been able to do so and this Company has hitherto not been permitted to supply the deficiency, and to this cause more than to any other is to be ascribed the increase in the salt traffic on the one hand with arrangements made for its collection, and the decrease in the weight of goods taken eastward without arrangements made for delivery on the other hand.

47. I beg leave to quote the following from my Report No. 67 dated 10th November 1857, as being applicable at the present time to our goods traffic.

Para 62. "I am however clearly of opinion that considering the very large traffic of the districts through which the Railway passes and with which it is connected, the traffic has been, and continues to be, comparatively small, but whilst it must be a matter of great regret that with such ample material for a large and flourishing business we have done so little, it must be a subject of congratulation that there are the means of vastly improving the Revenues of the Company whenever it shall please the Government to allow us to pursue those plans which will transfer the existing traffic of the roads to the Railway, and permit us to take an active interest in the developement of the resources of the country a course which the large capital embarked by this Company would seem to justify."

Para 63. "The amount of traffic passing along the roads is very large, and as it may be interesting to the Board to know to what extent goods are conveyed by road. I give the result of returns made to me weekly from a reliable source, checked by such means as I can bring to bear upon the subject."

"Goods traffic by road and Rail for November and December 1856 inclusive."

	By road.	By Rail.
"November 1856 tons	2,238	tons 4,222
"December „ „	1,976	4,214.2,839 7.061

"Goods traffic by Road and Rail during the half year ending 30th June 1857."

	By road.	By rail.
"January 1857 tons	1,270	tons 2,093
"February „ „	1,182	„ 1,624
"March „ „	1,399	„ 1,607
"April „ „	1,721	„ 1,622
"May „ „	2,486	„ 1,977
"June „ „	3,202.11,260	3,148.12,071

48. Goods traffic by road and rail during the half year ending 31st December 1857.

	By road.	By rail.
July 1857 tons	3,289	tons 3,778
August „ „	2,282	„ 3,786
September „ „	1,887	„ 2,785
October „ „	1,435	„ 2,484
November „ „	1,466	„ 3,279
December „ „	1,341.11,700	3,668.19,780

The total traffic by road and rail from November 1856 to December 1857 inclusive, would be as follows:—

	By Road.	By Rail.
Two months ending December 1856 Tons	4,214	Tons 7,061
Half year ending June 1857 „	11,260	„ 12,071
Half year ending December 1857 „	11,700	„ 19,780
	Tons 27,174	„ 38,919
Average per mensem	„ 1,941	„ 2,772 $\frac{6}{11}$

49. As stated in my letter No. 67, para 64. "If the road traffic as above be added, such as falls into the western road a few miles from Madras from Naggery and places to the North of the line by country roads, and the local traffic (none of which is included in the above) all of which should find its way by rail into Madras, we should find that there is a much larger traffic passing along the road than there is over the Railway. The whole of this traffic could be transferred from the road to the Railway if the facilities I have asked for, are afforded, and a little freedom allowed to the officers of the Company enabling them to make such arrangements as their experience convinces them will conduce to the developement of traffic and the well working of the Railway."

50. The 27,174 tons of goods by road were despatched from the undermentioned places for Madras in the undermentioned quantities during the 14 months from November 1856 to December 1857, inclusive.

Bangalore.....	Tons	3,729
Mysore, Ossoor, &c.....	"	276
Seringapatam.....	"	259
Palmanair.....	"	1,552
Chittoor.....	"	1,976
Arnee.....	"	495
Arcot.....	"	631
Wallajapett.....	"	1,110
Vellore.....	"	1,632
Privellum, Amboor, Palicondah, &c.....	"	979
Vaniembaddy.....	"	2,275
Tripatoor.....	"	1,641
Salem and places Westward.....	"	898
Cuddapah.....	"	2,060
Bellary.....	"	1,159
Kistnagherry.....	"	634
Sundry places.....	"	5,838

Total.....27,174

51. The impressment of bandies for the service of Government at Arcot and Vellore has exercised a most prejudicial effect upon our traffic. The injury done in that respect to our goods traffic can scarcely be over estimated.—The very great objection which bandy men have to being forced to convey Government stores and Soldiers baggage has prevented them from bringing goods to our stations, and I much fear that unless some means can be devised to obviate this most serious evil it will be almost impossible to induce any bandy owner to cart goods to the Railway stations, more particularly when it is known that troops are being moved or about to be moved. I beg to refer you upon this subject to my letter No. 81, to your address.

52. *Working expences.* Every means has been employed to keep the working expences in this department as low as possible. I am happy to say that the large expenditure hitherto incurred and adverted to in former reports in the item of grease has recently been very much reduced.

I have, &c.,

(Signed) H. A. FLETCHER,

Traffic Manager.

(True Copy.)

N. B. ACWORTH,

Agent and Manager.

MADRAS RAILWAY,
LOCOMOTIVE DEPARTMENT, ENGINEER'S OFFICE,
MADRAS, 4TH MAY 1858.

No. 59.

To N. B. ACWORTH, Esq.,

Agent and Manager, Madras Railway.

SIR,

I have the honor to acknowledge the receipt of your letter No. 15, dated the 2nd March 1858, calling upon me for a full report made up to 31st December 1857, upon the state of my Department and the work executed during the preceeding twelve months.

2. I append to this a statement marked A of Engines and Rolling stock. The engines had all been erected previous to the year 1857. Those that were not required for present use were partially stripped of their working gear and laid up at Perambore.

3. The statement of Rolling Stock shows the stock finished up to 31st December 1856, that finished up to 31st December 1857, the total stock finished and the stock in the course of construction at the close of the year 1857.

4. In my report dated the 7th November 1857, I explained in para. 9 under the head of "Construction of Rolling Stock" that I had purposely kept back the construction of vehicles and I gave my reasons for so doing, we have however done a great deal of general work during this year for other departments, and during the time that the Government were so much pressed in getting ready Military Stores for Bengal, being called upon by the Officers in charge of the Ordnance and Commissariat Departments for assistance, we undertook the construction of a number of platform carts and arm chests which we were enabled to complete with greater despatch than they could elsewhere have been done, in consequence of the facilities we have at our command in the machinery in our carriage building establishment.

5. Both in the Locomotive and carriage workshops considerable progress has been made by the men under training in the various trades connected with our work. I have endeavoured as far as possible to make up everything in our own shops that can be made to render them as independent as possible of external aid, and every endeavour has been made to bring into use as far as practicable the labour that is procurable in this country whether European, Eurasian or Native.

6. I forward you an abstract marked B which shows the working expenses from the opening of the Line. I have had this prepared in such a manner as to shew comparatively the expenditure on the different classes of trains during such periods as can be best taken for the purpose of comparison. First the passenger and goods trains are shown separately for the six months ending 31st December 1856. The Passenger trains are then shown for the 12 months ending 31st December 1857.

The goods trains for the eleven months ending 30th November 1857, and the mixed trains for the single month of December 1857, being the first month in which they were run.

7. The abstract for Locomotive Engines and tenders gives particulars in detail of the working of these respective trains during the periods taken under consideration. In it are shown the "miles run with trains" the "miles shunting" "driving wages" "cleaners and coke-men's wages" "coke and coal consumed in gross" and "average consumption per mile run" "cost of oil, firewood and petty stores" and "total cost of working". The "cost of repairs of engines and of tenders" both labour and material. The "cost of Superintendence and office expenses." The "total cost of working and repairs" and the "total cost" per mile run.

8. The abstract of "repairs of carriage and wagons" shows separately the cost of "labour" "material" "stores" and Superintendence on the respective classes of trains during the same periods as taken for the engines.

9. The summary is worked out from the abstract, and shows separately the "working or running expences" the cost of "repairs of Engines and Tenders" the cost of "repairs of vehicles" "Superintendence" "total cost" "cost per mile run" and average number of vehicles hauled.

10. Under the head "working" are shown the "miles run" the "total cost" and the average "cost per mile run."

11. Under the head "repairs of Engines and Tenders" the total cost and average cost per mile are also shown, and under the head "repairs of vehicles" the total cost of these repairs and their average cost per train mile run is shown. In this last average it must be borne in mind that this is per train mile, or per mile run with the whole of the vehicles, and not the average expense on each vehicle per mile.

12. I will first consider the expenses shown in the summary under the head "working."

13. *Passenger trains.* The difference in the working expenses is slightly in favor of the year 1857, there being an increase of about 12 per cent in the average load, and a decrease, about $1\frac{1}{2}$ per cent, in the expenditure per mile run.

14. *Goods trains.* There is a decrease in the expenditure per mile run in the year 1857 as compared with 1856 of 1 anna, or nearly 10 per cent, but there is also a decrease in the loads conveyed of about 14 per cent, greater in proportion than the decrease of expenditure. This is accounted for in the extra cost for watermen's wages necessitated by the number of watering stations required to be kept up for the supply of the tank engines, which engines were brought much more largely into use in 1857, as in other respects the working expenses are proportionately less in 1857 than in 1856.

15. *Mixed trains.* These trains show an increase of about 5 per cent in the average load and an increase of about 2 per cent in the expenditure per mile, as compared with the previous eleven months working of goods trains with the same classes of engines, the argument as regards expenses being slightly in favor of the mixed trains, but a single months working can scarcely be considered a test.

16. *Passenger trains.* The cost of repairs per mile run in the year 1857 amounts to fully double that of 1856. In the first half year the engines were entirely new and very little repairs were required to these engines, running as they usually did with light loads.

17. *Goods trains.* The cost of repairs per mile run is also higher in the year 1857 than the year 1856, though much less so in proportion than in the case of the passenger engines.

18. The mixed train engines have cost less for repairs per mile run than the goods trains in the year 1857 although working with heavier loads.

19. These do not appear to call for any particular remark. These repairs are so much dependent upon the nature of the goods carried, in them, if goods vehicles, and upon the treatment they receive whether passenger or goods, that it is difficult to fix a standard whereby to compare them. We have also been a good deal troubled with hot axles, and considerable expense has been incurred in replacing and refitting brasses. This evil is now remedied to a great extent by the substitution of an improved grease lately brought into use in the traffic department.

20. *Passenger Trains.* The cost of working passenger trains is higher in 1857 than in 1856 by about 10 per cent. There is however a proportionate increase in the loads conveyed, and the increase in expenditure as I have already shown is attributable to repairs which might reasonably be expected to be higher on the engines and stock on the latter period.

21. *Goods trains.* The cost of working goods trains though less in 1857 than in 1856, are somewhat heavier in the latter period in proportion with the average number of vehicles.

22. *Mixed Trains.* The cost of working mixed trains is favorable in proportion with the loads conveyed as compared with the goods trains either in 1857 or 1856.

23. I think the consumption of fuel will be found to compare favorably with most other Railways. We have however laboured under great disadvantage in having had a large proportion of very inferior coke, I mean that purchased at Madras. Had the whole of the coke been of the quality sent out by the Board of Directors I believe that our consumption of fuel would have been fully 10 per cent less than it has been during the past year.

24. We have latterly been burning coke manufactured in India. The coke is of good quality but of less strength and less lasting than it would probably have been, had we been able to have coked the coals immediately on their arrival in this country. I made an experiment two months ago by coking some coals (purchased in this country) as soon as landed. The out-turn from the ovens was good, and the coke which I afterwards tried on one of the engines was of excellent quality and gave very satisfactory results as regards the quantity consumed compared to the loads hauled.

25. I am however decidedly of opinion that we should not manufacture our own coke unless we should at any future time be enabled to procure coking coal in the country, in a place adjacent to the line.

26. I have already given the Board the reasons on which I base my opinion on this question. When the line is open through to the western coast we must always keep on hand a large stock of fuel, and coke is the least liable to deterioration, and therefore the most suitable fuel for keeping in stock as well as being, so far as my experience has shown, the fuel best adopted for Locomotive purposes.

General state of Engines. 27. The engines are all in good working order.

28. *Boilers and Fireboxes.* As yet there have been no heavy repairs required, the boxes and boilers seem to be standing well and as yet no patching has been required.

29. *Tubes.* Hitherto the tubes have stood well and we have had scarcely an instance of a Tube failing.

30. *Wheels.* The wheels are many of them showing signs of wear and a few pairs have had to be replaced. They have generally worn well and the state of them generally corresponds with the mileage they have performed.

31. The Rolling Stock is in good working order and considering the climate and the exposure to which it has been subject from want of shelter, I consider that it is doing well.

32. We are still in our temporary works at Royapooram the buildings at Perambore being still unfinished, I am in hopes that they will be quite ready for us in the year 1859, and that we shall be able to get into the machinery shop and bring steam power into use for driving our machinery before the close of this year. It is very important that we should get into these buildings as soon as possible, we shall then be able to turn out work at much less cost and with much greater rapidity than we can do with our present very insufficient arrangements and shop room, and it is extremely desirable that these works should be available before any great extension of the line takes place or we shall be unable to keep pace with the requirements of the line.

33. *Locomotive Engines.* In November last I left Madras for Beypore and the two engines per "Leopold 1st" were safely landed in December. One of them has since been conveyed to Ponany to be taken up the river to Beypore and Western coast.

Wattepollium as soon as there is sufficient water in the river where it is to be employed ballasting and leading material on the 5th division of the Railway. The other engine has been erected at Beypore and is ready for use whenever the Engineering department may require it. I have not yet sent Engine drivers over to the other coast as the Resident Engineer at Beypore informs me that he will not require the Engine till after the monsoon.

34. I have commenced wagon building at Beypore and expect to have constructed before the close of monsoon the whole of the stock required by the Engineer for that division of the line.

35. Preparations are also being made at Paulghaut for the construction of a supply of rolling stock for that division, and arrangements have been made to move the men now in charge of the construction of stock at Beypore on to Paulghaut as soon as possible, to supply the requirements of the Resident Engineer of that division.

36. The conduct of the men generally has been very satisfactory.
I have, &c.,

(Signed) W. B. WRIGHT.

(True Copy.)

N. B. ACWORTH,

Agent and Manager.

MADRAS RAILWAY.
LOCOMOTIVE AND CARRIAGE DEPARTMENT.

Statement of Rolling stock finished up to 31st December 1856, and that constructed in the year 1857, and stock in the course of construction up to 31st December 1857.

Engines.	Erected up to 31st December 1857.	In the course of erection.				Remarks.
PASSENGER LOCOMOTIVES.						
Tender engines Nos. 1 and 2	2					
Tank do. Nos. 7-8-9-10-11-12-13-14-15 and 16.	10					
GOODS LOCOMOTIVES.						
Tender engines Nos. 3 and 4	2					
Tank do. Nos. 5-6-17-18-19-20-21 and 22.	8					
Rolling Stock.						
	Finished up to 31st December 1856.	Finished up to 31st December 1857.	Total Stock finished.	In the course of construction up to 31st December 1857.	Remarks.	
1st Class English carriage... ..	3	...	3	...		
Composite do.	8	...	8	...		
2nd class do.	4	...	4	...		
3rd do. do.	21	2	23	17		
Ballast waggons.	60	...	60	32		
Open goods do.	90	10	100	...		
Carriage Trucks.	4	...	4	...		
Coke waggons.	20	10	30	20		
Hopper do.	5	...	5	...		
Cattle do.	10	20	30	...		
Covered goods waggons... ..	50	...	50	18		
Passanger break vans... ..	3	2	5	...		
Goods do.	6	3	9	...		
Horse boxes.	5	...	5	...		
Platform Trucks.	20	...	20	...		
Timber do.	10	...	10	...		
Gun Powder van.	1	...	1	...		
Total... ..	320	47	367	87		

(True Copy.)

(Signed) W. B. WRIGHT,

Locomotive Superintendent.

N. B. ACWORTH,

Agent and Manager.

Madras, May 1858.

in the month of July 1856 to December 1857.

Repairs.		Tenders.		Total cost of Repairs.	Proportion of Supts. Clerks and other Servants' wages and Office Expenses.	Total cost of working and repairs.	Total cost per mile.
Engine.							
Materials.	Wages.	Materials.	Wages.				
10 536 1 10 692 10	3 4 6 8	2 1 240	6 1 259 15	13 063 3 4	8 195		
3 845 4 11 1 421 15 4	2 6 10 2 15 7	2 272 10	8 1 352 13	15 208 10 2	15 513		
10 2 584 2 4 3 897 9 8	6 481 11 6 2 807 7 8	33 806	8 11 50				
2 900 15	5 163 6 1	8 064 5 1	3 419 8 8	43 496 8 9	14 598		
4 298 15 8 463 2	762 1 8 271 1 10	4 858 10 10	13 10 26				

Summary.

Repairs of engines and tenders.		Repairs of vehicles.		Superintendence.	Total cost.	Cost per mile.	Average No. of vehicles.
Cost.	Cost per Mile.	Cost.	Cost per Mile.				
7 21 1 240	6 9 30	744 9 3	5 58	1 346 2 8	13 894	8 8 18	7 78
3 02 2 272 10 8	2 3 65	1 094 7 7	1 31	1 511 4 9	16 461 9 3	8 33	22 50
3 96 6 481 11 6	1 8 61	1 771 3 9	5 63	3 026 3 6	35 795 15 7	9 5 82	8 78
8 05 8 064 5 1	2 8 25	2 193 3 4	8 77	3 709 13 10	45 980 1 3	15 3 92	19 63
10 90 762 1 8	2 2 08	189 14 1	6 50	292 8 1	5 069 15 1	14 5 49	20 68

(Signed) W. B. WRIGHT,

Manager.

Locomotive Superintendent.

MADRAS RAILWAY, ACCOUNTANT'S OFFICE,
4TH MAY 1858.

No. 158.

To N. B. ACWORTH, Esq.,

Agent and Manager.

SIR,

In accordance with the instructions conveyed in your letter No. 1 of the 1st March, I have now the honor to forward to you a report of the progress of the Department under my charge for the year 1857.

Capital accounts.

The capital accounts, I regret to say, are not in so forward a state as could be desired, arising from the alterations which it has been found necessary to make in our construction accounts from August to December 1857. They have received the sanction of Government up to the 31st July only, and consequently, I have been unable to forward for the information of the Board of Directors, our journal entries to a later date than that month.

The delay is mainly attributable to the questions which have been raised as to the propriety of charging certain sums to revenue which had been charged to capital.

Much inconvenience has been, and no doubt will continue to be experienced as we proceed with regard to these charges, and were so many of them are of an arbitrary character, it will be foreseen that differences of opinion must frequently arise upon a subject on which the best authorities in Railway management have not been able to agree.

Had some such plan as that suggested by the late Mr Rendell been adopted, it would not only have saved much time, and rendered unnecessary a large amount of correspondence, but would also have removed the difficulties which must be constantly recurring in allocating the expenditure in capital or Revenue. An inevitable consequence, moreover, of the present system is, that this fertile subject for discussion will continue to be the cause of much dissatisfaction, as well as of delay in the rendering and passing of our accounts.

Apart, however, from all other considerations, the simplicity of the mode suggested for keeping the accounts of a large undertaking like the Madras Railway, where expenditure both on our Capital and Revenue accounts will be going on at the same time for a considerable period, on those parts of the line open for traffic, and will be so intimately blended one with the other as to be separable only by an arbitrary arrangement, is of itself a strong recommendation for the adoption of the plan suggested by the late Consulting Engineer of the Company.

I bring the subject prominently to your notice in anticipation of any enquiries which it is to be expected will follow with regard to the arrears which are accruing, as well as with the view of pointing out the difficulties that must always attend the present system of attempting to divide with accuracy, our expenditure on account of capital from that on account of Revenue.

I am glad to be able to report that the capital accounts in other respects are somewhat more forward than they have been for a considerable period; but I find that in consequence of the distance of some of our districts from Head Quarters being so great, we are still unable to forward our construction accounts for sanction under two months from a given date.

Store and workshop accounts.

The store and workshop accounts have been rendered by all the Departments up to the 31st December 1856, and are now under examination, within the last week those also for the half year ending June 1857, have been rendered by the Locomotive Superintendent and the general Store-keeper. As I shall have occasion to report to you fully hereafter, upon this subject, I shall for the present only observe that the general preparation of the accounts by all Departments is of a very satisfactory character, and it is due to those engaged upon them to say that every effort is being used to bring up the arrears which have accumulated. It is probable that the whole of these returns will be rendered in the course of the present year.

Revenue accounts.

Our Revenue accounts generally may be said to be up to date.

The journal entries have been forwarded to the Board up to the 31st December 1857, and I am now in a position to forward these transcripts monthly, should the Board be of opinion that any advantage will result therefrom.

In the preparation of these accounts for the year 1857, the home expenditure of the several Departments was included, but in conformity with the instructions received from the Board, the practice has now been discontinued, and from the commencement of the year 1858, the accounts have been prepared without these charges.

The current work in the Audit and in the Statistical Departments of my office is kept up regularly, our traffic returns and statistical information being forwarded weekly.

There was some delay in transmitting a part of our Revenue accounts to England during the end of the year owing to the inexperience of those engaged in the permanent way Department, in separating the charges in their monthly expenditure on account of capital from those on account of Revenue, much has been done to remove the difficulties that have heretofore stood in the way of accomplishing this with dispatch at the end of each month, but I much doubt whether any system can be devised by which the expenses of this Department can be so separated as to give perfect satisfaction in the distribution of its charges between the two accounts.

Staff.

Mr. Peele my deputy arrived in India in the month of December but in consequence of his having succeeded Mr. Underdown as chief clerk and cashier in the month of February I had only the temporary benefit of his services.

There was an increase in the number of hands engaged on my establishment during the past year as compared with the year 1856, principally in consequence of an increased amount of work having been thrown upon it.

It affords me pleasure to state that the heads of the several offices (Accountant, Audit and Statistical) into which this department is divided, and their subordinates continue to perform their duties in an efficient and satisfactory manner.

Annual Statements.

I have the honor to forward herewith the usual annual statements, to these I have added on the present occasion, other returns which will be found to contain much useful and interesting information. If approved, I propose to continue to furnish similar statements to accompany my Annual Report so long as any benefit may be derivable from the information which they may contain.

No. 1 is the usual abstract statement of progress in construction and surveying on each district for the year 1857.

No. 2 is a statement shewing the entire construction in each year from the commencement. It will be seen from this statement under the head of.

Earthwork.

That a larger quantity has been performed during the past year than in any of the preceding years being 73, 63, 710, cubic yards, equivalent to 38 per cent of the gross quantity executed.

Brickwork and Masonry including Station.

That the gross amount of work done is 2,71,632 cubic yards, of which 1,02,359 cubic yards were completed during the year, this is equivalent to about 38 per cent of the whole, and a larger quantity than has been accomplished in the same time before.

Permanent Way.

That 113 miles 83 yards have been laid, of which 1 mile 778 yards is on the Western coast. There has been less progress during the past year than in any of the preceding years, owing it is said to the difficulty experienced in procuring bandies to deliver the materials in the several districts.

Ballasting.

That 521,593 cubic yards were spread during the year, being about one half of the whole quantity as yet done.

Fencing permanent and temporary.

That 10,500,33 lineal yards or nearly 60 300 miles have been fenced.

No. 3 is the usual statement of receipts and expenditure on capital account under its several heads and districts from the commencement up to the 31st December 1857. It shews that Rs. 130,57,571-8-11 have been received and Rs. 120,60,858-7-8 expended.

No. 4 is an abstract statement of the above distributed over departments and the districts of the lines, (South Western and North Western.) It shews the same results as No. 3 in an elaborate form.

No. 5 is the usual statement of sleepers purchased during the year—shewing the number of each class and the cost of the whole.

No. 6 is a statement exhibiting the number of sleepers purchased in each year from the commencement. From this return it will be seen that 128,926 sleepers equal to the requirements of about 73 miles of Railway were delivered and paid for in the year 1857; that the total number delivered up to 31st December at 1,750 sleepers per mile is equal to the requirements of about 304 miles, that the average price per sleeper has gradually diminished

from 1853-4 when it was Rs.	3	5	11
to 1855.....	3	1	9
„ 1856.....	2	11	4
„ 1857.....	2	4	3

the average cost during the whole period from 1852 to 1857 being Rupees 2-11-10 per sleeper.

No. 7 although not a statement properly belonging to the year 1857 has been prepared with a view to show the progress made in the delivery of sleepers during the first three months of the present year, it will I think remove much of the anxiety which has been felt on this account as it will be observed that at our present rate of receipts, not taking into account the more effectual measures which are now in contemplation for insuring a regular supply, we shall have sleepers sufficient to lay 120 additional miles of Railway by the end of the present year, making in all a quantity equivalent to the requirements of about 320 miles allowing a wide margin for sidings and contingencies. The average cost per sleeper during these three months has slightly increased being Rupees 2-5-11 each.

I stated in my report for the year 1856 that an annual return of receipts and expenditure on Revenue account would in future be added to the other returns. It is now enclosed and marked.

No. 8, it shows that our gross receipts from every source of traffic during the year was Rs. 3,58,102-9-8 and the expenditure amounts to Rs. 2,28,934-6-8 or 63-93 per cent of the receipts. It must however be borne in mind that the maintenance of the permanent way for the first half of the year was paid for out of Capital.

No. 9 is a comparative statement of our traffic receipts and of our expenditure, prepared quarterly from the opening of the line for traffic up to the 21st March 1858. The receipts for the several quarters may be said to indicate a steady increase, for although there is a falling off in the last two quarters exhibited in this return as compared with the September quarter, immediately preceding them, yet upon instituting a comparison between them and the corresponding periods of the previous year the improvement is a marked one. The receipts per mile open for the several quarters being Rs. 872-1-3 for the quarter ending September 1856.

1,096	7	December	„
1,084	9	March.....	1857
1,136	2	June.....	„
1,261	2	September.	„
1,227	12	December..	„
1,182	12	March.....	1858

and as in England so it is believed it will be found in this country, that the September quarter will have the largest amount of traffic.

For about one half of the whole period that the line has been open viz., from the 1st July 1856, to the 7th May 1857, 65 miles of Railway were in operation, during the other viz., from 7th May 1857, to 31st March 1858, 81 miles. Dividing then the traffic of the whole period in this way, we find that the receipts in the first period amounted to Rupees 2,41,360-5-11 or Rupees 3,713-3-9 per mile, and in the latter to Rupees 3,40,407-8-7 or Rupees 4,202-9-0 per mile.

If we divide the expenditure in like manner we find that in the one case it was Rupees 909-11-1, or Rupees 1,875-8-6 per mile, in the other exclusive of the expences in the maintainance of the permanent way, it was Rupees 1,56,658-3-6, or Rupees 1,934-0-10 per mile. Thus whilst the receipts of the latter period over the former have increased upwards of 13 per cent per mile, the expenditure on the other hand has increased only at the rate of about 3 per cent per mile.

It will also be seen from this return, that the expenditure in the maintainance of the permanent way for the quarter ending March 1858, is very much in excess of the two previous quarters, but as it includes a large proportion of the expenditure incurred in those quarters, the average of the three will give a fair estimate of the amount chargeable against each quarter.

The gross expenditure under this head for the 9 months during which Revenue has borne the charge, is Rupees 1,19,823-0-10, averaging Rupees 13,313-10-9 per month, but it is expected that this is a higher average than future monthly abstracts will shew.

No. 10 is a statement prepared quarterly from 1st July 1856 to 31st March 1858 in the same form as statement No. 9, to exhibit the earnings per train, and per train mile, passenger and goods during those several periods. Its object is to see the effect produced on the two classes of traffic by an increased mileage, as well as by the alteration in the system of running the trains.

In the 1st case it will be seen from the following table, that the receipts increase in a greater ratio than the mileage both in coaching and goods traffic.

	1856 Qr. Endg. September. 65	1856 Qr. Endg. December. 65	1857 Qr. Endg. March. 65	1857 Qr. Endg. June. 81	1857 Qr. Endg. September. 81	1857 Qr. Endg. December. 81	1858 Qr. Endg. March. 81
	Miles.	Miles.	Miles.	Miles. from 7th May	Miles.	Miles.	Miles.
Ratio of mileage.	1-00	1-00	1-00	1-16	1-25	1-25	1-25
of Coaching Traffic.	1-00	1-00	1-17	1-30	1-53	1-56	1-51
of Goods Traffic.	1-00	1-76	1-38	1-13	2-31	2-12	2-02
of gross Traffic.	1-00	1-25	1-24	1-51	1-81	1-75	1-69

The coaching traffic shews a progressive and steady advance, whilst the goods traffic as was fully expected exhibits a more rapid but irregular increase, the fluctuations being accounted for by the seasons.

It may here be stated incidentally that a certain amount of sympathy is found to exist between the two descriptions of traffic, an increased amount of goods carrying with it some amount of passenger traffic, although this fact is not quite apparent from the above table.

The immediate effect produced by the introduction of mixed trains to be seen from this return is in the diversion of a large proportion of the passenger traffic from the ordinary train, but the improvement in the passenger traffic that has arisen out of the change not appearing, in consequence of the the coaching receipts of the December quarter embracing a large sum for the conveyance of soldiers and of specie which those of the march quarter do not, a return has been prepared to show what the result has been.

No. 11 is the return referred to, and it will be observed that the number of passengers conveyed during that 4 months immediately preceding the running of mixed trains was 57,659 against 71,561 conveyed for a like period, since the introduction of those trains the average number of miles travelled by each passenger in the former case being 42-23, in the latter 39-89. The inference to be drawn then from these figures is that a new traffic has been created by the facilities now afforded for enabling persons to proceed to any place along the line and return the same day.

It will be observed that the number of persons travelling in the several periods shewn upon this return was.

Eastward.

	4 Months ending March 1856.	4 Months ending November 1857.	4 Months ending March 1858.
Passenger.....	27,028	27,717	22,311
Mixed.....	...	52	12,375
Total.....	27,028	27,769	34,686
Westward.			
Passenger.....	30,315	29,807	24,165
Mixed.....	...	83	16,759
Total.....	30,315	29,890	36,925
	57,343	57,659	71,561

No. 12 shews the flow of the traffic passengers and goods, eastward and westward throughout the year. From which it appears that there were 87,908 travelling eastward yielding a revenue of Rs. 81,475-13-5, and paying an average fare of Rs. 0-14-10, and 95,621 travelled yielding a Revenue of Rs. 81,894-14-8, and paying an average fare of Rs. 0-13-8.

The goods' statement exhibits a total weight of maunds 4,72,543, carried west, bringing a Revenue of Rs. 59,726-1-4 or Rs. 0-2-0, 26 per maund, whilst the traffic eastward amounted to maunds 6,20,736-1-6 producing Rs. 89,497-10-11 or Rs. 0-1-6 66 per maund.

The bulk of the traffic west consists of Railway materials, salt, &c., that east of the staple productions of the country.

No. 13 is an analysis of the Locomotive expences throughout the year, shewing the mileage performed both with passengers and with goods trains, and the relative consumption of fuel by the two classes of trains. The total cost of running per mile is also given on the productive mileage, the total cost of Locomotive power per mile is per passenger

	Rs.	As.	P.
Train.....	0	9	5 10
Per goods train.....	1	0	0 36

The total number of passenger trains which ran during the year was 774, the average composition of each train and the mileage performed being as follows:—

No. of engines.	No. of vehicles.	No. of passengers.
1-015	9-748	254
Average mileage of each train.	Average mileage of each vehicles.	Average mileage of each passenger.
74	67	41

The total number of goods trains which ran during the same period was 644, the average composition of each train being

No. of engines.	No. of vehicles.	Weight of goods in maunds.	Equivalent in tons to.
1-051	2-8231	2-163	79-53
Average mileage of each train.	Average mileage of each vehicle.	Average mileage of each maund.	
75	52	55	

The largest number of vehicles by any one train, was passengers 31, goods 72. The minimum No. of vehicles by any one train, was passengers 6, goods 7.

No. 14 exhibits the changes made in the European staff in India during the year 1857 in consequence of retirements, dismissals, and deaths, or from promotions and newly made appointments. The number employed on the 31st December 1856, of all grades was 73, of these, 8 retired, 5 were dismissed, 1 died, and 6 were promoted to a higher grade, on the other hand, 5 were appointed in succession to vacancies, 26 were newly appointed, and 6 were promoted from a lower grade, giving a total of 90 officers and servants appointed from England on the Indian staff on the 31st December 1857.

Before concluding this report, I have to observe that since the earlier part of it was fair copied the construction accounts for the month of August last, have been passed, and I hope to be able to forward to you the transcript of your journal entries for that month in time for the next mail.

I have, &c., (Signed) FITZGERALD CHURCH, Chief Accountant.
(A true copy.) N. B. ACWORTH, Agent and Manager.

P. S.—Upon your suggestion, I beg to enclose a classification of the passenger and goods traffic for the year 1857, dividing the traffic Eastward and Westward.

MADRAS RAILWAY,
GENERAL STORES DEPARTMENT,
26TH APRIL 1858.

To N. B. ACWORTH, Esq.,

Agent and Manager.

DEAR SIR,

In compliance with your request I beg to hand you the following report on general stores for the year 1857.

The number of vessels arrived in India during that period is 34, viz., 29 to Madras, and 5 to Beypoor, and the cost of the stores received amounts to Co's. Rupees 11,54,042-1-8 as enumerated below.

Description.	Received in Madras.	Received at Beypoor.	Total.
Office furniture			
Tools...	1,312 5 5		1,312 5 5
Materials	30,395 2 6	9,619 1 1	40,014 2 7
Miscellaneous	1,06,821 10 1	1,02,183 14 10	2,09,005 8 11
Stationery	469 4 6	891 5 1	1,360 9 7
Surveying instruments	13,106 11		13,106 11
Permanent way materials...	6,541 6 9		6,541 6 9
Rolling stock...	3,22,746 12 9	4,97,762 2 11	8,20,508 15 8
Machinery	1,473 8 3		1,473 8 3
Engines	18,521 15 9	4,411 15	22,933 14 9
Telegraph stores	12,363 14 2		12,363 14 2
	25,114 7		25,114 7
Company's Rupees...	5,38,866 11 9	6,15,175 5 11	11,54,042 1 8

The above stores include besides cost in England, the following expenses incurred in India viz.

	At Madras.	At Beypoor.	Total.
Government duty...	17,374 5 10	20,264 6 7	37,638 12 5
Boat hire...	5,826	3,396 9	9,222 9
Cooly hire	2,950 11 10	1,792 10 9	4,743 6 7
Company's Rupees...	26,151 1 8	25,453 10 4	51,604 12

The vessels which have cleared from the beginning of this year are, up to the end of March

The "Trafalgar" at Madras cost of shipment with charges Rs.	68,514 4 5
" Leopold 1st at Beypore	2,04,751 10 11
Amounting to Company's Rupees...	2,73,265 15 4

The "Warren Hastings" has already completed her landing, and the "Winterthur" now in the roads is the only vessel discharging.

The expenditure on stores in India from January to December 1857 is as follows:-	
1,28,926 Country Sleepers.....	2,92,208 13 5
Tons. Feet.	
10,367 " 41 1/2 Teak timber.....	5,85,782 4 10
Materials, tools, miscellaneous stores and expenses.....	7,07,306 13 9
Government duty, boat hire, and expended on stores received from England.	51,604 12
Company's Rupees.....	16,369,908 7 1

I beg to hand you for the information of the Board a list of surveying instruments in store, and in use in the Engineering Department up to December 1857, found servicable, viz.

	In use.	In store.
Barometers in case	5	...
" Aneroid.	1	...
Boxes colour...	38	22
Chains and arrows 100 Feet	10	...
" " 66 "	46	...
" " 60 "	2	...
Chains and arrows 50 "	1	...
" Links	3	...
Cuarves-Boxes...	4	...
" Radii	20	4
Compasses Beam	1	0
" Prismatic in case.	14	0
" Proportional.	3	0
Instruments Mathematical in Mahogany cases...	80	47
" " in fish skin cases.	49	46
Levels	34	0
Perambulators.	0	3
Protractors Circular.	12	1
" Ivory	4	0
Photographic Apparatus...	1	0
Rules parallel brass...	7	0
" " Wooden...	44	10
Sextants box...	2	0
Scales boxwood...	126	30
" Offset	8	0
" Ivory Plotting and offsets in case..	2	0
Sextants pocket in case	4	0
Staves levelling.	50	0
Squares T...	36	45
" Sets..	8	0
Straight edges...	40	209
Squares..	23	0
Thermometers..	15	18
Telescopes portable in case	6	0
Theodelites..	28	0
Templates wooden curve	2	0

The annexed is a general abstract of the stores received and issued at Madras and at Beypoor from January to June 1857, to the several Departments, showing the value of stock in both places up to that date.

Considering the past arrears of the store accounts when I took charge of the Department in February 1857, I beg to say that a satisfactory progress has since been made in closing the two half yearly returns due up to December 1856, which have already been sent forward, that for June 1857 will be placed in your hands in a week from this date, and the returns for December 1857, closing the full year, will be rendered as speedily as possible. No exertions will be spared to bring the accounts into such a state as to enable us to close each return regularly within two months after the expiration of every half year, and I shall not rest satisfied until this is accomplished, in accordance with the desire expressed by the Board and yourself.

I have, &c.,

(Signed) J. LONGHURST, General Storekeeper.

(True copy.)

N. B. ACWORTH, Agent and Manager.

Statement shewing the value of stores

At Ma

Description.		Stock on hand 1st January 1857.		Value of stores received.								Cost of					
				Received from England		Purchased in India.		Received from Engineering workshops.		Received from Locomotive workshops.			Manufactures General stores Department.				
Office furniture.....	6,595	15	3	1,312	5	5	992	2	3,549	2	6	884	10	3	...	...	19
Tools.....	32,310	13	7	3,539	...	4	27,436	5	6	57,508	...	10	544	9	...	...	261
Materials.....	1,91,424	15	2	25,110	1	...	7,17,086	3	11	405	8	9	18,920	11	11	...	6,267
Miscellaneous.....	29,263	6	11	280	7	11	5,666	6	10	6,990	5	11	1,230	4	8	...	50
Stationery.....	39,456	13	5	7,943	3	2	22,464	1	8	17	13	6	...	...	...	6,361	256
Surveying Instruments..	2,950	11	6	3,479	4	6	3,090	4	...	75	13	2	...	...	...	...	55
Permanent way materials	28,50,624	7	2	2,55,909	12	9	1,35,079	2	6	4,681	1	8	...	...	...	...	2,161
Rolling stock.....	813	8	6	1,473	8	3	...	...	...	56,712	13	7	27	12	1	...	12
Machinery.....	18,897	15	1	12,007	3	3	202	...	...	3,045	12	5	...	...	...	...	103
Engines.....	873	4	9	2,103	3	5	...	...	...	772	4	2	...	...	...	...	17
Tents.....	240	9	...	...	...	...	928	14	...	33	9	7	...	...	...	...	7
Live stock.....	302	2	1	...	...	...	...	...	...	9,000	5	8	...	...	...	...	...
Medical stores.....	...	...	...	...	...	...	1,431	5	11	...	...	...	...	...	...	...	12
Telegraph stores.....	...	...	...	25,114	...	7	...	...	...	...	...	...	...	...	...	...	212
Company's Rupees..	31,79,754	10	5	3,38,272	10	7	9,14,436	10	6	1,42,792	11	9	21,627	15	11	6,361	9,438
Office furniture.....	...	...	...	...	...	...	44	...	...	...	...	...	...	...	...	...	At Bey
Tools.....	2,623	14	8	...	...	...	783	5	5	...	...	...	...	...	...	...	5
Materials.....	9,096	9	...	17,374	11	1	1,223	1	2	...	...	...	...	...	...	...	135
Miscellaneous.....	17	14	9	...	...	...	115	...	...	...	...	...	...	...	...	...	...
Stationery.....	122	8	11	...	...	...	413	10	...	...	...	...	...	...	...	...	3
Permanent way materials	12,81,139	14	...	4,61,864	5	8	5,498	3	...	...	...	...	...	...	...	...	3,414
Machinery.....	3,137	15	11	...	...	...	1,105	...	...	...	...	...	...	...	...	...	8
Dead stock.....	2,987	12	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Company's Rupees..	13,00,076	9	4	4,79,239	...	9	9,182	3	7	...	...	...	...	...	...	...	3,568
Madras Railway, General stores																	

Madras Railway,
General stores Department,
24th April 1858.

(True Copy.)

N. B. ACWORTH,

Agent and Manager.

received and issued from January 1857.

dras.

		Value of Stores issued.																							
working.	Total.			General Stores Department.			Traffic Department.			Locomotive Department.			General offices.			Engineers Department.			Total.			Stock on hand 30th June 1857.			
7	2	13,353	8	9	1,174	14	3	763	2	7	875	4	4	107	7	10	3,598	4	4	6,519	1	4	6,83.	7	5
8	10	1,21,600	4	1	15	...	208	2	5	2,464	14	2	...	...	...	...	71,675	12	7	74,350	12	2	47,24	7	11
13	6	9,59,216	14	3	...	...	4,388	11	1	2,44,562	9	2	17	5	11	4,69,873	8	11	6,98,842	3	1	2,60,373	1	2	
3	6	48,501	3	9	36	4	11	1,576	5	3	1,358	10	1	93	1	5	9,215	4	11	12,279	10	7	31,221	9	2
12	6	76,500	1	6	2,171	1	7	1,217	6	5	829	7	1	1,777	13	2	12,808	3	7	18,803	13	10	57,09	1	8
7	7	9,651	8	9	6	3	3	119	8	4	58	4	1	57	...	1	3,543	3	11	3,784	3	8	5,867	5	1
4	6	32,48,455	12	7	954	4	7	...	...	...	...	...	...	...	...	...	4,25,899	13	10	4,26,854	2	5	28,21,601	10	26
7	2	59,040	1	7	...	...	...	...	...	...	1,513	11	6	...	...	...	56,712	13	7	58,226	9	1	813	8	6
9	10	34,316	8	7	...	...	...	399	14	5	11,560	11	6	243	7	5	5,471	7	5	17,875	8	9	16,640	15	10
12	2	3,766	8	6	...	...	...	...	...	...	2,120	15	7	...	...	...	772	4	2	2,803	8	9	873	4	9
13	5	1,210	14	...	...	...	...	...	...	...	...	...	...	...	...	...	942	10	6	942	10	6	263	3	9
...	...	9,302	7	9	...	...	...	302	2	1	...	...	...	...	...	...	9,000	5	8	9,302	7	9	...	...	...
1	5	1,443	7	4	...	...	...	...	...	...	...	...	...	...	...	...	1,443	7	4	1,443	7	4	...	...	...
1	4	25,326	1	11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25,326	1	11
6	11	46,06,684	7	4	4,344	11	7	8,975	4	7	2,65,344	7	6	2,296	3	10	10,50,957	4	9	13,31,918	...	3	32,74,706	7	1
poor.																									
5	2	44	5	2	14	1	8	...	...	...	...	...	...	...	...	...	36	3	6	44	5	2	...	...	...
11	8	3,412	15	9	3	15	7	...	...	...	...	...	...	...	...	...	848	13	5	852	13	...	2,560	2	9
14	...	28,730	3	3	91	8	...	...	...	...	...	...	...	...	...	...	2,860	2	7	2,951	10	7	2,577	8	8
13	5	133	12	2	70	10	2	...	...	...	...	...	...	...	...	...	...	...	...	70	10	2	63	2	...
...	4	539	3	3	29	6	1	...	...	...	...	...	...	...	...	...	280	...	3	309	6	4	229	2	11
14	...	17,51,967	4	11	...	...	...	...	...	...	...	...	...	...	...	...	4,26,080	11	5	4,26,080	11	5	13,25,856	9	6
1	2	4,251	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1,113	1	2	1,113	1	2	3,137	15	11
...	...	2,987	12	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,987	12	1
12	...	17,92,066	9	8	209	9	6	...	...	...	...	...	...	...	...	...	4,31,213	...	4	43,1,422	9	10	13,60,64	15	10

(Signed) J. LONGHURST,

General Storekeeper.

MADRAS RAIL

Dr *Statement of receipts and expenditure on capital Account from 1st January*

Receipts.	Received up to 31st December 1856.	Received from 1st January to 31st December 1857.	Grand total
To cash received from the Honorable Com- pany through the Sub-treasurer of the Government of Fort Saint George.....	75,59,177 11		75,59,177 11
" " during the month of January 1857...		3,15,886 3 3	
" " " February " "		3,32,687 13 8	
" " " March " "		3,00,844 13 10	
" " " April " "		4,88,922 4 8	
" " " May " "		1,73,255 15 7	
" " " June " "		6,98,525 7 2	
" " " July " "		9,78,038 8 4	
" " " August " "		4,79,997 5 5	
" " " September " "		3,97,362 6 6	
" " " October " "		3,91,835 10 2	
" " " November " "		2,09,570 15 1	
" " " December " "		6,97,456 2 5	54,54,354 1 1
" " on account of the Cuddapah survey. " " during the month of January 1857...	13,755 13 3		13,755 13 3
" " " February " "		3,374 3 10	
" " " March " "		1,444 12 10	
" " " April " "		4,095 7 8	
" " " May " "		1,073 11 8	
" " " June " "		1,095 7 8	
" " " July " "			
" " " August " "		3,058 9	
" " " September " "			
" " " October " "		1,920 7 3	
" " " November " "		2,256 8 10	
" " " December " "		2,757 7 9	
" " on account of the Madras Division " " during the month of November 1857.		5,231 10 1	23,308 6 7
" " " December " "		961 2 6	
" " Short delivery of materials from " " various vessels.		1,890 9 1	2,851 11 7
" " during the month of January 1857...	3,735 10 5		3,735 10 5
" " " February " "		51 2 8	
" " " October " "		152 8	
		184 8 4	388 3
Madras, } 21st April 1858. }	Rupees... 75,76,669 2	854,80,902 6	3,130,57,571 8 11

(Signed) F. CHURCH,

Chief Accountant.

FORM F.
MADRAS RAILWAY.
ENGINEERING DEPARTMENT.

Statement showing the total Expenditure in India up to the 31st of December

Sanctioned for the Month of December 1857.

South Western Line.

South Western Line.																																				
Nature of Work.	See Form.	District No. 1.		District No. 2.		District No. 3.		District No. 4.		District No. 5.		District No. 6.		District No. 7.		District No. 8.		District No. 9.		District No. 10.		District No. 11.		District No. 12.		District No. 13.		District No. 14.		District No. 15.		District No. 16.		District No. 17.		
		RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	
Earthwork.....	D																																			
Masonry.....	D	281	8 8					9,181	8 11	9,012	15 1	5,776	6 1	8,673	15 7	4,766	4 8	10,058	9 11	8,258	9 5	2,626	3 11	10,925	7 3	6,920	5 10	9,264	2 4	6,670	11 11	5,545	15 1	1,790	... 9	
Ballast.....	D				15 10			18,702	9 2	11,402	10 10	14,517	13 2	4,690	... 1	3,629	12 10	3,962	14 3	672	11 8	7,573	15 1	43	.....	3,095	3 3	6,611	... 4	2,479	12 5	6,327	3 11	1,629	4 4	
Laying Permanent way.....	D																																			
Timber.....	D					291	8	13,819	14 8	2,037	10 9	4,272	2 5	2,567	9 9	181	6		187	3				91	13 6		391	2 2	217	1	1,666	15 9	1,937	9	1,815	15 6
Fencing.....	D																																			
Station.....	D																																			
Miscellaneous.....	D	8,683	8 8	284	5 10	353	2 4	3,826	15 6			165	.....	445	7 11	569	9		736	12 9	511	4														
Workshops.....	D																																			
Special Superintendence.....	A&B																																			
Electric Telegraph.....	A&B	691	12 8					10	6 2	3,125	4 9	1,753	12 11	1,231	4 8	1,311	2 7	2,397	8 7	1,518	7															
Total.....		9,656	14	284	5 10	670	3 2	48,821	5	21,715	6	26,481	9 4	18,125	15 9	11,685	15 1	16,142	1 2	10,441	9															
General Superintendence.....	A																																			
Survey.....	B																																			
Contingent Charges.....	B																																			
Total.....																																				

N. B. ACWORTH,
Agent and

N. B. ACWORTH,
Agent and A

28th June, 1858.

FITZGERALD CHURCH,
Chief Accountant.

1857.

Workshops.		Electric Telegraph.		Total.		Amount Previously Sanctioned.		Total of South Western Line.		Sanctioned for the month of December.		Amount Previously Sanctioned.		Total of North Western Line.		Grand Total of South and North Western Line.		Remarks.
RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	RS.	A. P.	
				99,471	4 9	27,57,326	2 7	28,56,797	7 4							28,56,797	7 4	
				85,665	2	15,74,428	12 7	16,60,093	14 7							16,60,093	14 7	
				29,477	8 2	5,62,691	15 9	5,92,169	7 11							5,92,169	7 11	
				2,569	11 6	1,41,764	4	1,44,333	11 0							1,44,333	11 0	
				13,358	2 4	5,16,860	4 3	5,30,218	6 7							5,30,218	6 7	
				6,618	9 8	2,65,806	4 5	2,72,424	14 1							2,72,424	14 1	
4,283	2 8			44,283	2 8	9,28,795	5 11	9,73,078	8 7							9,73,078	8 7	
				24,846	2	8,12,932	5 1	8,37,778	7 1	3,097	13 2	46,828	11 10	49,926	9	8,87,705	1	
		617		617		721	10 1	1,338	10 1							1,338	10 1	
4,283	2 8	617		3,06,906	11 1	1,75,61,326	13	78,68,233	8 1	3,097	13 2	46,828	11 10	49,926	9	79,18,160	1 1	
		6,012	9 10	6,012	9 10	2,33,369	8	2,39,382	1 10							2,39,382	1 10	
						2,336	14 5	2,336	14 5							2,336	14 5	
		6,522	2 10	6,522	2 10	23,763	15 8	30,256	2 6							30,256	2 6	
		12,534	12 8	12,534	12 8	2,59,470	6 1	2,72,005	2 9							2,72,005	2 9	
		3,19,441	7 9	78,20,797	3 18	81,40,238	10 10							49,926	9	81,90,165	3 10	

J. M. HEPPEL,
Chief Engineer.

Manager.

FORM P.

MADRAS RAILWAY.

Statement shewing the receipts and expenditure in India from the commencement sanctioned up to December 1857.

Department.	Vouchers.	Disbursements up to 30th November 1857.	Disbursements for December 1857.	Total expenditure up to 31st December 1857.	Receipts up to 30th November 1857.	Received during December 1857.	Total receipts.	Remarks.
Agency and Management.	Salaries.....	1,82,883 0 6	3,237 12 8	1,86,120 13 2	1,79,728 6	3,154 10 6	1,82,883 6	
	Contingencies	1,28,678 5 3	530 6 9	1,29,208 12	1,47,482 8 7	...	147,482 8 7	
	Stores.....	2,376,122 11 1	30,867 4 9	24,06,989 15 10	24,10,000	70,000	24,80,000	
	Sleepers.....	9,62,170 4 3	19,153 12 8	9,81,324 11 11	10,50,000	...	10,50,000	
Locomotive.	Salaries.....	101,386 11 3	3,370 5 8	1,04,757 11 11	97,747 12 8	3,638 14 7	101,386 11 3	
	Contingencies.	11,108 11 0	724 14 10	11,833 8	...	...	...	
	Construction..	1,72,934 9 6	7,473 2 9	1,80,407 12 3	1,65,000	70,000	2,35,000	
Engineer.	See statements, F & G	78,67,625 14 11	3,22,539 4 11	81,90,165 3 10	82,98,910 10 8	557,784 12 6	88,56,695 7 2	
	Total..	118,02,909 10 7	3,87,897 1	121,90,806 11 7	123,48,869 5 11	7,045,78 5	7 180,53,447 11 6	
	Balance.			121,90,806 11 7	123,48,869 5 11	7,045,78 5	7 180,53,447 11 6	
	Total.	118,02,909 10 7	3,87,897 1	121,90,806 11 7	123,48,869 5 11	7,045,78 5	7 180,53,447 11 6	

Madræs Railway,
28th June 1858.

F. CHURCH,
Chief Accountant.

N. B. ACWORTH,
Agent and Manager.

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APPENDIX II.

ESTIMATE OF DISTRICT V.

MADRAS RAILWAY,
30TH APRIL 1856.

No. 248.

To MAJOR J. H. BELL,
In charge of the Office of Consulting Engineer for Railways.

SIR,
I have the honor to submit for sanction the Estimates of Sections I and II of District V,
amounting as hereunder specified to Rupees 5,21,554.

	Rs.	A.	P.
Section I.....	2,90,707	0	0
„ II.....	2,30,847	0	0
Total...	5,21,554	0	0

I have, &c.,
T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 29th April 1857.

MADRAS RAILWAY,
25TH AUGUST 1856.

No. 562.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer.

SIR,
I have the honor to forward a fair copy of the Survey and Section of Section II District V,
for submission to Government.

I have, &c.,
T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 29th April 1857.

MADRAS, 22ND OCTOBER 1856.

No. 529.

To MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

SIR,
In the Lithographed Sketch Map of District No. 5, I observe the length of the District is
written down as 24½ Miles, whereas the joint amount of the Estimates submitted with your letter
No. 248, of the 30th April last is only 24 Miles, I have the honor therefore to request that you
will be good enough to inform me at what point, *i. e.* at what distance from Madras, District No.
5, actually does terminate, as it is impossible to ascertain this point correctly from any documents
as yet submitted to this Office.

[2]

2. To prevent confusion, I have the honor to request, in all similar Estimates and Plans, and Sections of Districts forwarded hereafter for submission to Government, that each and all of such papers should distinctly state the distances respectively from Madras where each such District or portion thereof, begins and ends.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 3RD NOVEMBER 1856.

No 761.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 529 dated the 22nd Ultimo, I have the honor to state that the explanation afforded relative to the distance marked in the Sketch Map of District V by the Engineer Department is, that "the 24½ miles is an Office error, and should have been written "24¼ miles as being sufficiently near for the Sketch Map.

"The termination of District V is 122 miles, 19 chains, 87½ links from Madras.

"The length of District V is 24 miles, 21 chains, 87½ links.

"The gradient of District V is stopped at the 24th mile, and the Estimate was sent in for that length, pending the consideration of the neutral gradient between this point and the commencement of District VI, the datum of the latter not being known at the time.

"These gradients will be corrected, and a supplemental Estimate forwarded with that already "submitted for District V."

I have, &c.,

T. A. JENKINS,

Agent and Manager.

MADRAS, 14TH NOVEMBER 1856.

No. 606.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letter No. 782, of the 8th instant, re-transmitting the Drawings of the Survey and Section of District V, I have the honor to point out that the height of the embankment at the end of that District now appears to be 7.86 feet, whereas the Drawing of District VI shows a height of 8 feet at the corresponding point, viz. at its commencement.

2. Again, on the Drawing of District V, the nature of the plane of 22 chains lately added has not been entered. It appears, however, that this is about 16 feet to the mile.

3. I need scarcely point out the inadvisability of introducing a short plane of this description between those so much more favorable on either side of it, viz. 1 in 586.66, and 1 in 1320, respectively, and I would recommend therefore that either the one or the other of those planes be modified, so as to embrace the 22 chains in question.

4. Section 2 of District V, is herewith returned, in order that the corrections and addition above noticed may be made thereon. Should the Drawing of District VI be likewise required by you, it will be forwarded on application.

5. I shall feel obliged by your forwarding a revised Estimate, if necessary, to suit the correction in the amount of Earthwork rendered requisite in consequence of the alteration of the plane above recommended.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

[3]

MADRAS RAILWAY,
MADRAS, 2ND DECEMBER 1856.

No. 855.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

1. With reference to your letter No. 550 dated the 30th October, I have the honor to re-transmit herewith the Survey and Section of District V Section II with the necessary correction made therein.

2. I beg to transmit herewith a revised Supplementary Estimate to the end of the District, additional length 22 chains, making from Madras to the end of the District 122 Miles, 22 Chains.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 29th April 1857.

MADRAS RAILWAY,
MADRAS, 4TH APRIL 1857.

No. 304.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 338 dated the 2nd of April, I have the honor to re-transmit herewith a revised supplementary Estimate of section 2 District 5, amounting to Rupees 3,832, together with the fair Drawing of Section 1 District V returned by you with your letter No. 59 dated the 16th of January, with alterations made therein as requested, and beg to state that no explanation having been received relative to the nature of the alterations in question which it has been thought necessary to make, as required by you, I have again applied for the same.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 29th April 1857.

MADRAS RAILWAY,
MADRAS, 24TH APRIL 1857.

No. 356.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

1. With reference to your letter No. 353 dated the 6th instant, I have the honor to re-transmit the drawings of Sections 1 and 2 of District 5 and 6 with the mileage entered correctly therein as required.

2. The Chief Engineer reports that the mistake in the mileage at the commencement of District 5 arose from a Draughtsman having copied the mileage entered in the Office plan in pencil, reckoned from a different starting point at Madras in place of that which the mileage of District 1 commences at. The error has now been corrected as above stated.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 29th April 1857.

No. 154.

On letters received from the Agent and Manager of the Madras Railway Company, Nos. 248, 562, 855, 304, and 356, dated respectively the 30th April, 25th August, and 2nd Decemb. 1856, and 4th and 24th April 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits, for the sanction of Government, Surveys and Estimates of that portion of the Madras Railway constituting the 5th District, which commences at the 98th mile, and terminates at 122 miles, 22 Chains, from Madras.

2. These several documents being forwarded, as will be observed, at intervals, have been reserved as usual, until the plan and estimate for the whole district were ready for submission to Government, or until satisfactory replies, to the several references which appeared necessary, were received from the Agent. In the present instance an omission of 22 chains occurred in the estimate originally prepared for the 2d section of this District. A revised supplemental estimate for this portion is now submitted in a detached form.

3. The district of which surveys are now submitted lies in North Arcot, between Goriattum and Vaniembady, and is 24 miles 22 chains long. No. 5 district like the 4th follows up the valley of the Palar, crossing that river at a point about 106½ miles from Madras, but continuing to ascend the valley along the right bank. At 109½ miles from Madras, the line falls in with the high Western Road at a point where a bend of the river, washing the foot of the Putchycoopum hill, renders such close contiguity unavoidable. A cutting here of 30 feet through hard gravel and rock is rendered necessary, and is succeeded by a further cutting of 36 feet through similar soil in curving round a rocky hill situated at 110½ miles from Madras.

* Trunk Road No. 1.

4. The estimates now submitted include, as usual, the whole of the work up to the formation level, in addition to Gates, Fencing, and Miscellaneous, i. e. items for temporary bungalows for the Engineer and his subordinates, and for Gate keepers' lodges, and platelayers' huts; they also include an allowance at the rate of Rupees 1,500 per mile, for maintenance of way and works for 12 months, from the date of opening the line.

5. The total amount of the estimate is shown below:

Section 1—12 miles.....	Rs. 2,90,707 0 0
Section 2—12 miles.....	„ 2,90,847 0 0
Revised Supplemental Estimate for 22 Chains.....	„ 3,832 0 0

Total for the District, Rupees... 5,25,386 0 0

6. The length of the District being thus 24 miles 22 chains, the cost per mile, exclusive of Stations, Rolling Stock, and of the materials of the permanent way, amounts to Rs. 21,643-0-0.

The estimate for District 8 submitted on the 18th instant exceeds that of District 5 by Rs. 1,357 per mile.

7. This is higher than any of the estimates yet submitted with the exception of that for District 3, which, including the estimate for the Poiney bridge, exceeded it by Rupees 647 per mile.

8. The details of the estimate of No. 5 district are as follows:

Brickwork.....	Rupees 1,57,016 11 9
Metalling of roads.....	„ 5,000 0 0
Earthwork in road approaches.....	„ 1,875 0 0
Do. in cuttings and Embankments.....	„ 1,22,748 15 9
Do. at stations, extra drains, &c.....	„ 4,551 9 0
Fencing.....	„ 23,498 3 2
Ballasting.....	„ 67,448 0 0
Permanent way.....	„ 46,016 6 0
Gates.....	„ 5,000 0 0
Miscellaneous.....	„ 8,056 0 0
Maintenance of way and works.....	„ 36,412 8 0
Contingencies.....	„ 47,762 10 4
	Rupees.....5,25,386 0 0

9. As regards earthwork the Country throughout the District may be considered to be very favorable, with the exception of that portion already alluded to, between the 106th and 110th miles, where much rocky excavation is required, and where recourse is obliged to be had, to what is generally considered so objectionable in practice, viz., a curve through a deep cutting.

10. The estimated amount of earthwork on the 1st section of this district is 6,97,244 cubic yards, or 58,104 cubic yards per mile. As the formation level is 20 feet and slopes 2 to 1 we have thus an average height or depth of 8 feet. On the 2nd section, including its supplemental 22 chains, the amount of earthwork is cubic yards 6,12,078½, or 49,863 cubic yards per mile, giving an average height or depth of 7.35 feet.

11. With these average heights or depths, the maximum height of embankment in the district will be observed from the sections to be 18.75, and the maximum depth of cutting 36.06 feet.

12. The data allowed by Mr. Bruce for earthwork is the same as that for district 4, viz., 0.1-6 per cubic yard, a fair average as it appears to me, and one that admits of the work being well executed within its limits.

13. The following table of planes exhibits the characteristics of the line as attained by the above noted expenditure in earthwork.

No. of Planes.	Length in Miles and Chains.	Rate of Inclination.	
1	0—25	Level.	
2	1—35	1 in 1056	Ascending.
3	2—0	1 in 290	do.
4	1—0	Level.	
5	1—20	1 in 290	Ascending.
6	2—10	1 in 811.06	do.
7	1—30	1 in 264	do.
8	1—0	Level.	
9	1—0	1 in 440	Ascending.
10	1—40	1 in 352	do.
11	1—40	1 in 211.2	do.
12	1—40	1 in 660	do.
13	1—0	1 in 400	do.
14	3—0	1 in 660	do.
15	4—0	1 in 586.66	do.
16	0—22	1 in 334.17	do.

14. The gradients throughout the District are easy with one exception (viz., a plane of 1 in 211.2 for a distance of 1 M. 40 Chs.) which is only tolerably so, but which from the location of the

line in its contiguity to the Palar, and the rocky surface of the country rising determinedly cannot well be moderated. The remainder of the planes, with three exceptions which are on a level, ascend gradually with the country.

15. The total difference of level, rising from East to West, on these 24 Ms. 22 Chs. is 269.37 feet, which gives a mean rise of 11.09 feet in the mile, or a grade of about 1 in 476.

16. As regards works of masonry, the estimated cost of these in the District, inclusive of the Palar bridge, is Rupees 1,57,016-11-9 being at the rate of Rupees 6,512-5-10. per mile, or nearly Rupees 1,000 per mile less than the estimated cost per mile of masonry in No. 4 district.

17. Of the above total amount this is comprised by the Palar bridge, the estimate of which (24 arches of 30 feet span and amounting to Rupees 63,880) was sanctioned by Government on the 7th February 1856.

18. The site of this bridge, as shown in the survey, is not quite exact. The original intention was indeed to place the bridge in the position shown, but Mr. Bruce subsequently concurred with me in preferring a site a little above the narrow neck, at which, judging from the plan, the line would appear to cross the river, although it does not actually do so.

19. Besides this bridge no large works of masonry occur on this District. There are, however, seven bridges of 20 feet span, of from 5 to 2 arches each, in the second section, besides a number of single 15 feet arches in both sections.

20. The cost of masonry throughout the district is estimated at Rupees 4 per cubic yard for all bridges, whether large or small. Although in excess of the rate allowed in the last, or No. 4 district, it does not exceed that estimated for former districts.

21. It is only proposed to have one station in this District, viz. at Amboor, distant 113 miles from Madras. The estimate for this station, amounting to Rupees 12,567, is one of the seven that received the sanction of Government on the 28th October last.

22. It will be observed in para 6, that the amount of the estimate now submitted gives an average of Rupees 21,643 per mile. To calculate the entire cost of this portion of the line, it is necessary to include the rails, chairs, &c., sleepers and stations. Taking the latter at Rs. 520 per mile, and the materials of the permanent way, as in the case of District 4, at Rupees 25,000, we obtain an estimate of Rupees 47,163 per mile for the cost of the line in working order, and exclusive of stock.

23. This is below the cost of either of the last two districts, (Nos. 3 and 4) and the reason for its exceeding that of each of the 1st and 2nd districts must be attributed, as in the case of No. 4 district, to the large quantity of Masonry work being distributed over the District, in consequence, not only of the Palar River having to be crossed, but from suitable provision for the drainage into that river having to be made.

24. The data for the other items of the Estimate now forwarded, including "Fencing," "Metalling," "Ballasting" "Laying of Rails," "and Maintenance of way," correspond exactly with those for No. 4 district, recently submitted, and they consequently require no further remark here.

25. As in the estimate for No. 4 district, the allowance in that for No. 5 for Engineer and Inspectors' bungalows exceeds, by Rs. 1,780, the amount (Rs. 1,220) sanctioned by Government for the same. Should the Government approve the proposal of the Board, to allow Rs. 900 for each Engineer's bungalow, the amount to be sanctioned for this district, on this account, will be Rupees 1,770, instead of Rupees 3,000, and the total amount of the present estimate will become Rs. 5,24,156.

26. With this trifling exception, the estimate might I think be passed, and accordingly I would recommend that the sanction of Government be granted to the extent of Rupees 5,24,156,

or exclusive of the amount (Rupees 63,880), already sanctioned for the Palar bridge, to the sum of Rupees (4,60,276) Four hundred and sixty thousand two hundred and seventy-six.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 29th April 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 245.

Extract from the Minutes of Consultation under date the 11th May 1857.

Read Observations of the Consulting Engineer on letters from the Agent and Manager of the Madras Railway Company.

Submitting for sanction Surveys and Estimates for District V, the latter amounting to Rupees 5,25,386-0-0.

(Here enter 29th April 1857, No. 154.)

The Surveys and Estimates submitted with the above Observations embrace that portion of the Madras Railway constituting District V, which lies in North Arcot between Goriattum and Vaniambady, and is 24 miles 22 chains in extent. It follows up the valley of the Palar, crossing that river at a point about 106½ miles from Madras, but continuing to ascend the valley along the right bank. The gradients throughout the District are, with a slight exception, easy, and the planes, excepting three which are on a level, ascend gradually with the Country.

2. The Estimates for the 1st and 2nd Sections of 12 miles each, and the Supplemental one for 22 chains, amount together to Rupees 5,25,386, and provide as usual for the whole of the Work up to the formation level, in addition to Gates, Fencing, and miscellaneous items for temporary Bungalows

for the Engineer and his subordinates, for Gate Keepers' lodges and Platelayers' huts. They also include an allowance of Rupees 1,500 per mile for Maintenance of Way and Works for one year from the date of opening the Line. The cost per mile, exclusive of Stations, Rolling Stock and materials of the Permanent Way, amounts to Rs. 21,643.

3. The only large work of Masonry that occurs in District V is the Palar Bridge for which an Estimate of Rupees 63,880 was sanctioned under date the 7th February 1856, and there is to be only one Station, viz. at Amboor, for which an outlay of Rupees 12,567 was authorized on the 28th October last. Taking the cost of Stations at Rupees 520 per mile, and the materials of the Permanent Way at Rupees 25,000, the entire estimated cost of this portion of the Line in working order, and exclusive of Stock will be Rupees 47,163 per mile. This is stated to be below the cost of either of the two preceding Districts III and IV, but to exceed that of each of the 1st and 2nd Districts in consequence not only of the Palar having to be crossed, but from suitable provision having to be made for the drainage into that river.

4. The allowance made in the Estimates for District No. V for Engineer and Inspectors' Bungalows is Rupees 3,000. Allowing Rupees 900 for each Engineer's Bungalow, as authorized by the Railway Board in England, the amount to be sanctioned on this account, the Consulting Engineer states, will be Rupees 1,770, or Rupees 1,230 less than that estimated, and with this trifling exception he recommends that the Estimates be passed to the extent of Rupees 5,24,156, or exclusive of the sum of Rupees 63,880 already sanctioned for the Palar Bridge, Rupees 4,60,276. This amount, Four lacs sixty thousand two hundred and seventy-six, is accordingly sanctioned by the Government.

(True Extract.)

(Signed) E. MALTRY,
Acting Chief Secretary.

MADRAS, 20TH MAY 1857.

To MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway Company.

No. 499.

Sir,

With reference to your several letters as per margin, I have the honor to communicate the sanction of Government to the Estimates of the 1st and 2nd Sections of District 5, amounting, after certain deductions exhibited below, to Rupees 4,60,276, Four lacs, sixty thousand, two hundred and seventy-six.

Estimate of Section I.....	Rupees 2,90,707	0	0
Do. Do. II.....	2,30,847	0	0
Supplemental Estimate for 22 Chains.....	3,832	0	0
	Rupees... 5,25,386	0	0

DEDUCT:

Amount already sanctioned under date 7th February 1857 for Palar Bridge.....	Rupees 63,880
Amount over-estimated for Bungalows.....	1,230
	65,110 0 0

Amount sanctioned... 4,60,276 0 0

The allowance made in the Estimates for Engineer and Inspectors' Bungalows is Rupees 3,000. Allowing Rupees 900 for each Engineer's Bungalow, as authorized by the Railway Board in England, the amount which has been sanctioned by Government on this account is Rupees 1,770, or Rupees 1,230 less than entered in the Estimates.

* Engineer's Bungalow.....	900
2 Inspectors'.....	300
2 Sub do.....	300
1 Apothecary.....	150
2 Detached Bungalows for Engineers.....	120

Ra. 1,770

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

ESTIMATE OF DISTRICT VIII.

MADRAS RAILWAY,
AGENT'S OFFICE.

No. 107.

To LIEUTENANT COLONEL T. T. PEARS, c. B.,
Consulting Engineer.

Sir,

I have the honor to submit for sanction the Estimate of Section No. 1, District 8, amounting to Rupees (180,565-15-2) one hundred and eighty thousand, five hundred and sixty five, annas fifteen and pice two.

I have, &c.,

T. A. JENKINS,
Agent.

Submitted (with observations) for the sanction of Government.

Madras, 18th April 1857.

T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
18TH AUGUST 1856.

No. 540.

To LIEUTENANT COLONEL T. T. PEARS, c. B.,
Consulting Engineer for Railways.

Sir,

I have the honor to submit an Estimate of the cost of constructing the line in Section II District VIII, and request that you will have the goodness to obtain the sanction of Government for the expenditure of the amount, viz. Rupees 3,21,044.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the sanction of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 18th April 1857.

MADRAS, 27TH OCTOBER 1856.

No. 538.

To MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

Sir,

I observe in the Estimate of Section No. 1 District 8, forwarded with your letter No. 107, of the 23rd March 1855, that the item for Temporary Fencing is entered for a length of 1,100 yards only, instead of 4,400, as appears to be required, and I have therefore the honor to request that a corresponding correction may be made in the Estimate herewith returned for that purpose, or else that explanation be afforded for the apparent discrepancy.

1. In the same Estimate the item of "Maintenance of way" is omitted, and should therefore be inserted.

3. In the Estimate of Section No. 2, of the same District, received with your letter No. 540, of the 18th August, there appears an error in both the Temporary and Permanent Fencing the amount of each of these being written down as 36,960, instead of lineal yards 36,696, as they should be, so as to correspond with the length (10 Miles and 34 Chains) of that Section.

4. In the miscellaneous items it is observed that for the Temporary Bungalows for the Engineer and his Subordinates there is allowed a sum in No. 1 Section of Rupees 1,000, and in No. 2 Section of Rupees 1,500, or together a sum of Rupees 2,500, which is in excess by Rupees 1,280, of that sanctioned by Government for the purpose.

5. I request that you will be so good as to make this and the other alterations above pointed out, and return me the Estimates at an early date, so as to enable me to submit them with all convenient despatch to Government for sanction.

6. The Surveys of this District are likewise herewith returned in order that the respective distances from Madras may be shown thereon, as they should be on the Estimates, in pursuance of the instructions conveyed to you in my letter No. 529, of the 22nd instant.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY.
MADRAS, 17TH DECEMBER 1856.

No. 913.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter No. 906, dated the 20th ultimo, I have the honor to re-transmit corrected the Estimates of Sections 1 and 2 of District VIII. The Drawings of this District were returned to you with my letter No. 797 dated the 12th idem.

I have, &c.,
T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the sanction of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 18th April 1857.

No. 759.

MADRAS, 2ND DECEMBER 1856.

TO MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

SIR,

As the Estimates of Sections 1 and 2, of District VIII re-transmitted with your letter No. 913, of the 17th instant do not include among the corrections the items for Bungalows erroneously entered therein, as pointed out in my letter No. 538, of 27th October 1856, to which my letter, No. 619 of the 20th ultimo was a reminder, I have the honor to return again the two Estimates in order that these corrections may be duly made, and to request that you will be so good as to hasten the re-transmission of these documents to this Office, for submission to Government.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 26TH JANUARY 1857.

No. 65.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter No. 79 dated the 22nd Instant, I have the honor to forward herewith the Estimates of District 8 which were returned for correction with your letter No. 759 of the 22nd December last.

I have, &c.,
T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the sanction of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 18th April 1857.

No. 145.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 107, 540, 913, and 65, dated severally the 23rd March 1855, 18th August, and 17th December 1856, and 26th January 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent submits for the sanction of Government Surveys and Estimates of that portion of the Madras Railway constituting the 8th District, beginning near the 170th mile, and ending at about the 193rd from Madras.

2. As heretofore, it will be observed, these several documents, forwarded at intervals, have been reserved until the Plans and Estimates for the whole district were ready for submission to Government.

3. The plans and sections had to be returned for some trifling corrections, and the Estimates likewise* returned on account of important omissions in the items of Fencing, Maintenance of Way, and excess of charge for Engineer's bungalow, &c., were received back in this Office with the last of the four letters heading these Observations.

4. The District of which surveys are now submitted, lies partly within and in part below the Baramahl of the Salem district, between the bund of the Chintalpaudy tank near Bussavapoorum and the village of Pooleysshettyputty, and embraces a length of 22 miles 74 chains. It is chiefly remarkable for the Moroor pass (the summit of which is met at a distance of 186½ miles from Madras) occasioning in its descent a slope greater than any hitherto met on the line viz., 1 in 75, for a distance of nearly 1½ miles.

5. The portion of the line in section 1, considering the rugged nature of that part of the country through which it passes, is remarkably free from heavy works. The line ascends through the first half of the section and descends the remainder, past the Shervaroy Hills station (at Mulla-poorum), until within half a mile of section 2, i. e., at a distance of about 3 miles from the station, the Eastern or more gentle ascent of the Moroor pass is commenced, the length of this pass, from the Moroor river to its summit, is 4 miles and 12 chains, and the whole height ascended being 144 feet, the average slope is about 35 feet per mile or 1 in 150.8. The descent of the pass in the remainder of section 2, a distance of 6 miles 14 chains, comprises a total fall of 298 feet, giving an average of 48 feet per mile, or 1 in 110.

6. The estimates include, as usual, the whole of the work up to the formation level, the cost of laying permanent way, of ballasting, gates, fencing, and miscellaneous, under which latter head the items for temporary bungalows for the Engineer and his Assistants, and for gate-keeper's Lodges and Platelayer's huts, are entered, maintenance of way and works for 12 months is likewise allowed for, at the usual rate of Rupees 1,500 per mile.

7. The total amount of the estimate is as follows:
Section 1—12 Miles 40 Chains Rs.2,10,714
Section 2—10 Miles 34 Chains „3,20,154
Total Rupees...5,30,868

8. As the length of the District is nearly 23 miles, the cost per mile, exclusive of stations, rolling stock, and of the materials of the permanent way, is roughly about Rupees 23,000.

9. This is higher than any of the Estimates yet submitted, it is Rs. 800 per mile in excess of that for District 3, which in consequence of its including the Poiney bridge, is the highest of all the estimates that have been up to the present time submitted to Government for sanction.

10. The details of the Estimate of No. 8 District, are as follows:
Brick work..... 98,873 10 0
Metalling of roads..... 5,000 0 0
Earthwork in road approaches..... 4,062 8 0
do. stations extra drains &c..... 5,250 0 0

Earthwork in cutting and embankments.....	2,02,053	3	0
Fencing.....	22,191	6	5
Ballasting.....	47,997	0	0
Permanent way.....	51,428	0	0
Gates.....	5,000	0	0
Miscellaneous.....	6,276	0	0
Maintenance of way and works.....	34,387	8	0
Contingencies.....	48,348	12	7
Rupees.....	5,30,868	0	0

11. The soil, more especially in Section 2, of this District, being generally hard and frequently rock, it has been attempted to lighten the Earthwork as much as possible, by the sacrifice, as a matter of necessity, of easy, *i. e.*, comparatively easy, gradients.

12. The total amount of Earthwork, for which the Estimate provides is Cubic yards 9,69,468, or an average of Cubic yards 42,288 to the mile. With a formation level of 20 feet and slopes 2 to 1, this gives an average height or depth of 6½ feet.

13. Taking the 2 Sections separately we have on

Section 1.....	The total Cubic yards.....		4,50,015
	Cubic yards per mile.....		34,400
	Average height or depth.....		5.6 feet.
Section 2.....	Total Cubic yards.....		5,39,453
	Cubic yards per mile.....		51,746
	Average height or depth.....		7.2 feet.

14. With these average heights or depths, the maximum height of each embankment in the District is shown from the sections to be 15.26 feet, (at 17 miles 30 chains) and maximum depth of cutting (at 17 miles 40 chains) to be 29.30 feet.

15. An unusually liberal allowance for earthwork has been made by Mr. Bruce in both sections of this District, *viz.* in Section 1, two Annas six Pies per Cubic yard, and Section 2, four Annas per Cubic yard. In the latter section there is doubtless much hard soil and rock to contend with, and difficulty in procuring labor sufficient to execute the work with fair expedition; and upon these considerations I do not think an allowance of four Annas per Cubic yard is more than enough to cover the expenditure.

16. The following table of planes exhibits the characteristics of the line, as attained by the above expenditure on earthwork.

No. of Planes.	Length in Miles and Chains.		Rate of Inclination.		
	Miles	Chains			
1	0	40	1 in	880 Descending.	Section 1.
2	1	0	1 in	211.2 Ascending.	
3	2	0	1 in	880 do.	
4	2	52	1 in	264 do.	
5	0	48		Level.	
6	0	40	1 in	200 Descending.	
7	1	20	1 in	120 do.	
8	1	60	1 in	176 do.	
9	1	50	1 in	293½ do.	
10	0	50	1 in	138.9 Ascending.	
11	2	60	1 in	132 do.	Section 2.
12	1	0	1 in	264 do.	
13	0	40	1 in	150 do.	
14	1	30	1 in	75 Descending.	
15	0	7		Level.	
16	3	8	1 in	96 Descending.	
17	0	59		Level.	
18	0	46	1 in	165 Descending.	
19	0	24	1 in	114.183 do.	

17. For the reasons given in para 11 of these observations, the gradients throughout the District are however unavoidable, far from favorable, more especially in Section 2 where a descent of 1 in 75 occurs (down the Moroor Pass) for a length of 1½ Miles, part of which is on a curve of 1½ mile radius.

18. The total difference of level between the Eastern and the Western extremity of this District is 190.23 feet, the latter being so much the lower of the two.

19. The estimated cost of works of Masonry on the District amounts to Rupees 98,874, being at the rate of Rupees 4,313 per mile, an average which, though in excess of that for District 7, is below that of either of District 4 or 5 from there being no bridges of any magnitude required along this portion of the line, as is the case with those two Districts.

20. There are only two works of importance in section 1, *viz.* the Topoor Bridge of three Arches of 30 feet, estimated at Rupees 4,162, and one triple 30 feet arch bridge, estimated at Rupees 3,621, over a Nullah at miles 9, chains 72. On section 2 there are the following.

A bridge of 7 arches of 30 feet span over the Palamode River, at 21 Miles 31 Chains	Rs. 8,495 12 0
A bridge of 3 arches of 30 feet span over the Moroor River, at 12 Miles 47 Chains.....	„ 3,285 14 0
A bridge of 3 arches each 20 feet span in 24 feet bank at Miles 17—77 Chains	„ 5,375 0 0
And Two (skew) beam bridges, at Miles 20—18 chains and Miles 20—41 Chains, respectively each.....	„ 8,038 12 0

21. The masonry of Section 1, is calculated at Rs. 3 per cubic yard, and Rs. 3-6-0 on section 2, both sufficiently moderate, and appearing the more so from the Earthwork on the District being estimated at a high rate.

22. There will be only one Station on this District the Shervaroy Hills Station at Mallapooram, distanced at 179 miles from Madras, the estimate for this station, one of the 1st Class and amounting to Rs. 17,252, was sanctioned by Government on the 10th January 1856.

23. The other items of the estimate appear to call for no remark.

24. It will be observed that allowing Rupees 25,000 per mile for the materials of the permanent way, and Rupees 750 per mile for stations, in addition to that Rupees 23,000 per mile (vide para 8) of the Estimate now submitted, the total cost of this portion of the line is estimated at Rupees 48,750 per mile, the estimated cost per mile of District 7 nearly.

25. The drawings which accompany this Report are surveys and sections of Sections 1 and 2 of District 8, together with a sketch on reduced scale showing the general direction of the line.

26. Opportunity is taken to forward a similar sketch of District 4, which sketch should have accompanied, but by an oversight was not transmitted with my Report of the 23rd October 1856, No. 215, submitting the estimate for that District.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 18th April 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 243.

Extract from the Minutes of Consultation under date the 5th May 1857.

Read Observations of the Consulting Engineer on letters from the Agent and Manager of the Madras Railway Company.

Submitting for sanction Surveys and Estimates of District VIII, } (Here enter 18th April 1857, No. 145.)
the latter amounting to Rupees 5,30,868-0-0.

With the foregoing Observations the Consulting Engineer submits Survey and Estimates of that portion of the Madras Railway which constitutes District VIII, embracing a length of 22 Miles, 74 Chains and lying partly within and partly below the Baramahl of the Salem District, between the Bund of the Chintalpaudy Tank near the 170th Mile, and the village of Pooleysheetty-putty, ending at about the 193rd Mile from Madras. The District is chiefly remarkable for the Moroor Pass, the length of which from the Moroor river to its summit is 4 Miles 12 Chains, and the whole height ascended is 144 feet; while the descent of the Pass, a distance of 6 Miles 14 Chains, comprises a total fall of 298 feet, there being a slope greater than any hitherto met on the Line, viz: 1 in 75, for a distance of nearly 1½ Mile.

2. The Estimates amount together to Rupees 5,30,868, and provide as usual for the whole of the Work up to the formation level, the cost of laying Permanent Way, of Ballasting, Gates, Fencing and Miscellaneous, which latter includes temporary Bungalows for the Engineer and his Assistants, Gatekeepers' Lodges and Platelayers' Huts. The usual rate of Rupees 1,500 per Mile is also allowed for Maintenance of Way and Works for one year.

3. The length of the District being nearly 23 Miles, the cost per Mile, exclusive of Stations, Rolling Stock and materials of the Permanent Way, is about 23,000 Rupees, which is higher than any of the Estimates yet submitted, and is Rupees 800 per mile above that for District III, the highest of all the Estimates that have been sanctioned by Government in consequence of its including the Poiney Bridge. The excess seems to be accounted for by the nature of the soil, especially in Section 2 of the District, which is said to be "generally hard and frequently rock," and by the difficulty of procuring labor, which renders it necessary to make "an unusually liberal allowance for Earthwork." Colonel Pears does not however think that upon these considerations the allowance, viz: 4 annas per cubic yard is more than enough to cover the expenditure.

4. There are no Bridges of any magnitude required along the portion of the Line comprised in District VIII, and there is only one Station on it, the Shervaroy Hills Station at Mulpooram, for which an Estimate of Rupees 17,252 was sanctioned by Government in January 1856. Allowing Rupees 25,000 per Mile for the materials, of the Permanent Way and Rupees 750 per Mile for Stations, in addition to Rupees 23,000 per Mile of the Estimates now submitted, the total cost of this portion will be Rupees 48,750 per Mile.

5. With these remarks the Government sanction the Estimates forwarded by the Agent of the Railway Company, amounting together to Rupees (5,30,868) Five lacs thirty thousand eight hundred and sixty-eight.

(True Extract.)

E. MALTBY,
Acting Chief Secretary.

MADRAS, 12TH MAY 1858.

No. 476.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

Adverting to your letters noted marginally, I have the honor to communicate the sanction Nos. 107, dated 23rd March 1855, of Government to the Estimates (of Section 1 and 2 of District 8) forwarded by you, amounting together to Rupees (5,30,868) five lacs, thirty thousand, eight hundred and sixty-eight.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

CAUVERY BRIDGE, &c.

* MADRAS RAILWAY, 1ST JUNE 1856

No. 391.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to submit a Plan and Estimate of a Bridge of 22 arches proposed to be constructed over the River Cauvery in Section I District XI, and request that you will have the goodness to obtain the sanction of Government for the amount, viz. Rupees 1,84,450.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the sanction of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 16th April 1857.

MADRAS, 26TH FEBRUARY 1857.

No. 207.

To MAJOR T. A. JENKINS,

Agent and Manager Madras Railway Company.

SIR,

I have the honor, by order, to convey to you authority to proceed with the construction of the Cauvery Bridge plan, which was returned with your letter, No. 132, of the 11th instant, pending an examination of the estimate.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS, 17TH MARCH 1857.

No. 267.

To MAJOR T. A. JENKINS,

Agent and Manager Madras Railway Company.

SIR,

With reference to the Plan, (received originally with your letter No. 391 of the 17th June 1856, and returned from your Office on the 11th instant) and Estimate amounting to Rupees 1,84,850; of a Bridge of 22 Arches proposed to be built over the Cauvery, in Section I District XI, I have the honor, by order of Government, to request that you will obtain the opinion of your Acting Chief Engineer, as to the necessity of so large an expenditure as 8 annas per cubic foot for the parapets thereof, considering the great expenditure that must necessarily be incurred in the construction of a work of the kind, and also whether the additional width obtained for the bridge by the means proposed might not be gained in the more ordinary and less costly mode of construction.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 9TH APRIL 1857.

No. 321.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 267, dated the 17th Ultimo, I have the honor to annex a copy of a letter from the Acting Chief Engineer No. 69, dated the 8th instant, in which he explains his views in regard to the Cauvery Bridge and forwards a revised estimate for the same, which I beg to submit herewith, amounting to Rupees 1,91,670 for the sanction of the Government.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the sanction of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 16th April 1857.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 8TH APRIL 1857.

No. 69.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

In reply to yours No. 219, enclosing copy of a letter from the Consulting Engineer requesting to be informed whether I thought the expenditure on the parapets of the Cauvery Bridge too great, and whether this might not be overcome by increasing the width of the Bridge two feet, I beg to inform you that I have examined the estimate and reduced the costs of the parapet to

the minimum. The item of rubble Mason work is increased, in consequence of a portion of the parapet being included, and also by the haunches of the arch being calculated solid throughout, which I find was not estimated, in that manner before. As regards increasing the arch by two feet in order to get rid of the more expensive work of the parapet, I find it would cost about Rupees 9,000 against Rupees 2,000, being the cost of that part of the parapet saved thereby, I have the honor now to enclose a revised estimate.

I have, &c.,

(Signed) ALEXANDER BEATTIE,

Acting Chief Engineer.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

No. 140.

On letters from the Agent and Manager of the Madras Railway Company, (Nos. 391 and 321,) dated respectively the 17th June 1856 and 9th April 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

With the former of the above mentioned letters the Agent submits a plan and estimate of a bridge across the Cauvery river, a little below Errode.

2. The bridge consists of 22 arches—segments of circles, of 60 feet span, the rise of the arches is 15 feet. The piers are 10 feet in thickness, increased to 10 feet 9 inches in the lower portions, i. e. at 25 feet below the springing line of arches; the highest pier is 36 feet above the footings to springing line. The roadway is 26 feet, the bridge being 28½ feet wide including parapets.

3. The calculations are made for foundations averaging four feet in depth, and for brick masonry throughout, with the exception of the parapets which are of dressed stone.

4. As in the original estimate, Rupees 1,84,450 in amount, the item for these parapets, Rupees 25,810, appeared excessive: on account of the liberal rate 8 annas per cubic foot allowed for the same, reference was made to the Agent as to whether "the additional width obtained for the bridge by the means proposed might not

In letter No. 267, dated 17th March 1857. "be gained in the more ordinary and less costly mode of construction."

5. In the revised estimate, forwarded with the Agent's letter last mentioned above, the item for parapets is reduced to Rupees 14,885, but owing to an omission, Rupees 18,145 in amount in another item, in the original estimate, the total of this revised estimate is Rupees 1,91,670.

6. The length of bridge between the abutments being 1,530 feet, the estimated cost is at the rate of Rs. 125 the foot forward.

7. This is nearly half as much again as the rate for the Poiney bridge, which though of stone masonry throughout was estimated at Rupees 87 the foot forward, and constructed within that rate.

8. In the present estimate owing to the great height of the bridge, a very liberal allowance Rupees 5 per cubic yard, has been entered for the brick masonry, which ought therefore to be built well within that amount.

9. With the hope and expectation that such will be the case, I would recommend for the sanction of Government the construction of the Cauvery bridge as per Plan* and estimated cost of Rupees (1,91,670) one lac, ninety-one thousand, six hundred and seventy.

* No. 70.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 16th April 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 409.

Extract from the Minutes of Consultation under date the 22nd April 1857.

Read the following letter from the Consulting Engineer for Railways.

Observations on letters, Nos. 391 and 321, of 17th June 1856 and 9th April 1857, from the Agent and Manager of the Madras Railway Company submitting for sanction a Plan and Estimate of a Bridge across the Cauvery River. (Here enter 16th April 1857, No. 140.)

The Government sanction the Plan and Estimate submitted by the Railway Agent, and recommended by the Consulting Engineer, of a Bridge, proposed to be built over the Cauvery River, near Errode, in District No. XI, amounting to Rupees (1,91,670), one lac, ninety-one thousand six hundred and seventy.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

MADRAS, 27TH APRIL 1857.

No. 423.

To MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway Company.

SIR,
Referring to your letters Nos. 391 and 321 of the 17th June 1856, and 9th April 1857, I have the honor to communicate the sanction of Government to the Plan and Estimate submitted by you of a Bridge proposed to be built over the Cauvery river near Errode in District No. XI, amounting to Rs. (1,91,670) one lac, ninety-one thousand, six hundred and seventy.

2. I am at the same time directed to inform you, that the estimated amount of Rs. 14,885 for the parapet work though large, has been passed under the impression that the Parapets are to be of "dressed stone," both the design and the high rate allowed, viz. 8 Annas per cubic foot, or 13½ Rupees per cubic yard, showing clearly that such is the intention.

3. In an order of Government No. 213, dated 2nd July 1856, communicated to you on the 3rd idem, it was ruled that whenever the word "Masonry" is used, it be understood as "Brick in Chunam" unless otherwise specified, and I am now to request a strict observance of this rule in the preparation of estimates.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 15TH MAY 1857.

No. 415.

To LIEUTENANT COLONEL T. A. PEARS, C. E.,

SIR,
Consulting Engineer for Railways.

1. With reference to para 3 of your letter No. 423 dated the 27th of April, in which reference is made to order of Government No. 213 dated 2nd of July 1856, wherein it is prescribed that the word "Masonry" when used is to be understood as "brick in chunam" unless otherwise

specified, I have the honor to acquaint you that the Acting Chief Engineer is of opinion that some delay would be incurred by buildings being restricted to either stone or brick. He states, "our rule hitherto has been to construct our bridges, &c., of the best materials within our reach; at one place we may have difficulty in procuring stone, although it is desirable that it be used in preference to brick, but we find it cannot be had, so we use brick instead; at another place we may wish to use brick, but we find we cannot get them in time, so use stone."

"To shew you the difficulty I would have in complying with the order of Government, I would call your attention to the fact that there is not a single Bridge on Districts 7 and 8 constructed exclusively either of Brickwork or Masonry: we have the abutment, solid spandrils, and wing walls generally of rubble Masonry, as it is generally easily obtainable and cheaper than brick; we have also the foundation of piers and sometimes the hearting of the piers, of Masonry, we, however, turn our arches of brick, and build, or case most of the piers with the same materials."

"Resident Engineers are in some cases advised by the Chief Engineer what materials it is advisable to use in the constructions, but as a general rule no order is given, and the Resident Engineer is held responsible, whatever may be the specification or estimate, that he makes a judicious selection of his materials, the object in view being economy and progress."

"I still feel at a loss to know how I can meet the order of Government, unless I do so by a general Statement having reference to all structures, which statement would be to this effect that I have it in contemplation to use stone in all buildings from Madras to Beypore, if on commencing or during the construction of the work, the Resident Engineer should see that stones can be procured and are cheaper than bricks, when delay would occur in waiting for bricks being made, or from any other good cause."

"This Statement, if forwarded to Government, would in one sense comply with the order of Government, but in reality it would be ignoring the order altogether; the Statement, however is strictly true, thus."

"In all the Vellore Station buildings, and in the remaining Bridges on District 4, we intend to use stone if we can find it in sufficient quantity, at a moderate rate; this however, we do not expect, and accordingly the Station building will most probably be constructed partly of brick work and partly of Masonry."

"On District 5, we also intend to use stone where we can find it, but we expect to have to build some small bridges entirely of brick, as we have difficulty in getting stone in sufficient quantity at a reasonable rate."

"On District 6, we expect to use stone and brick in almost every bridge."

"On Districts 7, 8, 9, and 10, I think without single exception, every bridge on these Districts will consist of Masonry and brick work combined."

"I am well aware of right of supervision and control by Government which you refer to, but it becomes a question whether this supervision and control may not at times be detrimental to the interests of the Railway Company."

2. I beg leave to state that I concur with Mr. Beattie in opinion that so long as the work be constructed according to plan, either of Masonry or of Brickwork, and the cost of the same does not exceed the amount sanctioned by the Government, that it is advisable that Resident Engineers in charge of Divisions be allowed to exercise their judgment in the selection of materials, and beg that the Government may be pleased to sanction the same.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

MADRAS, 22ND MAY 1857.

No. 503.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor, by order, to acknowledge the receipt of your letter, No. 415, of the 16th instant having reference to the order of Government No. 213 of the 2nd July* 1856, and giving your opinion that some delay would be incurred by buildings being restricted either to brick or stone, and recommending "that so long as the work be constructed according to plan, either of masonry or of brickwork, and the cost of the same does not exceed the amount sanctioned by the Government, that it is advisable that Resident Engineers in charge of Divisions be allowed to exercise their judgment in the selection of materials, and beg that the Government may be pleased to sanction the same."

2. The Government presume your Chief Engineer is informed before any works of masonry are begun what material is to be used, and they cannot perceive upon what grounds you object to furnish the Government with similar information.

3. In minor works of masonry small Bridges, &c., provided as you observe, the cost is not expected to exceed the amount sanctioned, they do not require that any delay should take place in consequence of the information being given.

4. In more important works of masonry, such as bridges estimated at, or above Rupees 15,000, you are requested to observe the rule already laid down, and if such works are to be constructed of material other than brick in chunam, you will be good enough to report to that effect before beginning the work.

5. You are requested to observe, that the order objected to by you was given on the occasion of the cost of a certain work exceeding the estimate, in consequence of stone having been, without authority, substituted for brick, and also that you have lately explained the very high Estimate of 6 Rupees per yard for masonry in the Vellore Station, arising from the circumstance of your contemplating the use of stone.

6. The Government, therefore, desire to be informed whenever it is proposed to adopt this generally the more expensive material of the two.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS, 27TH AUGUST 1857.

No. 775.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

I have the honor, by order, to request you will be good enough to furnish for the information of Government, with as little delay as practicable, with a special report on the actual condition of the works on the Cauvery, Palaur, and Goriattum, bridges.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 758.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

I have the honor to annex for your information a copy of a letter from our Chief Engineer, giving a detailed report upon the bridges over the rivers Goriathum, Palaar and Cauvery.

2. You will observe that Mr. Heppel with reference to the great cost and time that will be taken up in the construction of the Cauvery Bridge, proposes to modify the construction by the substitution of wrought Iron Girders as explained by him.

3. Will you have the goodness to submit this proposition to the Government, and if approved of, I shall forward plans and Estimates as soon as possible.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 6th October 1857.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 7th October 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
CAMP COIMBATOUR, 1ST OCTOBER 1857.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

I beg to furnish for your information and that of the Government some particulars with reference to the Bridges over the Rivers Goriathum, Palaar and Cauvery.

1. Goriathum Bridge.—The East abutment is up to the springing level, numbering the piers from East to West. Nos. 1 to 6 inclusive are up to springing. Nos. 7 to 18 inclusive nothing yet done. Nos. 19 and 20 up to level of river bed. No. 21 foundation nearly out. Nos. 22 and 23 and East abutment nothing done. Some of these foundations have to be carried as much as 18 feet below the river bed, so that with the means we at present have of keeping these dry, no great progress can be expected till after the monsoon. In the meantime materials are being collected, Carpenter's Workshops established, and all requisite arrangements within the power of the Engineers being made to enable him to attack this part of the work with effect immediately on the subsidence of the River.

In the meantime the turning of the 6 arches on the East side will be gone on with.

The whole work may be expected to be completed before the setting on of the monsoon of 1858.

2. Palaar Bridge.—East abutment and Piers 1 to 6 inclusive up to springing. Piers 7 to 14 inclusive nothing done. Piers 15 to 20 inclusive and west abutment up to springing. Turning of arches on both sides about commencing. In this Bridge like the Goriathum not much can be done at the foundations of the river piers till after the monsoon. The whole work may be expected to be completed about the same time as, or rather sooner than the Goriathum.

I take this opportunity of noticing a point which has been under discussion as to whether in case of these bridges being found behind the other works, temporary bridges might be established with advantage. I am inclined to think not, because with proper exertion both these bridges ought to be completed before the other works between the Palaar and Vaniembady, which are greatly retarded by the extreme scarcity of labor in that part—nor even if these were

completed would it be possible to deliver and lay the permanent way in less time than would suffice for finishing these bridges. For the transport of the permanent way material themselves, the present temporary roads across the river beds will with very little improvement suffice; should the completion of either of these bridges however be retarded by any unforeseen circumstances, the establishment of a temporary Bridge at either place could be effected in from 6 weeks to 2 months.

3. Cauvery Bridge.—From causes into which it is unnecessary for me to go at present, it appears that nothing of any consequence was done on this bridge till within the last 6 months, so that it is in a far less advanced state than could be wished.

The present condition is the following:

East abutment foundation got out. Pier No. 1 nearly up to springing. Piers 2 and 3 foundations got out. Piers 4 to 19 nothing done. Pier 20 foundation nearly out. Pier No. 21 masonry commenced. West abutment up to about 8 feet below springing. Amongst the Piers yet to commence are 6 which are in the permanent low water of the river, and which may give some little trouble in getting in the foundations. In general however this part of the work presents but little difficulty, but on account of the great hardness of the rock is very expensive. On account of the great force of the current in the floods, the Resident Engineer considers it necessary to dress the beds and joints of the stones, and although I think it possible that with care in the preparation of the mortar, the ordinary rubble work of which most of the other bridges are constructed might have been sufficient. I must agree with him that in so important a work, the smallest risk of failure should be avoided.

The cost of the quarrying and dressing of this stone becomes however very great, especially from the slow and imperfect methods adopted by the native Stone cutters. Methods which the Engineer has in vain endeavoured to induce them materially to improve, and the price of the masonry throughout will consequently in all probability not stand at less than from 10 to 11 Rupees per cubic yard.

The increased cost, however, is in my opinion by no means the worst point in the case. This is, that if the plan of 60 feet stone arches is to be adhered to, considering the difficulty of procuring stone cutters, and the slow rate at which those we have turn out their work, and in addition to this the delay in constructing, forwarding to the place and erecting the centerings for these larger arches, I do not think that the completion of the work could be expected with any confidence in less than from 4 to 5 years.

For these reasons I propose to submit for your consideration a proposal to modify the construction of this bridge by the substitution of 60 feet wrought Iron Girders instead of the Arches, and for the sake of economy, I should propose in the first instance to make up, all that part of the masonry which is above permanent low water level, for a single line only. At the same time I propose to lower the rail level, which has been fixed at its present height merely from the necessity of keeping the springing of the arches above the flood level, about 10 feet. By this means much masonry will be economized. With a bridge of this kind there would be no difficulty whatever in adding the second line whenever the traffic might require it, which would probably not be for a considerable time to come. I have therefore directed the work to be for the present carried on in a manner to admit of this modification being adopted, and I would beg you, if you see no objections, to submit it to the proper authorities.

I shall in the meantime, be preparing the necessary drawings, but I hope that what I have above stated may be found sufficient to enable the Government to arrive at a decision on the proposal. In case of its acceptance, the whole work may be expected to be finished within two years.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

No. 347.

On a letter from the Agent and Manager of the Madras Railway Company, No. 758, dated 6th October 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

In a letter, No. 775, dated 27th August 1857, the Agent was requested to furnish, for the information of Government, a special Report on the condition of the works, on the Goriattum, Palaur, and Cauvery, bridges.

2. The Agent with a letter, No. 758, of the 6th instant, without making any reference to the application from this office, forwards the required report from the Chief Engineer, and supports the suggestion made by that Gentleman, to modify the construction of the Cauvery bridge by substituting for the arches wrought iron girders.

3. From Mr. Heppel's report it appears that—

Of the Goriattum bridge of 24 arches of 30 feet the East abutment with 6 piers are built up to the springing level, and 2 piers to the level of the river bed; that the foundation of 1 more pier is nearly out, and that to the remaining 14 piers, and the West abutment, nothing has been done.

4. Materials for the whole work are being collected, and the completion of the bridge is anticipated before the setting in of the Monsoon of 1858, or about this time year.

5. Of the Palaur bridge of 21 arches—that both abutments, with 12 piers are built up to the springing level, and that to the remaining 8 piers nothing has been done. The turning of the arches is about to be commenced, and the bridge is expected to be completed about the same time, or rather sooner than the Goriattum.

6. The estimate for Rs. 63,880 for a bridge of 24 arches, was sanctioned in Extract Minutes of Consultation, No 37, of the 7th February 1856, and the Agent and Manager will be called upon to report, on what grounds the sanctioned plan has been departed from, by the substitution of 21 for 24 arches. In the meantime I am informed by Lieutenant Roberts, that the question of the alteration in the design was brought verbally to Colonel Pears' notice by the late Acting Chief Engineer, and that he was requested to communicate with the Agent on the subject.

7. No communication however, having been received in this Office, I have considered it necessary to call upon the Agent for an explanation of the circumstance.

8. I fully concur in the opinion expressed by Mr. Heppel, that with proper exertion both these bridges* may be completed in time to prevent any delay on their account, in opening the Railway to Vaniembady, and that the idea of establishing temporary bridges should not be entertained.

9. On the Cauvery bridge of 22 arches of 60 feet, the progress made is very trifling, only one pier having been built up nearly to the springing level, the masonry of another pier commenced, and the west abutment built up to about 8 feet below the springing. The foundations of the East abutment and of 2 piers have been excavated, and of another pier nearly so, while to the remaining 16 piers nothing has been done.

10. Colonel Pears in his letter, No. 260, 21st July last, having fully entered into the question of delay in carrying on work at the Cauvery bridge, it appears unnecessary to notice further the allusion made in para 3 of Mr. Heppel's letter.

11. But little difficulty is anticipated in getting in the entire foundations, but the work in consequence of the hardness of the rock will, it is stated, be expensive.

12. Again, it is stated that the cost of quarrying and dressing the stone is so great, that the masonry throughout will probably not cost less than from 10 to 11 Rupees per cubic yard, the rate allowed in the estimate being Rupees 5 only.

13. Mr. Heppel lays great stress on the slow progress that is to be expected, from the difficulty of procuring stone cutters (a difficulty I should not have expected during the present stoppage of public works), and in constructing, forwarding to the place, and erecting the centerings and states that the completion of the work cannot confidently be expected in less than 4 or 5 years.

14. With a view of expediting the work the modification proposed is,

1st. To substitute for the arches, as before observed, wrought iron girders,

2ndly. To build up all the masonry above the permanent low water level for a single line only, and,

3rdly. To lower the rail level about 10 feet.

15. Mr. Heppel observes that, when the traffic requires it, there will be no difficulty in adding a second line, and in concluding his Report states, that he has directed the works to be carried on at present, in such a manner as will admit of the proposed modification being adopted, the necessary drawings in the meantime being under preparation.

16. From what has been stated it will be seen, that the modification proposed is not to meet any Engineering difficulty, but merely to save time; no approximate estimate is given of the saving likely to be effected by the substitution of the iron girders; no mention is made, which might have reasonably been expected under the existing difficulty in procuring stone, of substituting brick for that material; nor is it apparent why any delay should be experienced in constructing, forwarding, and putting up the centerings.

17. The estimate of Rs. 1,91,670, sanctioned in Extract Minutes of Consultation, No. 209, dated 22nd April 1857, provided for building a masonry bridge, that is, one of "brick and chunam," as ordered in Extract Minutes of Consultation, No. 213, dated 2nd July 1856, to be understood by the word "Masonry"; nor has any report until now been made to this Office of the intention of using stone; a point on which explanation will be required from the Agent.

18. In para 8 of Colonel Pears' observations, No. 140, dated 16th April 1857, it will be observed in reference to the Cauvery bridge, that mention is made of Rs. 5 being a very liberal allowance per cubic yard for brick masonry.

19. I do not consider that Mr. Heppel has advanced sufficient reasons in support of his proposed modification, but as Government may probably wish to refer the question to the authorities in England, I would suggest, pending their decision, that the Agent be directed not to allow of any departure from the original design of the bridge.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 7th October 1857.

No. 494.

FINANCIAL RAILWAY DEPARTMENT.

Extract from the Minutes of Consultation under date 15th October 1857.

Read Observations of the Officiating Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

Forwarding a Special Report on the condition of the Works on the Goriattum, Palur and Cauvery Bridges.

(Here enter 7th October 1857, No. 347.)

With the foregoing Observations the Officiating Consulting Engineer submits a letter from the Agent accompanied by a special report from the Chief Engineer of the Railway on the condition of the Works on the Goriattum, Palur and Cauvery Bridges. In this letter the Agent supports the proposition made by Mr. Heppel, with the view of expediting the Work, to modify

the construction of the Cauvery Bridge by the substitution of wrought iron Girders for the Arches.

2. The Government agree with the Officiating Consulting Engineer that it will be necessary to obtain the information referred to in paras. 16 and 17 of his report, before any decision can be arrived at as to the advisability of the change proposed by the Chief Engineer. When this information, which the Agent should be called upon to furnish without delay, is laid before them, it will then be for consideration whether a reference should be made to the Authorities in England or not, on the subject.

(True Extract.)

E. MALTBY,

Acting Chief Secretary.

MADRAS, 20TH OCTOBER 1857.

No. 898.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

With reference to your letter No. 758 of the 6th instant, submitting a special report from your Chief Engineer on the condition of the works on the Goriattum, Palur and Cauvery Bridges, and supporting the proposition made by Mr. Heppel with the view of expediting the work, to modify the construction of the Cauvery Bridge by the substitution of wrought Iron Girders for the arches, I have the honor, by order, to inform you that Government consider it necessary to have before them the information called for in a letter from this office, No. 861, dated the 7th instant, before they can arrive at any decision as to the advisability of the change proposed by the Chief Engineer.

2. I have to request therefore that you will be good enough to furnish the information called for in the letter above adverted to, with as little further delay as possible.

I have, &c.,

(Signed) C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

MADRAS, 7TH OCTOBER 1857.

No. 861.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor by order to acknowledge the receipt of your letter No. 758, of yesterday's date, forwarding a report from your Chief Engineer on the present state of the works on the Palur, Goriattum and Cauvery Bridges, and to apprise you that the orders of Government on the question raised by Mr. Heppel regarding the Cauvery Bridge will be communicated to you with as little delay as practicable. In the meantime however I have to request that you will

favor Government with a report as to the grounds—on which "stone" Mr. Heppel's letter, dated 1st October, para 3, Clauses 2 and 3. has been substituted for "Brick in Chunam" for this Bridge without their authority having been first obtained for so doing.

2. In communicating the sanction of Government to the estimate and plan of the Cauvery Bridge, it was distinctly intimated, that there should be a strict observance of the rule laid down by Government, that whenever the Letter No. 423, dated 27th April 1857.

word "Masonry" is used, it be understood as "Brick in Chunam," and in a further letter* being a reply to one from you dated 15th May 1857 No. 415, you were informed, para 4, that in more important works of Masonry, such as Bridges estimated at, or above, Rupees 15,000, the rule already laid down should be observed; and if such works are to be constructed of material other than Brick in Chunam, a report to that effect before beginning the work should be made.

3. No report of the nature required appears to have reached this Office relative to the Bridge in question, until the receipt of Mr. Heppel's letter before noticed.

4. From Mr. Heppel's report on the "Palaar Bridge," it would appear that it consists of only 21 arches, while the plan and estimate sanctioned by Government under date the 7th February 1856, communicated to you on the 9th idem, provided for a Bridge of 24 arches of 30 feet span. I shall feel obliged, therefore, by your affording explanation of the circumstances under which you have authorized a deviation from the sanctioned plan, and also why no report of the same was made to Government.

5. I have also to observe, that in handing up Mr. Heppel's letter, you make no allusion whatever to a requisition* from this office for a "special report on the actual condition of the works on the Cauvery, Palaar and Goriattum Bridges."

(Signed) C. C. JOHNSTON,
Officiating Consulting Engineer for Railways.

No. 847.

MADRAS RAILWAY.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

1. With reference to your letter No. 861, dated the 7th October, in which you call for explanation as to the grounds on which, stone has been substituted for brick in Chunam in the construction of the Cauvery Bridge I have the honor to annex a copy of a letter from the Chief Engineer No. 208, dated the 10th November, in which he states that it was never contemplated to construct the Cauvery bridge of other material than of stone, but there has been an oversight in not communicating such intention to the Government.

2. He also states that the alteration in the construction of the Palaar Bridge of 8 middle openings of 40-feet span, each in place of 12 of 30 feet, was made with the concurrence of your predecessor.

3. With reference to the 5th paragraph of your letter, I beg to observe that I furnished you with a special report, by the Chief Engineer on the Cauvery, Palaar and Goriattum Bridges, and do not therefore understand what is meant, by the expression therein that, "you make no allusion whatever to a requisition from this Office," &c.

4. In advertence to letter from your office No. 503, dated the 22nd of May 1857 paragraph 4, the Acting Chief Engineer then informed me that in all bridges estimated at or above Rupees 15,000 it was intended, whenever obtainable, that stone be used in place of brick in chunam.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 11th November 1857.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 13th November 1857.

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MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 10TH NOVEMBER 1857.

No. 208.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway.

SIR,

Yours No. 878, October 8th annexing letter of Officiating Consulting Engineer No. 861 October 7th.

There certainly appears to have been some inadvertence in not bearing in mind the somewhat singular meaning attached by order of Government to the word "Masonry."

The original estimate for the Cauvery bridge was sent in before the receipt of this order, and the word Masonry therefore used in its ordinary acceptation. It is however undoubtedly true that on being informed of the sense in which it was understood by Government we ought on deviating from that sense to have reported it, and we have to apologize for the omission. There was however never any intention in this office to construct the Bridge otherwise than of stone, which was considered the best material in every respect for the purpose, afforded by the country.

I should have replied earlier on this subject but considering the essential question to be whether brick or stone was to be preferred, I had written to the Resident Engineer for some further information, which I am now waiting.

In the meantime I may state, that either one or the other will require, unless I am much mistaken, about twice the time for completion that will be required for the Iron Topped bridge.

The bridge over the Palaar River was sanctioned for 24 openings of 30 feet, giving 720 feet waterway. The alteration made is, that instead of the 12 middle openings, there are 9 of 40 feet span. This alteration has not hitherto I find been regularly reported, but it was made with the knowledge and concurrence of the Consulting Engineer who was on the spot with the late Chief Engineer.

The advantage of the alteration in a place where the foundations are the chief difficulties is a course too obvious to require a word. It was intended to send a drawing of the Bridge as altered, but it has been impossible as yet to get them out under the press of work in the office.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

(True copy)

T. A. JENKINS,

For Agent and Manager.

MADRAS RAILWAY.

No. 891.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

In reference to my letter No. 847 dated the 11th of November and its annexment, I have now the honor to forward to you a copy of a letter from the Chief Engineer of this Company No. 225 dated 25th ultimo, in which he affords further explanation in support of his views in recommending that the Cauvery Bridge be constructed with iron girders in place of brick or

stone arches, and I beg to recommend that Government may be pleased to sanction the construction of the Cauvery Bridge in accordance thereto.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 2nd December 1857.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 4th December 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE.

MADRAS, 25TH NOVEMBER 1857.

No. 225.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

Since my letter of the 10th instant I have obtained further information with reference to the question of adopting brick work for the arches of the Cauvery Bridge, the result of which is that I am confirmed in the opinion that on the present design of the bridge it would be a very imprudent proceeding.

2. The design itself in fact when carefully examined shows that the use of none but materials having a very high resisting power to fracture by compression, could have been contemplated, and if we should be under the necessity of using bricks, I should have to submit for sanction a design exhibiting considerable modifications in some of the dimensions, and particularly in the thickness of the arches, which would have to be increased by one half.

3. The Resident Engineer has sent me the following estimates of the cost of completing this bridge in stone, brick and in the manner proposed.

Bridge built of Stone.

Excavation for foundation Cubic yards.....	15,640	8	7,820
Masonry do.....	26,349	15	3,95,235
Parapets, Cubic feet.....	29,770	1	29,770
Covering of arches, Square yards.....	400	5	2,000
Pipes.....	22	10	220
Scaffolding.....			15,000
Contingencies and Sundries 10 per cent.....			40,000
	Rs.....		4,90,045

Stone Piers and Brick Arches.

Excavation for foundation, Cubic yards.....	15,610	8	7,820
Masonry Piers and Abutments, do.....	6,946	15	1,04,190
Brick work arches, do.....	20,503	5	1,02,515
Covering of arches, Square yards.....	400	5	2,000
Pipes.....	22	10	220
Scaffolding centering.....			15,000
Contingencies and Sundries.....			23,000
	Total Rupees.....		2,54,745

Gradients lowered 10 feet and an Iron top for Single line of Rails.

Excavation for foundation, Cubic yards.....	15,640	8	7,820
Masonry do.....	5,132	15	76,980
Iron Girder 7 Tons each.....	44	200	61,600
Timber.....			6,000
Scaffolding.....			2,000
Contingencies and Sundries.....			15,000
	Total Rupees.....		1,69,400

4. I can only account for the great excess of the 1st of these estimates above the original one by the fact that the stone found in the neighbourhood has turned out much more difficult to quarry and work than was expected.

5. I must confess that although in the event of our being compelled to adhere to our present plan I should by every means endeavour to bring down the cost of the stone. I could not in any way with a proper regard to the quality of the work hope to effect much saving in the total. Several items such as scaffolding appearing to be considerably under-estimated.

6. In the case of brickwork being adopted, the second estimate would have to be increased by about Rupees 50,000 for increased thickness of arches which the Resident Engineer does not appear to have taken into account, besides this the scaffolding is as in the former one, under-estimated.

7. In the third estimate the price of the Iron girders is I think taken too low to include freight and erection, nor can I accurately state the price at which they could be obtained without making enquiries requiring time, supposing an increase of 20,000 to be necessary we should have 1,90,000 for the single line, and probably about 80,000 more for the completion of the double line, should it be required.

8. The advantage of economy seems therefore to be with the plan proposed, accompanied by the still more important advantage of being able to see our way much more clearly to the attainment of our object, than by either of the others, which involve a much greater amount of contingencies, and consequent risk of delay and disappointment.

9. Few Engineers I think visiting the spot could come to any other conclusion than that an Iron Bridge was the proper thing for the place. The stone bridge appears to me, as the estimate for it in fact shews, to have been a mistake and adopted on a misconception, nor does it appear from the result of my enquiries that the matter would be much mended by the substitution of brick. I hope therefore the Government will be disposed to sanction the proposal now before them, in which I shall be ready to supply any further information required, though in a matter, the practice of which is now so thoroughly familiar to Engineers as the construction of a 60 feet Iron bridge, I have presumed that it will not be deemed necessary to have detailed drawings in order to arrive at a decision.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

No. 384.

On a letter from the Agent and Manager of the Madras Railway Company, No 847, dated the 11th November 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

The Agent and Manager in a letter, No. 861, dated 7th October 1857, was called upon to explain the grounds on which stone has been substituted for brick in chunam in the construction

of the Cauvery bridge, referred to in Extract Minutes of Consultation Financial Railway Department, No. 494, dated the 15th idem.

2. In reply, the Agent with the foregoing letter, forwards copy of a communication from the Railway Chief Engineer, from which it appears 1st, "that it was never contemplated to construct the Cauvery bridge of other material than of stone, but there has been an oversight in not communicating such intention to the Government."

"2nd. That the alteration in the design of the Palaar bridge was made with the concurrence of my predecessor."

3. As already stated in my report, No. 347, dated the 7th Ultimo, the question of the alteration in the design was brought verbally to Colonel Pears' notice, and the late Acting Chief Engineer was requested to communicate with the Agent on the subject, but whether he did so, or not, is not explained. In any case, the Railway Officers must have been fully aware of the necessity of obtaining written authority for the alteration proposed, and their not applying for such, is another instance of oversight.

4. The obvious meaning of the expression in my letter, which the Agent is at a loss to understand, is that in forwarding the Report on the Palaar, Cauvery, and Goriattum bridges, he made no allusion to the letter from this Office calling for such Report.

5. In intending that for all bridges estimated at above Rupees 15,000 stone wherever obtainable, should be used, instead of brick in chunam, it never could have been intended that stone in chunam, costing from 10 to 11 Rupees per cubic yard, should be substituted for brick in chunam, estimated at Rupees 5 per cubic yard, without the authority of Government; and if the Agent is under the impression that so great a license is permitted, it is advisable that he should be undeceived.

6. The information required from the Railway Chief Engineer regarding the alteration in the design of the Cauvery bridge has not yet been furnished, and I should not have troubled Government with this reference, were it not that it appears necessary the Agent should be directed to call Mr. Heppel's attention, to the impropriety of making unbecoming remarks on the orders of Government.

7. Mr. Heppel states that the word masonry was used in the original Estimate of the Cauvery bridge, in the ordinary acceptation of the word. The Estimate is dated the 13th June 1856 and the order of Government which defined the meaning to be attached to the word "masonry" was passed on the 2nd July* of that year, in consequence of the substitution of stone for brick in the Bridge across the neck of the Madras Terminal Station, by which the sanctioned Estimate was exceeded by Rupees 5,640. The revised Estimate, however, for the Cauvery bridge was not prepared by the late Acting Chief Engineer until the 3rd April 1857, or 9 months after the orders of Government had been made known, and the neglect of those orders, whether from oversight, or any other cause, must be considered reprehensible.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.
Madras, 13th November 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 578.

Extract from the Minutes of Consultation under date the 2nd December 1857.

Read Observation of the Officiating Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

Affording explanation as to the grounds on which Stone has been substituted for Brick in Chunam, in the construction of the Cauvery Bridge. (Here enter 13th November 1857, No. 384.)

The Government will await the information to be furnished by the Chief Engineer regarding the alteration in the design of the Cauvery bridge.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

No. 406.

On a letter from the Agent and Manager of the Madras Railway Company, No. 891, dated the 2nd December 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

With the foregoing letter the Agent and Manager submits copy of one from the Railway Chief Engineer, in further support of his proposal, that wrought iron girders should be substituted for the arches of the Cauvery bridge.

2. The approximate estimates for the bridge, including certain items noted by Mr. Heppel are:

1st Bridge constructed entirely with stone.....	Rupees.....	4,90,045
2nd do. with stone piers, and brick arches.....	„	3,04,745.
3rd do. with stone piers and wrought iron girders..	„	2,79,400

The adoption of the latter being further advocated, as requiring less time for construction.

3. The bridge having been originally designed by the late Chief Engineer Mr. Bruce, it appears advisable that the correspondence on the subject of Mr. Heppel's proposed modification, together with the sanctioned plan and estimate,† should be forwarded for the consideration of the authorities in England,

and the question left to their decision; the Agent in the meantime being directed, as suggested in para 18 of my observations, No. 347, dated 6th October last, not to allow of any departure from the sanctioned design.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 4th December 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 601.

Extract from the Minutes of Consultation under date the 16th December 1857.

Read Observations by the Officiating Consulting Engineer, dated 4th December 1857, No. 406.

Ordered that the foregoing papers and the previous correspondence on the subject be transmitted to the Honorable the Court of Directors, with a view to the question of the proposed modification of the sanctioned Plan for the Cauvery Bridge being submitted for the consideration and decision of the Railway authorities in England. Pending their decision the Agent should be directed not to allow of any work to be proceeded with, which would not be equally adapted to either plan.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

Communicated to the Agent and Manager in letter No. 1115, dated 23rd December 1857.

KUDDULHOONDY BRIDGE.

MADRAS RAILWAY COMPANY.
AGENT AND MANAGER'S OFFICE.

No. 177.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to forward herewith a sketch shewing the mode in which the Chief Railway Engineer proposes to carry the Railway over the Kuddulhoondy estuary in the XVIIth District, as explained by Mr. Bruce in a letter dated the 19th of March.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 29th March 1856.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
CAMP, DISTRICT 16, 19TH MARCH 1856.

TO MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

I beg to submit the design of a bridge which appears to me best adapted for carrying the Railway over the Kuddulhoondy River on District 17.

2. The river where we cross it is very wide, being nearly 34 chains, or 2,244 feet. The whole of this width is not actually required for the passage of the water coming down from the uplands, but as the river emerges from the Hills about one mile above the point of our crossing, it has worked out for itself an extensive basin in the low land skirting the sea.

3. At the bar the channel is very narrow; this is caused by the formation of a tongue of sand on the north side, running due north and south, having only a channel of about four hundred feet. This, however, is liable to be increased during the monsoon by the tongue of sand above referred to, being washed away by the floods.

4. We cannot take the line higher up the River to a narrower point, because of the hilly nature of the ground on the south side of the River, and it would not be safe to take the line nearer to the sea.

5. This being a tidal River, and having in the channel six feet of water at low tide, we could not, without great expense, put in masonry foundation, and timber piles alternately wet and dry would be very liable to decay, and to destruction from worms.

6. I have, therefore, thought it best to propose a frame-work consisting of cast iron hollow cylindrical piles, rising above all ordinary water-level, and to place on these piles a superstructure of timber.

7. This will, I think, be a simple structure, and as economical as the nature of the difficulty to be overcome will allow.

8. You will observe that it is proposed to carry the line over the main channel, upon a viaduct, such as I have described and shewn in the plan, with forty openings of 20 feet each: this would, I think, be sufficient for the passage of the water; but that we may not run too great a risk, I propose to provide water-way in the minor channel on the north side of the river, by putting there also 19 openings constructed in the same manner, leaving the space between these two to be made up by an embankment.

9. The bed of the river, so far as we have been able to examine it, (15 feet,) is composed of strong sand or fine gravel, quite strong enough to bear the piles which I propose. The length of these piles should be a matter of experiment, but they would probably have to vary from 10 to 15 feet below the bed of the river.

10. There is one point which I should be glad if you would refer to the Board for Mr. Rendel's opinion, and that is supposing that we can reach nothing stronger than good, clean, coarse sand or fine gravel, would it be better to use screw piles, or piles such as I have shewn in the drawing?

11. There is nothing to apprehend from the scour in the channel with the ample water-way which is provided.

12. The estimate for the work, as shewn in the plan, is Rupees 58,750.

13. We can get the piles from Beypoor ironworks, and the timber down the river from the jungles.

14. It is absolutely necessary that we should have a saw mill to cut the timber, and if the Board would consent to send us out a carpenter accustomed to Railway timber bridges of this kind, it will be a wise economy.

I have, &c.,

(Signed) G. B. BRUCE,

Chief Engineer.

(True copy.)

T. A. JENKINS,

Agent and Manager.

No. 164.

TO MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor to return the sketch forwarded with your letter No. 177 of the 29th Instant, and to request you to observe that your Chief Engineer has apparently not determined upon the description of piles which he would propose to use in the construction of the bridge across the estuary of the Kuddulhoondy on the Malabar Coast. The project is not therefore in a state to be submitted to Government.

2. When the plan which your Company proposes to adopt in carrying out this work shall have been fully considered and determined upon, I request you will cause drawings and Estimates to be prepared for submission to Government.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 31st March 1856.

MADRAS RAILWAY.

No. 635.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to acquaint you that the Board of Directors of this Company, in their letter No. 126 dated the 22nd May last, after remarking on the unsatisfactory state in which the important matter of the construction of the viaduct over the Kuddulhoondy River yet remains,

have instructed me to forward to you, with a request that you will submit the same for the consideration and orders of the Government, a sketch Plan prepared by their Consulting Engineer, Mr. Hawkshaw, of a temporary Timber Viaduct, leaving the permanent bridge to be built at a future time, as explained in Mr. Hawkshaw's letter, a copy of which was appended to the letter in question, and which I now send you together with a copy of the Board's letter for ready reference. I beg to forward an estimate of the cost of constructing the Viaduct amounting to Rupees 10,190, which I beg to recommend for the sanction of Government, and annex a copy of a letter from the Chief Engineer No. 127 dated the 5th Instant, having reference thereto.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 7th August 1857.

MADRAS RAILWAY COMPANY,
33, NEW BOND STREET,
LONDON, 22ND MAY 1857.

No. 126.

SIR,

The Board have had under their anxious consideration the unsatisfactory state in which the important matter of the construction of the viaduct over the Kuddulhoondy River yet remains. On the receipt of Mr. Bruce's proposed design for it in May last, no time was lost in obtaining and transmitting to you as requested, Mr. Rendel's opinions and suggestions thereon, and the Board remained under the impression that measures had since been actively pursued for carrying the plan into effect. It was therefore with great disappointment that they learned by personal enquiry of Mr. Bruce that the plan of the structure had not after all been completed before he left India; and now that it has been received here by him, it proves not to be accompanied by the information as to the depth of the water, and character of the river bottom requisite to enable our Consulting Engineer to determine the description of bridge best suited for it, or to make a design and specifications with safety for the iron or other materials required from hence for its construction. While making every allowance for the effect of Mr. Bruce's illness and sudden removal from the direction of the Engineer department, the Board are unable to see in these events any sufficient explanation of this very unsatisfactory course of proceeding, in a matter where delay was so much to be deprecated.

2. With the view of obviating as far as possible under these circumstances the serious evils arising from the continued want of a communication across this river during the construction of the line, and the further evil of the opening of the western end of the Railway for traffic being delayed from the same cause, Mr. Hawkshaw has recommended the immediate erection of a temporary structure of wood at a small outlay, leaving the permanent bridge to be built at a future time when the requisite information is obtained, and before the temporary bridge is worn out.

3. The Board entirely concurring in Mr. Hawkshaw's opinions on this subject, direct me to forward a Copy of his report, with the accompanying explanatory sketch, of the plan he recommends, and to request that you will immediately apply to Government for authority to carry the same into execution with as little delay as possible.

I am, &c.,

(Signed) J. WALKER,

Managing Director.

33, GREAT GEORGE STREET,
WESTMINSTER, 13TH MAY 1857.

DEAR SIR,

As requested in your letter of the 27th ultimo, I have considered the question as to the Bridge over the Kuddulhoondy River, and after referring to the documents that relate to it and obtaining from Mr. Bruce all the information he could give me, I have to report as follows:—

The very low price at which masonry can be executed in India, and its superiority to any other material for Bridges, make it very desirable that wherever practicable stone structures should alone be used. But as the river in question is never wholly dry and the usual process of obtaining foundations by sinking wells in the manner which appears to be practised with success in India is not available, it seems I am sorry to say from all the information I can now obtain, not possible, except by having recourse to coffer dams, which would involve much delay and increased cost, to build a stone Bridge in that situation.

This being the case, I am of opinion that the best course ultimately may be to build the bridge of iron. The plan might be similar perhaps to that proposed by Mr. Bruce, but should the Board decide to have an Iron Bridge, a design I fear could not be safely made for it in England, without much more accurate information as to the depth and character of the River bottom, than is at present to be had, and then a considerable lapse of time would occur before the bridge could be made, sent out to India, and erected.

Looking to the importance to the works to be able to cross the river in question, the saving that will be effected in the transmission of materials across it, and the importance of being able to open the line without the delay that is otherwise certain to occur, I think on the whole it will be best in this case, which I consider to be a special one, to build a temporary structure of wood at a small outlay, and to erect the permanent bridge at some future period when the requisite information is obtained, and before the temporary Bridge is worn out.

If built of teak or other suitable timber, the Bridge I suggest will last for some years, it will be economical in construction, and will ultimately facilitate the erection of the more permanent structure.

The kind of bridge I suggest is simply to drive a couple of piles at intervals of about 12 feet which will carry a cap piece, and upon those will rest a couple of 15 inch balks. These will be planked with 3 or 4 inch planking and the rails placed on them. The following sketch will shew the sort of bridge or pileway I mean. The cost of it will be about 35s. a foot lineal.

The bridge would be in two lengths, separated from each other by a short embankment. One length would be 360 feet, the other 780 feet, and the aggregate length 1,140 feet.

As nearly as I can tell without a proper design and section of river bed, the cost of an iron viaduct for double line of way would be about £12 per foot run, and for a single line about £7 per foot run.

I am, &c.,

(Signed) JOHN HAWKSHAW.

JAMES WALKER, Esq.,
33, New Broad Street.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 5TH AUGUST 1857.

No. 157.

To T. A. JENKINS, Esq.,
Agent and Manager Madras Railway.

SIR,

Yours No. 673, July 28th.

The subject of the Kuddulhoondy bridge was discussed in London before my departure, so that I am already perfectly acquainted with the plan proposed, and have nothing to alter in it;

no drawing can therefore be more suitable for laying before the Government than the one forwarded here with Mr. Hawkshaw's signature, to which I have added my own, and I now beg to return it to you for submission to the Government.

An estimate is also forwarded.

I have, &c.,
(Signed) J. M. HEPPEL,
Chief Engineer.

(True copies.)

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 18th November 1857.

No. 789.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letter No. 635 of the 7th August, I have the honor by order to convey to you the sanction of Government to the construction of a timber bridge across the Kuddulhoondy estuary in the District of Malabar according to the plan forwarded with your letter.

2. The estimate has not been examined nor can it be until further information shall have been received, the drawings forwarded by you not showing the nature of the soil or depth of water in the different states of the river.

3. According to the Section forwarded with your letter No. 686 of the 27th ultimo, there would appear great doubt of the sufficiency of water way allowed, and I am to request therefore that while making every preparation for the commencement of this work, your Chief Engineer will take the first opportunity, on visiting the spot, of reporting specially on this subject, submitting if necessary a revised Estimate.

4. I am also to request that Mr. Heppel will take the same opportunity of considering the propriety or practicability of adopting piers of masonry in the proposed permanent structure.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 3rd September 1857.

No. 851.

MADRAS RAILWAY.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

With reference to your letter No. 789 dated the 3rd September, I have the honor to annex a special report from the Chief Engineer upon the sufficiency of water way and other matters connected with the construction of the Kuddulhoondy bridge.

2. Mr. Heppel states that he considers the water way allowed, to be more than sufficient ;

that he has no doubt that it is quite practicable to construct the bridge with masonry piers, but for the reasons therein given he is in favor of cast-iron cylinders being used.

I have, &c.,
T. A. JENKINS,
Agent and Manager.

Madras, 14th November 1857.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 18th November 1857.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 10TH NOVEMBER 1857.

No 210.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

Yours No. 787 September 4th, annexing letter of Consulting Engineer No. 789 September 3rd.

2. Shortly after the receipt of your letter I had an opportunity of visiting the site of the bridge over the Kuddulhoondy, and from what I there saw I became convinced that the water way provided by the temporary bridge, so far from being too small, was considerably greater than the case required.

3. A short distance above the site of the bridge an island has been formed, and the great breadth of the river at the bridge appears to arrive from the confluence of the currents on either side of this island. These evidently vary considerably in quantity and velocity from time to time, but the main discharge appears to be always on the south side.

4. About 2 miles above this island the river contracts to about 7 chains in width with steep banks—and I was informed that the water had not been known to rise over the flat land on the left bank which was about 4 feet above the water as it then stood. Even if it did, this land being thickly planted with cocoa trees and having buildings upon it would not afford much effective waterway.

5. The information to be obtained there as to flood levels is extremely uncertain, and I find that the flood line drawn on our section is supposed to rest on the authority of the late Mr. Connolly, but the point at which this level was observed is not specified.

6. Under such circumstances the arriving at a satisfactory conclusion is a matter of difficulty, and it is yet more difficult to make such a statement as to obtain the concurrence of others in them, I can only say that on examining the case with all the attention I could give it in company with Mr. Fenwick, and Mr. Beattie, I came to the conclusion that a width of 10 chains would be amply sufficient, and I should propose to effect this by banking across the north channel which is at present almost filled up, and putting the bridge in the south channel. In the worst case all we should have to apprehend would be a temporary stoppage of the line, while on the other hand the information we should obtain would be probably the means of effecting great saving in the permanent design.

7. With reference to the permanent structure it has always appeared to me that one advantage to be derived from the temporary one would be the affording of more time for the determination of this important point.

8. I have no doubt that it would be quite practicable to construct masonry piers, but considering that no very suitable materials are found near the spot, and that the carrying of foundation to a sufficient depth in sandy beds like the one in question is a matter involving a great amount of labour and some uncertainty. I am strongly inclined to think that cast iron cylinders sunk by the pneumatic process now so very generally practised in England, and on the Continent of Europe, would be found the best suited to the case. In this case the top would be wrought iron 60 feet girders like those proposed for the Cauvery.

9. The only doubt I have on this point is as to the effect of the extremely moist climate of Malabar on the iron work, to which, and to the means of obviating, it I propose to devote some attention before adopting any final conclusion.

I have, &c.,
(Signed) J. M. HEPPEL,
Chief Engineer.

(True copy.)

T. A. JENKINS,
Agent and Manager.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 635 and 851, dated the 7th August and 14th November 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

1. On the 29th March 1856, with a letter No. 177, the Agent and Manager forwarded copy of a communication, dated 19th idem, from the late Railway Chief Engineer, together with a sketch showing how it was proposed to carry the Railway across the Kuddulhoondy Estuary in the Malabar District.
2. The sketch not being complete was returned on the 31st March; and on the 24th December in reply to a letter from this Office of the 19th idem, the Agent stated that the plan and Estimate were in hand, and would be transmitted without delay.
3. From the 24th December 1856, to the 7th August 1857, no further communication was received; on the latter date the Agent forwarded copies of letters noted in the margin, together with a design and Estimate furnished by Mr. Hawkshaw, Consulting Engineer to the Railway Board, for temporarily bridging the Estuary in question.
From the Managing Director No. 126, dated 22nd May 1857.
From the Consulting Engineer of the Railway Board dated 13th May 1857.
From the Chief Engineer No. 157, dated 6th August 1857.
4. Further information being required before the Estimate could be examined in this Office, the Agent, in a letter, No. 789, dated 3rd September 1857, was requested to furnish the same, and to call the attention of his Chief Engineer to certain points noticed by Colonel Pears; authority being given in the meantime, for making all necessary preparations for commencing the work.
5. The Agent with his letter, No. 851, of the 14th Instant, forwards a special report from Mr. Heppel, who after a personal inspection of the sites of the proposed bridges, expresses an opinion that the waterway provided is considerably more than is required, and proposes to construct one bridge only in the South Channel, and to bank across the North Channel; stated at present to be almost filled up.
6. It appears advisable either that the Agent should be directed to carry out the integrity, the design furnished by Mr. Hawkshaw, or to obtain the authority of the Board making any deviation from it; the former is the course I would advocate, in order that no time may be lost.
7. Mr. Hawkshaw's design provides for two bridges, one of 360, and the other of 780 feet in length, and the Estimate, which is recommended for the sanction of Government, amounts to Rupees 10,190.

8. Mr. Heppel has not yet come to any decision as to the character of the permanent bridge or bridges to be constructed, though, as far as he has considered the question, he favors the adoption of cast iron cylinders for the piers, the bays to be spanned by wrought iron girders 60 feet in length. Feeling, however, doubtful as to the effect of the climate of Malabar on the iron work, he requires further time for consideration, before arriving at any final conclusion.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 18th November 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 576.

Extract from the Minutes of Consultation under date the 1st December 1857.

Read Observations by the Officiating Consulting Engineer on letters from the Agent and Manager of the Madras Railway Company.

Forwarding Plan and Estimate for the construction of a wooden Bridge over the Kuddulhoondy Estuary in Malabar. (Here enter 18th November 1857, No. 387.)

The Government are of opinion with Captain Johnston that the Railway Agent should either carry out in its integrity Mr. Hawkshaw's design for a temporary structure of wood for carrying the Railway across the Kuddulhoondy Estuary, or obtain the authority of the Board of Directors for making any deviation from it which Mr. Heppel, the Chief Engineer, may consider necessary. But in order that no further time may be lost in temporarily bridging the river and thus obviating, as remarked by the Railway Board, "the serious evils arising from the continued want of a communication across it during the construction of the line, and the further evil of the opening of the Western end of the Railway for Traffic being delayed from the same cause;" the Right Honorable the Governor in Council resolves to authorise the immediate construction of the temporary timber Viaduct, according to the Plan furnished by Mr. Hawkshaw, at the estimated cost of Rupees (10,190) ten thousand one hundred and ninety, which is recommended for sanction. It is observed that authority was conveyed to the Agent in Colonel Pears' letter of the 3rd September last, for making all necessary preparations for commencing the work.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

Communicated to the Agent and Manager in letter No. 1051, dated 5th December 1857.

TEMPORARY BRIDGES OVER THE TEROOR AND THOOTHAR RIVERS ON THE WESTERN COAST.

MADRAS RAILWAY.

No. 888.

TO CAPTAIN C. C. JOHNSTON,
Officiating Consulting Engineer for Railways.

SIR,
I have the honor to annex a copy of a letter from the Chief Engineer of this Company No. 215, dated the 12th ultimo, in which he recommends that under the same consideration which led to the adoption of the temporary Bridge over the Kuddulhoondy River temporary

Timber Bridges should also be constructed over the Teroor River at 18 miles 42 chains in District 17, and the Thootha River at 6 miles 53 chains in District 16. and forwards estimates* of the cost of constructing the same upon the same plan as that of the Kuddulhoondy Bridge, I beg to forward herewith a sketch shewing the sections of the Teroor and Thootha Rivers, and beg to recommend that the Government may be pleased to sanction the construction of Temporary Timber Bridges over these Rivers.

*Herewith sent.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 1st December 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 12TH NOVEMBER 1857.

No. 215.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

As I find that the chief considerations which led to the adoption of a temporary timber bridge over the Kuddulhoondy River are equally applicable to the case of the Teroor River at 18 miles 42 chains in District 17, and the Thootha River at 6 miles 53 chains in District 16. I beg to send in herewith estimates for such a temporary bridge in each of these cases, and beg you, if you see no objection, to obtain the sanction of Government for their construction.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the sanction of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 2nd December 1857.

No. 401.

On a letter from the Agent and Manager of the Madras Railway Company, No. 888 dated the 1st December 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

The Agent submits with this letter two Estimates (and sections) for temporarily bridging the Teroor and Thootha rivers in the Malabar District, and the necessity for these works is said to be precisely the same as that which led to the adoption of a temporary bridge over the Kuddulhoondy river; the papers, Estimate, and Plan regarding which were submitted to Government with my observations, No. 387, dated the 18th ultimo.

Paras. 25 to 28.

2. The Thootha Bridge is one of the four bridges which Colonel Pears remarked upon in his Report, No. 335, dated the 26th September.

3. It is of course of the first importance that the rivers in question should be bridged, to admit of the Western portion of the line being brought into operation as early as practicable; and as

there will evidently be some delay in the construction of the permanent works, I beg to recommend for sanction the Estimates now submitted for temporary Bridges.

4. The designs of of these temporary Bridges are the same as that proposed for the Kuddulhoondy.

5. The Estimate for the Thootha river, 990 feet in width, is Rupees 14,995, or a little more than 15 Rupees for a foot forward.

6. That for the Teroor river, about 160 feet in width, is Rupees 2,257, and at the rate of a trifle more than 14 Rupees per foot forward.

7. The rates allowed in the Estimate for Material and labor are fair, and I beg to recommend that sanction be given for the estimated sum, viz., Rupees 14,995, and Rupees 2,257.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 2nd December 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 586.

Extract from the Minutes of Consultation under date the 12th December 1857.

Read the observations by the Officiating Consulting Engineer dated 2nd December 1857 No. 401.

The Government sanction, as recommended, the two Estimates submitted by the Railway Agent for temporary Bridges over the Thootha and Teroor Rivers, amounting respectively to Rupees (14,995) fourteen thousand nine hundred and ninety-five, and Rupees (2,257) two thousand two hundred and fifty-seven.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

MADRAS, 17TH DECEMBER 1857.

No. 1095.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

Adverting to your letter, No. 888 of the 1st instant, I have the honor to communicate the sanction of Government to the two Estimates submitted by you for temporary Bridges over the

* District 16.
† District 17.

Thootha* and Teroor† Rivers, amounting respectively to Rupees (14,995) fourteen thousand nine hundred and ninety-five, and Rupees (2,257) two thousand two hundred and fifty-seven; and to request

that the expenditure on these Estimates, as well as on that of the Kuddulhoondy temporary bridge, be exhibited in the construction accounts—Form D—under a distinct item—
“Temporary Bridge as per sanction.”

I have, &c.,

(Signed) C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

VELLORE STATION, ENGINE SHED AND GOODS WAREHOUSE.

No. 596.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

No. 18 dated 2nd January 1856.
" 91 " 4th March "
" 274 " 31st May "
" 305 " 18th June "

I have the honor to request your attention to the several letters from this Office noted in the margin, and to remind you that the several requisitions conveyed therein have not yet been complied with.

2. I have had occasion, when lately inspecting a portion of the works on the 4th District in company with the Resident Engineer in charge, to observe that revised plans of the station building at Vellore have been sent for that Gentleman's guidance, but have not yet been laid before Government; and in a similar manner plans of the station at Trivallum have been forwarded to the same Gentleman, embracing, as it appears, a variety of buildings for which sanction has neither been given by Government, nor applied for by you.

3. With reference to the plan forwarded with your letter of the 19th June showing the general arrangements of minor stations, I have to request that in all cases when Estimates are forwarded and works proposed at any station whatever, the plan in question may be referred to when the proposed arrangements correspond exactly therewith. When such, however, is not the case, I request that a drawing may be prepared for the occasion.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 3RD DECEMBER 1856.

No. 864.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 596 dated the 13th of November, I have the honor to forward herewith a Plan of the Vellore Station building as proposed to be constructed, shewing also a covered way for carriages and Passenger shed.

2. The estimated cost of constructing the building is, that, as sanctioned for the Mullapooram Station, amounting to Rupees 17,252. The cost of constructing the Passenger shed is estimated at Rupees 54,000—vide copy of a letter from the Acting Chief Engineer No. 285 dated 22nd November.

3. I called upon the Traffic Manager for his report as to how far the Plan meets the requirements of his Department, I annex a copy of his reply No. 350 dated the 26th November, in which he states that in his opinion, the Passenger Traffic at Vellore, or its requirements, as the probable passing or meeting place for Trains would not justify the outlay of Rupees 54,000 for the construction of a Passenger Shed. Concurring in this opinion, and that a cover to the Platform only would suffice, I have requested the Acting Chief Engineer to furnish a sketch Plan.

57

and Estimate of the cost of constructing a roofing to the Passenger Platform. I annex a copy of Mr. Beattie's letter No. 293 dated the 2nd of December, and beg to recommend the estimate amounting to Rupees 9,400 for the sanction of the Government, as also the plan, in other respects of the Vellore Station.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 22nd May 1857.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 22ND NOVEMBER 1856.

No. 285.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

I have the honor to transmit to you the design of the station building proposed to be erected at Vellore.

2. In accordance to your letter of Instructions No. 37, dated 14th January 1856, accompanied by a letter from the Consulting Engineer, No. 18 dated the 12th of January, wherein it is stated, that the Plan of Vellore station was to be "on the same plan" as the one proposed for Mulliapooram with the addition of a passenger shed.

Para. 5 stated that, "The question in respect to adopting a different style of Architecture for each Station is left to your own judgment."

3. The present design is on the same Plan as the proposed station for Mulliapooram, sanctioned by Government, in an Extract from Minutes of Consultation in the Financial (Railway) Department, No. 11 dated the 10th January 1856, and containing the same superficial area, having only its architectural features modified in accordance to Para. 5 of your letter.

4. The present Plan shews also the passenger shed which is not yet sanctioned.

5. Enclosed is the Estimate of the Passenger shed amounting to Rupees fifty four thousand.

6. The Estimate for the building including the Tower (which can be dispensed with if desired) would amount to Rupees seventeen thousand two hundred and fifty-two, being the amount of the sanctioned Estimate for Mulliapooram Station building (Sanctioned.)...Rs. 17,252 0 0
Passenger shed....., 54,000 0 0

Rupees 71,252 0 0

7. As the Traffic is about to be opened, at as early a period as possible to Vellore, I shall feel obliged by your obtaining the necessary sanction from the Government for the Passenger shed to enable this work to proceed with as little delay as possible.

It is desirable that this shed should be constructed rapidly,—as great accommodation could be given to the Goods Traffic by using the Platform on the North side, containing a superficial area of 4,966.8 feet, should the Goods shed not be completed.

I have, &c.,

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
26TH NOVEMBER 1856.

No. 350.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

1. I have the honor to acknowledge the receipt of your letter No. 132 of the 25th Instant forwarding "Plans, estimates and original correspondence, relative to the Station buildings at "Vellore," and requesting me to state whether they meet the requirements of the Traffic Department.

2. I had the honor to state by my letter No. 103 dated 7th June, that the plans submitted of the Station arrangements for Vellore would suit the requirements of Traffic, and I am of opinion that they would be found convenient and suitable in every respect. I had not then, however, any estimates by which the cost could be ascertained, and upon re-perusing the plans, and looking over the estimates, as now sent in, I beg to observe, that I do not think the passenger Traffic of Vellore, or its requirements as a probable passenger meeting place for trains, would justify the expenditure of Rs. 54,000 for the construction of a passenger shed.

3. I would therefore suggest that the proposed passenger platform on the North side of the passenger lines should not be laid down, and that the shed should not be built, but that in lieu of the latter a roof should be placed over the passenger platform, attached to the station house.

4. It is probable I think, that a carriage shed will be required at Vellore, but it will be easy to erect this after the Station has been built, and other arrangements have been completed, by which time we should have more experience of the requirements at that station for Traffic.

5. I have had an interview with the Acting Chief Engineer upon this subject who concurs in these views, and observes that the buildings &c., may be so arranged now, as to admit of the shed being built at any future period, which is I think most advisable and will save the expenditure of Rupees 54,000, for a shed which could only be used to shelter trains en route, and may be found in practice of very little use as it could never be used as a carriage shed *per se*.

I have, &c.,

(Signed) H. A. FLETCHER,

Traffic Manager.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
2ND DECEMBER 1856.

No. 293.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

I have the honor to hand you a proposed design for covering the platform at Vellore, the cost of which will be Rs. 9,400. This includes the building of the walls at each side of the Station building, the platform foundations, filling in to proper level, and the iron gates in platform wall.

Trusting an early sanction will be obtained for the commencement of this work.

I have, &c.,

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

(True copies.)

T. A. JENKINS,

Agent and Manager.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 693.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

In reply to your letter No. 864, of the 3rd instant, I have the honor, by order of Government, to remind you that you were, by order of Government, No. 11 of the 10th January 1856, forwarded with my letter No. 18 of the 12th idem, authorized to proceed with the construction of the station houses at Vellore, Vaniembady and Mulliaporam.

2. It seems that the cost of Passenger shed as shown in the drawing forwarded by you would be heavy, and your Traffic Manager considers that a separate building would better answer the purpose of sheltering spare vehicles.

3. Pending therefore the consideration of the estimate, I am directed to convey to you the authority of Government also for proceeding with the preparation of materials for the proposes covering to the Passenger platform, the estimate for which including wall at each end, iron gate, &c., amounts to Rupees 9,400.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 5th December 1856.

MADRAS RAILWAY,
MADRAS, 29TH APRIL 1857.

No. 369.

To LIEUTENANT COLONEL T. T. PEARS, c. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to forward herewith Plans (Nos. 55, 56, and 57) of the Station house as now proposed to be built at Vellore, together with an Estimate amounting in the aggregate to Rupees 21,320 including Passengers, Platform, or Rupees 11,920 for the building only. The Estimate for out-houses, Fence Wall, &c. &c. for the Station and ground at Vellore amounts to Rupees 34,000. I beg to recommend that the Government may be pleased to sanction this outlay in substitution of that solicited in my letter No. 864 dated the 3rd December last.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 22nd May 1857.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 477.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

Adverting to your letter No. 369 dated the 29th ultimo, forwarding an Estimate for the Vellore station amounting to Rs. 21,320, I have the honor, by order, to notice that the rate

allowed for Brickwork, viz., 6 Rs. per cubic yard, appears to be very high, higher than the rates allowed in other Estimates on the Railway, for station houses as well as other buildings, and also of those prevailing in the Public Works Department for similar work—and to request you will be so good as to explain for the information of the Government the reason for such a high rate being entered in this Estimate.

The architectural design of the Vellore station though somewhat different to other buildings does not seem to justify such a high rate as 6 Rs. a cubic yard, or about 3 As. and 7 Pies per cubic foot for Brickwork.

I have, &c.,

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 13th May 1857.

MADRAS RAILWAY,
MADRAS, 18TH MAY 1857.

No. 426.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 477, dated the 13th of May, I have the honor to acquaint you that the Estimate for the Vellore Station is computed at a rate of 6 Rupees per cubic yard to cover the expense of constructing the building of Stone. It is intended that the exterior wall should be of Stone, but it is probable that the interior walls may be built of brick; if so, the cost of the building will be less than that estimated for.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

No. 187.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 864, and 369, dated 3rd December 1856, and 29th April 1857 respectively.

OBSERVATIONS BY THE CONSULTING ENGINEER.

With the first of these letters the Agent submitted Plans and Estimates of the Vellore Station house and passengers shed the former estimated to cost Rupees 17,252, the amount sanctioned for the Mulliapooram Station, and the latter Rupees 54,000, or together Rupees 71,252.

2. The estimate for the passenger shed was considered by the Traffic Manager, and concurred in by the Agent, to be too high, the requirements of the Traffic at Vellore appearing not to justify the outlay; but in substitution of this, it was proposed to construct a roofing to the Passenger platform, at an estimated cost of Rupees 9,400.

3. In order to expedite the completion of this covering, authority was conveyed from this Office, (on the 5th December 1856) pending the consideration of the Estimate, for the preparation of materials, &c.

4. On the receipt, however, of Extract Minutes of Consultation, No. 21 dated 16th January last, communicating the orders of the Honorable the Court of Directors, prohibiting the construction at Railway stations of buildings of an unnecessarily grand or ornamental character, the Agent was requested to furnish a revised estimate for this station, and to arrange the architectural features of the building in accordance with the views expressed by the Honorable Court. This he has now done.

5. The plan originally forwarded for the station included also a Tower, which has been omitted in the revised plan, the estimate for which, including the covering for the passengers shed, amounts to Rupees 21,320, or Rupees 34,000, including out-houses, Fencing, Fence-wall, sidings, &c.

6. The estimates have been examined; and I would recommend that sanction be granted for the sum of Rupees 34,000.

7. The rate of 6 Rupees per cubic yard for "Brickwork" entered in the estimate, appearing to be higher than what is usually allowed for such work, the Agent was called upon for explanation, and he states in reply, that—"It is intended that the exterior wall should be of stone, but it is probable that the interior walls may be built of brick; if so the cost of the building, will be less than that estimated for" the difference between this and brickwork would not exceed 2,660 Rupees, and, considering the superior character of the one material and the probability of the work being expedited by its adoption, I would recommend the sanction of this estimate.

8. The Vellore Station was one of the three stations for which authority to proceed with the construction was granted in Extract Minutes of Consultation, No. 11, dated 10th January 1856.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th May 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 285.

Extract from the Minutes of Consultation under date the 2nd June 1857.

Read the following observations from the Consulting Engineer for Railways.

Submitting Plans and Estimates of Vellore Station House and Passenger Shed, amounting to Rupees 34,000. } (Here enter 22nd May 1857, No. 187.)

The Government sanction the revised Plan and Estimate, recommended by the Consulting Engineer, for the Vellore Station House, including a roofing to the Passenger Platform and Out-houses, Fencing, Fence-wall, Sidings, &c., amounting together to Rupees (34,000) Thirty-four thousand. They also sanction the Estimate, (Rupees 2,660) Two thousand six hundred and sixty, recommended by Colonel Pears, being the difference between Stone and Brickwork.

(True Extract.)

(Signed) E. MALTBY,

Acting Chief Secretary.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 546.

TO MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letter noted marginally, I have the honor to communicate the sanction of Government to the revised plan and Estimate for the Vellore station house, including a roofing to the Passenger Platform and out-houses, Fencing, Fence-wall, Sidings, &c., amounting together to Rs.

No. 864 dated 3rd Decr. 1856.
No. 369 dated 29th Apl. 1857.
No. 426 dated 18th May 1857.

Agent's letter No. 426 dated 18th May 1857. (34,000) thirty-four thousand. They also sanction the use of stone to the exterior walls of the station, and brick to the interior walls, ample provision for which having been made in the estimate.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 10th June 1857.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 213.

To E. MALTBY, Esq.

Acting Chief Secretary to Government, Fort St. George.

SIR,

I have the honor to acknowledge the receipt of Extract Minutes of Consultation, No. 285, dated the 2nd instant, sanctioning the revised Estimate for the Vellore Station House, &c., amounting to Rupees 34,000, together with a further sum of Rupees 2,660, being the difference between stone and brickwork; and to state for the information of Government, that having observed in the estimate a very liberal allowance of 6 Rupees per cubic yard for masonry, and the Agent having explained that it was the intention to use stone for the exterior walls of the station, I pointed out in my report, No. 187, of the 22nd ultimo, that the difference between stone and brickwork would not exceed Rupees 2,660, and recommended the estimate for sanction, but I regret to find that my remarks on the subject were not sufficiently explicit.

2. The estimate amounting to Rupees 34,000, however, includes all that is requisite, and I have, therefore, communicated the sanction of Government for that amount to the Agent and Manager.

3. I would beg to suggest that the sanction of Government for Rupees 2,660 be cancelled.

I have, &c.,

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 10th June 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 309.

Extract from the Minutes of Consultation under date the 15th June 1857.

Read the following letter from the Consulting Engineer for Railways.

Acknowledges the receipt of Extract Minutes of Consultation, No. 285, dated 2nd June, and suggests that the sum of Rupees 2,660 sanctioned for the Vellore Station may be cancelled.

(Here enter 10th June 1857, No. 213.)

Resolved that as the Estimate of Rupees 34,000 is explained to provide all that is required for the Vellore Station, the sanction granted by Government for the further sum of Rupees (2,660) two thousand six hundred and sixty be cancelled.

(True Extract.)

(Signed) E. MALTBY,

Acting Chief Secretary.

MADRAS RAILWAY,
MADRAS, 26TH DECEMBER 1856.

No. 960.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to forward a drawing of an Engine shed proposed to be built at Vellore and which is pronounced by the Locomotive Superintendent to be in accordance with the requirements of his Department, I also transmit an Estimate for the same amounting to Rupees 7,970, which I beg to recommend for the sanction of the Government.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th January 1857.

No. 25.

On a letter from the Agent and Manager of the Madras Railway Company, No. 960, dated the 26th December 1856.

OBSERVATIONS BY THE CONSULTING ENGINEER.

*No. 50.

With this letter the Agent submits for sanction a Plan* and estimate (amounting to Rupees 7,970) of an Engine shed proposed to be built at Vellore.

2. The drawing shows in section the nature of truss proposed to be adopted to support the roof—42 feet span in the clear—the prominent feature of which truss is the introduction of an oblique tie-beam, of iron.

3. The description of roof, exhibiting oblique instead of horizontal tie-rods, is not such as I should have myself proposed, but having no doubt of its strength or sufficiency, provided the work be well executed, I would recommend that the Chief Engineer of the Railway be permitted to carry out his own design, and the plan be sanctioned.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th January 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 60.

Extract from the Minutes of Consultation dated 3rd February 1857.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 27th January 1857.)

The Government sanction the Plan and estimate submitted by the Railway Agent for an Engine shed proposed to be built at Vellore, amounting to Rupees (7,970) seven thousand nine hundred and seventy.

(True Extract.)

T. PYCROFT,

Chief Secretary.

MADRAS RAILWAY.
MADRAS, 2ND DECEMBER 1856.

No. 856.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

* No. 48.

1. I have the honor to forward Plan* and Estimate of a Goods Warehouse proposed to be built at the Vellore Station, and beg to recommend that the Government may be pleased to sanction the amount, viz., Rupees 11,120.

2. I beg to state that the building meets the requirement of the Traffic Department, with the exception that the Traffic Manager suggests that there should be three doors in the three large arches in place of one only, for the egress of the Traffic by country carts.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (and recommended) for the sanction of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 28th March 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 178.

Extract from the Minutes of Consultation under date the 3rd April 1857.

Read the following letter from the Agent and Manager of the Railway Company submitted through the Consulting Engineer.

Forwarding Plan and Estimate, No. 48, of a Goods Warehouse, proposed to be built at the Vellore Station, and recommending that the Government may be pleased to sanction the amount, viz. Rupees 11,120. } (Here enter 2nd December 1856, No. 856.)

The Government sanction the Plan and Estimate submitted by the Railway Agent, and recommended by the Consulting Engineer, for the Goods Warehouse, proposed to be built at Vellore, amounting to Rupees (11,120) Eleven thousand one hundred and twenty.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

Communicated to the Agent and Manager in letter No. 363, dated 7th April 1857.

MULLIAPOORAM STATION.

MADRAS RAILWAY,
MADRAS, 4TH JUNE 1857.

No. 470.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

The Government under date the 10th January 1856 sanctioned an Estimate for the construction of a station at Malliaporam amounting to Rupees 17,252.

2. I have now the honor in accordance with the Despatch from the Honorable the Court of Directors conveyed to me in your letter No. 62 dated 17th January last, to forward a revised Estimate and Plans* for the construction of the building named, amounting to Rupees 13,500 and request that you will have the goodness to obtain the sanction of the Government for the same.

* Three { No. 58. Tent Elevation.
" 59. Ground Plan.
" 60. Section.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the sanction of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 15th June 1857.

No. 220.

On a letter from the Agent and Manager of the Madras Railway Company, No. 470 dated 4th June 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

With this letter the Agent forwards a Revised plan and Estimate, amounting to Rupees 13,500, of the Mulliaporam station, prepared at my suggestion to meet the views expressed by the Honorable Court in their Despatch, communicated in Extract Minutes of Consultation No. 21 dated 15th January last.

2. The original Estimate, sanctioned by Government on the 10th January 1856, amounted to Rupees 17,252, and as it did not include any covered Passenger platform, it will be observed that the introduction of a less ornamented style of architecture, affording equal accommodation in the station itself, with the very valuable addition of a covered Platform 128 feet in length (sufficient for 6 carriages), has created a saving of Rupees 3,752.

3. Under these circumstances I would recommend that the former sanction be cancelled and that the sanction of Government be granted to the revised Estimate now submitted, amounting to Rupees 13,500.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 15th June 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 322.

Extract from the Minutes of Consultation under date the 22nd June 1857.

Read the following Observations by the Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

Submitting for sanction a revised Plan and Estimate for the Mulliaporam Station, the latter amounting to Rupees 13,500. } (Here enter 15th June 1857, No. 220.)

Under the circumstances represented, the Government cancel the sanction granted in Extract Minutes of Consultation of the 10th January 1856, for an outlay of Rupees 17,252, for a first Class Station House at Mulliaporam, and sanction the revised Plan and Estimate now submitted by the Railway Agent, amounting to Rupees (13,500) Thirteen thousand, five hundred.

(True Extract.)

(Signed) E. MALTBY,
Acting Chief Secretary.

Communicated to the Agent and Manager in letter No. 596 dated 26th June 1857.

EXCESS OF EXPENDITURE ON EARTHWORK ON DISTRICT III.

No. 455. MADRAS, 4TH MAY 1857.

To MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway Company.

SIR,

* Rs. 1,10,612 6 9
† Rs. 1,31,453 9 10
79,158 12 11

I have the honor by order, to draw your attention to the expenditure* on Earthwork, on District 3, having, up to October 1856, exceeded the estimated† amount by Rs. 79,158-12-11, and to request you will be good enough to ascertain and report for the information of Government the causes which have chiefly led to this excess, specifying distinctly the excess of expenditure on rock cutting, as well as the particular localities where such cutting may have been encountered to any great extent.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

No. 542. MADRAS RAILWAY.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter No. 455 dated 4th May last, I have the honor to annex a copy of a letter* from the Resident Engineer Mr. McMaster, forwarded by the Acting Chief Engineer, affording the information in respect to the expenditure in Earthwork on District No. 3 having exceeded the estimate, and stating the principal rock cuttings in the District, shewing the excess in each.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 7th July 1857.

Submitted (with observations) for the orders of Government.

Madras, 22nd July 1857.

T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY, MADRAS DIVISION,
RESIDENT ENGINEER'S OFFICE,
ARCOT, JUNE 26TH 1857.

MY DEAR SIR,

I beg to acknowledge receipt of your letter of the 7th ultimo, enclosing copies of letters No. 401, dated 5th May from the Agent and Manager, and No. 455 dated 4th May 1857, asking for an explanation of the cost of Earthwork on District 3 having exceeded the estimated amount by Rupees 79,158-12-11.

2. In reply, I beg to state that the cause which has chiefly led to this excess is the hardness of the ground, which made it quite impossible for me to execute the work at any thing

like the prices named in the estimate; as requested I annex a list of the principal rock cuttings on the district, shewing the excess on each over the estimated amount.

52nd Mile.

Estimate.....13,857 yards @ 0 1 1 Rs. 938 3 9
Cost.....13,857 „ @ „ „ 8,828 14 1

Excess.....7,890 10 4

54th Mile.

Estimate.....20,420 yards @ 0 1 1 Rs. 1,382 9 8
Cost.....20,247 „ @ „ „ 10,881 14 9

Excess... 9,499 5 1

58th Mile West cutting.

Estimate.....42,730 yards @ 0 1 1 Rs. 2,893 2 10
Cost up to } 20,149 „ @ „ „ 8,440 1 1
31st Octr. 1856 }

Excess.....5,546 14 3

69th and 70th Miles.

Estimate.....94,817 yards @ 0 1 6 Rs. 8,889 1 6
Cost.....80,691 „ @ „ „ 28,905 13 4

20,016 11 10

Rupees.42,953 11 6

4. From this statement it will be seen that there is an excess of Rupees 42,953-11-6 upon four cuttings alone, comprising a portion of 2 miles 2 chains out of 25 Miles. All the other work was hard in proportion, and the embankments were for the most part higher than on the 1st and 2nd Districts.

I have, &c.,

(Signed) B. McMASTER,
Resident Engineer.

(True Copy.)

(Signed) ROBERT PATON,
For Acting Chief Engineer.

(True Copy.)

T. A. JENKINS,
Agent and Manager.

No. 263.

On a letter (No. 542,) from the Agent and Manager of the Madras Railway Company, dated the 7th July 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

By the accounts brought up to October 31st 1856, it appeared that the cost of earthwork on District 3, exclusive of that due to work, tools, &c., issued from the Workshops, exceeded the estimate by the large amount of Rupees 79,158; and the Agent was requested to explain the reason of this circumstance, which he has done in the accompanying letter.

2. The expenditure up to December 31st 1856, has since been sanctioned and recorded, and is as follows, as compared with the estimate.

	Quantity.	Cost.	
	Cub. Yds.	Rs.	A. P.
Estimate.....	1,608,224	1,31,453	9 10
Actual Expenditure.....	1,601,043	2,19,175	8 5
Difference.....	-7,181	+88,021	14 7

3. The excess is large; but the explanation offered by the Resident Engineer appears to me satisfactory. In my Report, No. 26, dated the 16th February 1855, I gave it as my opinion, para. 7, that the rate allowed for earthwork was barely sufficient.

4. A great deal of the soil, besides the rock cuttings, was very hard, and many of the banks high; and there was at one time considerable difficulty in getting labor on this portion of the line, in consequence of the many public works going on, at the same time, in the neighbourhood.

5. Up to the end of December last, when the earthwork on this district must have been very nearly finished, it had cost about..... Annas 2 2 per cubic yard.

That on district 2 had cost..... " 1 6 "

" 1 2 "

On the two latter districts the works are generally much lighter than on District 3, and there is much less rock. I consider, therefore, that the Agent's explanation of the high cost of earthwork on District 3, is sufficient and satisfactory.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 22nd July 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 379.

Extract from the Minutes of Consultation under date the 3rd August 1857.

Read observations by the Consulting Engineer, on a letter from the Agent and Manager of the Railway Company, dated 7th July 1857, No. 542.

Affording information in respect to excess of Expenditure } (Here enter 22nd July 1857, No. 263.)
on Earthwork on District 3.

The explanation afforded in this communication is considered satisfactory.

(True Extract.)

(Signed) E. MALTBY,
Acting Chief Secretary.

Communicated to the Agent and Manager in letter No. 706, dated 10th August 1857.

REPORTS OF PROGRESS OF WORK FORM E.

Remarks of the Chief Railway Engineer on Progress Report E for November 1856.

There is again an increase in the amount of Earthwork turned out, the increase would have been much greater had it not been for the unfortunate stoppage of the works on Districts 9, 10 and 11 by order of the Consulting Engineer.

The Brickwork and Masonry has also improved, had it not been for the stoppage of works above referred to, the Masonry would most probably have been commenced on District 9, and instead of a decrease there would have been shewn an increase of work on District 11.

(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

Madras, 22nd May 1857.

No. 66.

On Report of Progress (Form E) for the month of November 1856.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The work done during November last, is no where remarkable, excepting on District XIV, (Paulghaut), where the unusually large amount of 2,80,658 Cubic yards is reported.

2. On certain other Districts, IX, X and portion of XI, work was suspended during part of the month.

3. The aggregate amount of Masonry executed, exceeded that of former reports, being greatest on District IV (Vellore.)

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 26th February 1857.

Remarks of the Chief Railway Engineer on Progress Report (E) for December 1856.

There is a slight decrease in the amount of earthwork executed, principally on Districts 10 and 14, the amount executed on the latter is however still very great.

On brickwork and masonry there has also been a decrease, principally on District 4, owing to the heavy rains, a commencement in Brickmaking was again being made but the weather during the month was still rather unfavorable on most Districts.

On the Goriattam, Palar, and Cauvery Bridges no work was executed during the month, but materials were being collected.

(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

Madras, 3rd April 1857.

No. 153.

On Report of Progress (E) for December 1856.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The amount of earthwork is on the average fair, very good on districts 14 and 15, about 8,70,000 cubic yards during the month on 14 districts, assuming an average per mile of 50,000 yards, the work would be at the rate of 17.4 miles of railway completed, as far as the earthwork is concerned, in one month, or 208 miles per annum at the rate at which the work is proceeding on District 14, it would amount to about 672 miles completed in the year.

2. The masonry work did not make good progress in December. On District 14 there is none reported a circumstance which should have been explained. This report has been sent in very late.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 23rd April 1857.

Remarks of the Chief Railway Engineer on Progress Report E for January 1857.

There has been a slight increase in earthwork and a slight decrease in masonry when compared with December.

At the Cauvery Bridge stones were being collected and dressed, and chunam kilns were built.

Preparation for commencement of works were being made at the Palar and Gooariatum Bridges.

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

Madras, 30th April 1857.

No. 175.

On Progress Report (E) for January 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The amount of earthwork executed during the month in question 8,95,798 cubic yards is, upon the whole, satisfactory. There is a wide difference, however, in the amount of work done on different portions of the line. On district XIV (Palghat) the progress continues to be reported very good, 2,02,614 yards in the month. On district V (Amboor) it amounted during the same month to only 35,270 yards.

2. In masonry the progress reported is not so satisfactory, 4,648 yards upon the whole line during the month.

3. In this month's report it is stated, that preparations for commencement of work were being made at the Palar and Gooariatum bridges. These works are of great importance at the present time, as their progress will probably determine the time of opening the line to Salem.

4. They were sanctioned the one on the 7th February 1856—but there have been difficulties doubtless—arising sometimes from heavy rains, and at others, from a scarcity of labour.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 13th May 1857.

Remarks of the Chief Railway Engineer on Progress Report E for February 1857.

There has been a slight decrease in earthwork but considerable increase in masonry, this is the more satisfactory considering that cholera has been very prevalent all along the line from Vellore to Salem.

At the Cauvery bridge we have got some piers, and abutments have been laid, and the excavation of foundations have been commenced.

We have been able to do very little at either the Gooariatum or Palar Bridge.

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

Madras, 30th April 1857.

No. 176.

On Report of Progress (E) for February 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The earthwork somewhat less than the preceding month, but still upon the whole fair—in some districts, as 6 and 14, very good.

2. Progress in masonry improving. A commencement made with the Cauvery bridge.

3. The Acting Chief Engineer reports that little has been done to the Palar and Gooariatum bridges, but gives no reason of the delay, which is much to be regretted, on these two important works.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 13th May 1857.

Remarks of the Chief Railway Engineer on Progress Report E for March 1857.

The progress has on the whole been pretty satisfactory.

The Gooariatum and Palar Bridges have got a fair commencement, and the Cauvery Bridge foundations are being dug, but as the freshes will soon be down in the Cauvery river nothing can be done with the water piers until after the south west monsoon.

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

No. 248.

On Progress Report (Form E) for March 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Progress made on earthwork during March, is less than what it was in the preceding month February.

2. In masonry, stations, ballasting and fencing, however, there has been a fair increase, and on the whole the progress reported during March may be considered pretty satisfactory.

3. It has been frequently pointed out to the Agent that the object of these Reports is in a great measure neutralized by their late receipt in this Office; but there has been nevertheless no amendment in their transmission.

4. The Report for one month should properly reach Government, at the latest, by the ending of the succeeding month; whereas the receipt of these Reports has been for several months past as follows.

Reports for		Date of receipt.
1856 {	October.....	15th January. 1857.
	November.....	23rd February.
	December.....	21st April.
1857 {	January.....	11th May.
	February.....	6th July.
	March.....	

I would suggest, therefore, that the Agent's attention be again especially drawn to the subject.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 8th July 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 351.

Extract from the Minutes of Consultation under date the 15th July 1857.

Read the following letter from the Consulting Engineer for Railways.

Observations on Progress Report Form E for March 1857. { (Here enter 8th July 1857, No. 248.)

Resolved accordingly that the attention of the Railway Agent be particularly drawn to the late period at which the monthly Reports of the progress of works are usually furnished by him, and that he be requested to ensure their earlier transmission for the future.

(True Extract.)

(Signed) E. MALBY,
Acting Chief Secretary.

Communicated to the Agent and Manager in letter No. 667, dated 22nd July 1857.

Remarks of the Chief Railway Engineer on Progress Report E for April 1857.

The Gooriattum and Palar Bridges have proceeded pretty favorably, and a little has been done to the Cauvery Bridge. In other respects the progress has been on the whole favorable.

(Signed) J. M. HEPPEL,
Chief Engineer.

Madras Railway, Chief Engineer's Office, 17th July 1857.

Remarks of the Chief Railway Engineer on Progress Report E for May 1857.

The Gooriattum and Palar Bridges were proceeding favorably until the 9th when heavy floods came down which put a stop to the works, during the remainder of the month.

The Cauvery Bridge works were proceeding steadily.

(Signed) J. M. HEPPEL,
Chief Engineer.

Madras, 4th August 1857.

Remarks of the Chief Railway Engineer on Progress Report E for June 1857.

Little has been done at the Gooriattum and Palar Bridges during the last month, on account of the water in the rivers, beyond the collecting materials and making preparations for proceeding as soon as the dry season shall commence.

Cauvery Bridge—The foundations for both abutments have been taken out to the required depth, so that masonry may be commenced immediately.

One hundred and twenty-eight cubic yards of masonry have been built on No. 1 pier East side.

One hundred and twenty-seven stone cutters have been employed daily during the month, and have turned out a considerable quantity, of very fine stone.

Contractors have delivered 877 Cubic yards of rubble stone, and 752½ parabs of chunam.

The Inspector Mr. Barker has been unwell the greater part of the month which has in some degree retarded the work.

(Signed) J. M. HEPPEL,
Chief Engineer.

Madras, 28th October 1857.

Remarks of the Chief Railway Engineer on Progress Report E for July 1857.

Gooriattum and Palar Bridges little work done on account of the water in the river.

Cauvery Bridge—The River abated somewhat during the month, so that we were enabled to have some of the foundation of pier No. 2 East side excavated, but before the men were enabled to complete their work the river again rose and drove them out.

A party of stone cutters also on the Island near the west bank of the river preparing stone for the western abutment, and they were also obliged to leave on account of the "fresh" in the river, which is now thirteen feet higher than it was on the 10th of March last.

Masonry has been commenced on the western abutment and wings, also on the western pier (No. 21.)

One hundred and seventy stone cutters have been employed daily during the month.

Contractors have delivered three hundred and sixty-nine cubic yards of rubble stone, and seven hundred and eighty-nine parabs of chunam.

One hundred and eighty cubic yards of masonry and sixty-nine cubic yards of foundations have been executed during the month.

Thirty cubic yards of stone have been quarried and dressed during the month by daily labour.

(Signed) J. M. HEPPEL,
Chief Engineer.

Madras, 28th October 1857.

No. 375.

On Forms E. Progress Reports for the months of June and July 1857.

OBSERVATIONS BY OFFICIATING CONSULTING ENGINEER.

These Reports are late. Independent of the usual reminders that the Reports were due, the Agent was specially called on under dates the 3rd and 28th ultimo, to expedite their dispatch, and they were received in this office yesterday.

2. In his observations, No. 248, dated 8th July last, Colonel Pears brought prominently to the notice of Government the delay which occurred in the receipt of these Reports, and the orders of Government thereon were duly communicated to the Agent.

3. The Reports now submitted are for the months of June and July, and were only received on the 2nd instant.

4. Government have no other means, but from the Reports, of judging of the progress made on the Railway works during each month, and they become of little use in that respect, if they are sent in after the lapse of several months.

5. The progress reported during the months of June and July is pretty fair. On district 12 a commencement was made in July, and 8,330 cubic yards of earthwork have been completed.

C. C. JOHNSTON, CAPTAIN;

Officiating Consulting Engineer for Railways.

Madras, 3rd November 1857.

Remarks of the Chief Railway Engineer on Progress Report E for August 1857.

Gooriattum and Palar Bridges—Vide letter of Chief Engineer, dated 1st October 1857.

Cauvery Bridge—Masonry has been commenced on the 20th pier, and foundations are being taken out for the 2nd, 3rd and 19th. No. 1 is already raised higher than necessary for the present. A dam has been commenced for drying the eastern channel. Working up the cut stones has been stopped until the water piers are raised above the ordinary water level, to prevent a deficiency of cut stones for that purpose when the foundations are dry.

One hundred and thirty stone cutters are now working daily in the Island, contractors have delivered 200 cubic yards of rubble stone, 950 Parabs of chunam, and 3,000 Bricks.

387 cubic yards of masonry and 30 cubic yards foundations have been executed during the month, and 50 cubic yards of stone have been quarried and dressed by daily labour.

(Signed) J. M. HEPPEL,
Chief Engineer.

Chief Engineer's Office, 9th November 1857.

On Progress Report (Form E.) for the month of August 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

The largest amount of earthwork done during this month is on District 6—68,456 cubic yards—and the least on District 17—8,057 cubic yards. The latter is not satisfactory, especially considering that no less than 60 thousand yards of work had been completed in the adjoining District 16; difficulties, if any in carrying on the work being it may be assumed, common to both districts.

2. The largest amount of masonry, viz. 2,133 cubic yards was executed on District 13 in Coimbatore, while in the District next to it No. 14, in Malabar, only 22½ cubicyards is reported.

3. The progress reported on stations is 187½ cubic yards of masonry, in the three first districts, while nothing appears to have been done elsewhere, where station buildings are in progress also.

4. It seems advisable that the Agent's attention should be drawn to the rate of progress on these station buildings; and he might also be requested to see that greater exertions are made towards their construction and completion, than appears to have been the case up to this time.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 13th November 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 563.

Extract from the Minutes of Consultation under date the 23rd November 1857.

Read observations by the Officiating Consulting Engineer on Progress Report (Form E.) for the month of August 1857, dated 13th November 1857, No. 382.

The Government desire that the attention of the Railway Agent be drawn to the rate of progress on Station buildings, and that a communication to the effect suggested by Captain Johnston, in para : 4 of his report, be made to that officer at the same time.

(True extract.)

(Signed) T. PYCROFT,

Chief Secretary.

Communicated to the Agent and Manager in letter No. 1022, dated 27th November 1857.

Remarks of the Chief Railway Engineer on Progress Report E for September 1857.

The progress of the works during the month is favorable, and owing to the state of the weather so much has not been done as was expected.

The state of the works at the Gooriatum and Palar rivers is reported in my letter of the 1st October.

* Vide Letter No. 31, dated 14th January 1858, from Agent.

There has been 213* cubic yards of masonry executed on the Cauvery Bridge during the month, and every exertion is being made to push forward the works.

(Signed) J. M. HEPPEL,

Chief Engineer.

Madras, 31st October 1857.

On Form (E) Progress Report for the month of September 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

The progress of work generally during the month of September is pretty favorable.

2. The aggregate amount of earthwork exceeds that executed during the preceding month by 25,417 cubic yards. This excess is chiefly on Districts 9, 10, 11, 12, and 17. There is a decrease in the amount of work done on Districts 5, 6, 7, and 8. On the two latter districts the falling off is to be attributed probably, in some measure, to the stoppage of work, during the Mahorum festival.

3. Under the head of masonry there is a decrease of 1,442 cubic yards, as compared with the last month.

4. On district 4, where it was to be expected that every exertion would be made to push on the masonry works, in order that the line between Vellore and Goriattum might be opened to Traffic at an early date, there is a decrease of no less than 266* cubic yards.

5. With regard to the Cauvery bridge, Mr. Heppel, the Chief Engineer, remarks that "there has been 560 cubic yards of masonry executed during the month." The bridge is situated on District 11, but the work shown in the report as executed on that District, is only 434 cubic yards. The cause of this apparent discrepancy has not been explained, and the circumstance will be pointed out to the Agent.

6. Under the head of stations, the report shows that 416 cubic yards of work was done on District 4, none on the other Districts.

7. The report now submitted, though dated the 31st October, was not received in this Office till late yesterday evening.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 24th December 1857.

(QUARTERLY REPORTS ON THE CONDITION OF THE WORKS) ON THE LINE OPENED TO TRAFFIC.

MADRAS RAILWAY,
MADRAS, 16TH MARCH 1857.

No. 237.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 514, dated the 18th October last, I have the honor to forward herewith a Quarterly Report from the Resident Engineer in charge of the Permanent way or that portion of the line opened for Traffic, countersigned by the Acting Chief Engineer; for the quarter ending 31st December 1856.

T. A. JENKINS,

Agent and Manager.

Submitted (with observations,) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 4th April 1857.

MADRAS RAILWAY, MADRAS DIVISION.

QUARTERLY REPORT.

For the Quarter ending December 31st 1856.

The state of the road, the amount of work done in ballasting, and the progress made with the stations having been given in detail in my monthly reports it is unnecessary for me to repeat this information. I will simply state with regard to the former that it remained in excellent order, and that when it suffered from the very heavy storms in November and December it was in every point put right again in 3 or 4 days and no inconvenience to the Traffic resulted. From the small amount of repairs found necessary after this the first monsoon of anything like ordinary severity since the banks were thrown up, I think it may confidently be expected that no serious results will occur from future rains. No masonry work was at all affected except one 6 feet arch near Madras. The wing wall of which was undermined by the water and fell, the body of the Bridge being quite uninjured. Ballasting has been done with Engines all over the Division.

With regard to the stations no great progress had been made up to the commencement of this quarter, owing to the continued rain since the mango showers in April and May. The constant heavy showers during the whole of the period having so retarded the process of brickmaking as to greatly delay and in some cases stop altogether the buildings at the stations. We seldom had as much as 3 weeks at a time without a storm of rain and our contractors were consequently afraid to make bricks, many of them being great sufferers. In my knowledge many of bricks newly made have been spoiled in this way. As a proof of the difficulty of getting materials I may mention that at Arcot we had to stop every other building to allow the Goods shed being completed at all. I trust that all this will not be forgotten if it is thought that I might have collected sufficient quantity of material before the monsoon. During the actual monsoon, of course, nothing could be done. It has already been stated in the monthly reports that during the quarter the out-houses at several stations were completed, the goods shed at Arcot handed over finished to the Traffic Department, and Goods sheds and Station Houses at Companypett and Sholinghur proceeded with, as long as the weather would permit.

The practice of putting stones on the rails was continued to a great extent during the 3 months, but in every case the stones were small; and everything goes to show that it is the work of mischievous and malicious persons.

The native workmen, employed in the maintenance of the way, have generally given me much satisfaction. They appear well acquainted with their work in an emergency with promptitude and energy, and I must not forget the European Inspectors who have shown themselves most zealous in the discharge of their duty, attention to their work in all weathers, and patient and persevering in their intercourse with the natives over whom they are placed.

(Signed) B. McMASTER,

Resident Engineer's office, Arcot March 10th 1857.

Resident Engineer.

(True Copy.)

(Signed) ALEX. BEATTIE,

(True Copy)

Acting Chief Engineer.

T. A. JENKINS,

Agent and Manager.

No. 128.

On a letter (No. 237) from the Agent and Manager of the Madras Railway Company, dated 16th March 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent was requested in letter, No. 514, of the 18th October 1856, to cause a report to be prepared and submitted on the 1st January, 1st April, 1st June, and 1st October of each year,

showing the condition of the works on such portion or portions of the line, as might be at such time open to traffic.

2. It was observed that the Report should certify as to the present condition of the line that the whole of the bridges and culverts had been examined at least once, during the quarter by a competent Officer.

3. The Agent has misunderstood the intention of the order, which was to furnish a very brief statement in the form of a certificate, for the satisfaction of the Government and the public, showing that all was right and safe, and has submitted the accompanying report, in which there is much that will, I believe, be considered by Government both interesting and satisfactory.

4. He has been informed, however, that in future a report of this nature will not be required.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 4th April 1857.

MADRAS RAILWAY,
MADRAS, 9TH APRIL 1857.

No. 323.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter No. 273, dated the 18th ultimo, I have the honor to send you herewith the Report of the officer in charge of Permanent way and works for the quarter ending 31st December 1856.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted for the information of Government with reference to observations No. 128, dated 4th April 1857.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 13th April 1857.

MADRAS RAILWAY, MADRAS DIVISION.

MAINTENANCE OF WAY AND WORKS.

Report Quarter ending December 31st 1856.

1. The condition of the Line was, generally speaking, very good.
2. The whole of the bridges, culverts, &c., have been examined by the Inspectors of Permanent way, and the greater part of them, including all the larger and more important, by myself.
3. The only repair found necessary to be made to any of these structures was the rebuilding of the wing wall of a 6 feet arch near Madras.
4. Some embankments which the heavy rains had caused to settle were raised, and slopes of embankments in Tanks had to be repaired.
5. No other repairs were found necessary.

(Signed) BRYCE McMASTER,

Resident Engineer.

Arcot, 2nd April 1857.

(True copy.)

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

(True copy.)

T. A. JENKINS,

Agent and Manager.

MADRAS RAILWAY COMPANY,
MADRAS, 9TH APRIL 1857.

No. 319.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to forward for submission to Government a copy of the Quarterly Report from Resident Engineer Mr. McMaster of the state of the way and works to the 31st March last.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted for the information of Government.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 13th April 1857.

MADRAS RAILWAY, MADRAS DIVISION.

MAINTENANCE OF WAY AND WORKS.

Report Quarter ending March 31st 1857.

1. The line has been during the Quarter and is generally in very good condition.
2. All the bridges, culverts, &c., have been examined by the Inspectors of Permanent Way.
3. The raising of embankments consequent on their settlement during the monsoon, has been continued, but beyond this no repairs whatever have been necessary.

(Signed) BRYCE McMASTER,

Resident Engineer.

Arcot, April 2nd 1857.

(True Copy.)

(Signed) ALEX BEATTIE,

Acting Chief Engineer.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

Report to the Quarter ending June 30th 1857.

The Line has been in good order during the Quarter. There has been a good deal of rain on some portions, but the cuttings and embankments uninjured.

2. All the Bridges and culverts have been examined by the Inspector of Permanent Way, and nearly the whole including all the larger and more important works by myself. They are all in good order, and it has not been necessary to make any repairs. Some of the stone bridges upon the 3rd District have been pointed.

3. The making up of embankments still continues, but will be very soon completed. It has appeared advisable to give to embankments through Tanks a slope of $2\frac{1}{2}$ to 1, and to plant the slopes for protection against the water.

4. No repairs to Station houses have been necessary with the exception of the floor of the Perambore Station house, which had settled considerably.

(Signed) BRYCE McMASTER,

Resident Engineer.

Resident Engineer's Office, Arcot, June 30th 1857.

(True Copy.)

(Signed) ROBERT PATON,

For Acting Chief Engineer.

10th July 1857.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

MADRAS RAILWAY.

No. 772.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

I have the honor to forward a Report from the officer in charge of the maintenance of way and works for the quarter ending September 30th 1857.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted for the information of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 13th October 1857.

MADRAS RAILWAY, MADRAS DIVISION.

MAINTENANCE OF WAY AND WORKS.

Report for the Quarter ending 30th September 1857.

The Line has been in good order during the whole of the three months.

The repairs of earthwork have been chiefly confined to the heavy banks in the valley of the Cortelliar and west of Tinnanoor.

The Bridges and Culverts have been examined by the Inspector of Permanent way and as many as possible by myself. It was found necessary to put beams over the 9 feet arch at the 23rd mile post. No other repairs have been executed.

Considerable progress has been made with the alterations and additions ordered to the station arrangements at Perambore, Trivellore, Chinnamapett, and Sholinghur, and the new goods sheds at the last two stations are in rapid progress.

The maintenance of the Permanent hedges along the line has cost much labor and expense. The prickly pear, which it was believed would grow any where, is found as difficult to make a hedge of as was the Caracopillay. Much renewal is necessary, but I believe that with some wet weather we shall succeed. The hedges being much longer in becoming good fences than was

anticipated, there has also been considerable expense in keeping up the temporary fencing which was not adopted to so long a trial.

(Signed) BRYCE McMASTER,
Resident Engineer.

(True Copy.)

(Signed) ROBERT PATON,
For Chief Engineer.

(True Copy.)

T. A. JENKINS,
Agent and Manager.

Madras Division, Resident Engineer's Office,
Madras, October 1st 1857.

ROADS LEADING TO RAILWAY STATIONS.

FINANCIAL RAILWAY DEPARTMENT.

No. 44.

Extract from the Minutes of Consultation, dated 24th January 1857.

Read the following.

PUBLIC WORKS DEPARTMENT. *Railway.*

No. 135.

Extract from the Minutes of Consultation under date the 20th January 1857.

Read the following Extract from the Minutes of Consultation in the Financial (Railway) Department, dated 6th December 1856, No. 446.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 27th September 1856.)

Para. 6. Para. 43 of the Consulting Engineer's report respecting the construction of the road from the Shervaroy Hills to the Railway at Mullapooram, which is stated to have been suspended for the present, will be communicated to the Public Works Department for consideration.

12. Copy of paras. 100 to 109 of the Consulting Engineer's report will be furnished to the Public Works Department, where the subject of improving the roads therein referred to, will be considered with reference to the remarks of Colonel Pears.

Extract from a letter from the Consulting Engineer for Railways, dated 27th September 1856.

Para. 43. I may observe here that the construction of a road from the Shervaroy Hills to the Railway at Mullapooram, a trace of which was made under the sanction of Government some time ago, appears to have been for the present suspended, considering the difficulty of getting up to the Hills from the Salem side, the delay which may yet occur in carrying the rail down the pass to that side, and the peculiar advantages which, as I am informed, the line to Mullapooram offers for the construction of a good road, it would be, I think, greatly to be lamented if the Government should feel it necessary to deny to the public at large, and to the inhabitants of the Shervaroy Hills in particular, this boon. At the same time, I must add, that strongly advocat-

Fair occasion for a Toll.

Daily amount of labour 4,528.

daily on this District during July was 4,528.

Para. 100. Before closing the Report, I beg to call the attention of Government to the following points.

101. The Gooriattum station being about 15 or 16 miles from that of the Vellore is fixed to the eastward of the river of that name, and the opening of the line to that point is therefore independent of the completion of the Railway bridge across that river.

102. The importance of the Gooriattum station may be great, but depends upon the completion of a good pass up the neighbouring ghauts and the perfecting of the road to Policondah. I believe that great improvements have been lately effected on an old pass towards Palmanair known as the Synegoontolah; but I am not aware if anything has been done towards the tracing or construction of a thoroughly good cart road up the ghauts near this point.

103. Another point to which I would request the attention of Government, is the pass to the Kangoondy Zemindary described in my Report No. 32, dated the 16th September 1853.

104. By this pass, I proposed taking the branch line to Bangalore. The construction of the branch is, however, postponed by order from Home. I would therefore earnestly recommend to the consideration of Government, the improvement of the present road.

105. In the course of my late tour, the Railway Chief Engineer and myself struck off from the line at a point near Vauniembady, and rode up this pass staying two days at Coopum and meeting there Mr. Puckle, Executive Officer in the Public Works Department of Mysore.

106. I believe, that should the Government be disposed to improve the road as far as the frontier, i. e. about 12 or 15 miles beyond Coopum, the Mysore Government is quite prepared to undertake the construction of a road through the Baitmungalum and Maloor Talooks in order to place that part of the country into close communication with the rail at Vauniembady.

107. Government will observe how large a tract of country there is lying between the Palmanair and Sholagherry passes with no means of getting into the low country or on to the Railway, but by a long detour to one or other of these passes.

108. It is not merely for the benefit of the people of these Districts as exports, but for the promotion of trade generally and specially by the cheap conveyance of salt, that the improvement of this pass seems to be a matter worthy of consideration.

109. So long as there is a prospect of a Railroad up the same pass, the Government might not consider it desirable to construct a first class road complete in bridges, &c., but I believe that a very great and permanent improvement may be made on it at a comparatively small expense; improvement that is required as much on the road between the pass and the present Trunk road at Nutrumpully as on the pass itself, I trust therefore the Government will permit the subject of improving the road to be reported upon in the Public Works Department.

(True Extracts.)

(Signed) T. PYCROFT,
Chief Secretary.

Ordered to be communicated to the Chief Engineer, together with the Extracts from the Report of the Consulting Engineer for Railways which accompany it.

2. The road from Yercaud to Mullapooram was included in the Budget of 1856-57*; but under the restriction imposed on expenditure, it has not been commenced. It should have a place in the Budget for 1857-58.

* Statement No. 2, No. 241.

3. The Governor in Council will be glad to have a report from the Chief Engineer as to what has been done respecting the two passes to descend the Ghauts respectively to Gooriattum and Vanniembady, and whether Estimates for either or both have been prepared.

(A true Extract.)

Signed J. D. BOURDILLON,

Secretary to Government.

Ordered to be communicated to the Consulting Engineer for Railways with reference to paras. 6 and 12 of Extract Minutes of Consultation in this Department, dated 6th ultimo No. 446.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

FINANCIAL RAILWAY DEPARTMENT.

No. 98.

Extract from the Minutes of Consultation, dated 26th February 1857.

PUBLIC WORKS DEPARTMENT.

Public.

No. 351.

Extract from the Minutes of Consultation under date the 21st February 1857.

Read the following letter from Colonel C. E. FABER, Chief Engineer; to H. FORBES, Esq., Acting Secretary to Government, D. P. W., dated 2nd February 1857, No. 9951.

SIR,

1. As required in para. 3 of Extract from the Minutes of Consultation, No. 135, dated 20th ultimo, I have the honor to supply the following information.

1st. The improvement of the Syna Goonta Ghaut and road from Palmanair to Gooriattum is under execution, on an estimate* of Rupees (4,700) four thousand and seven hundred, the whole line being now open for cart traffic.

2. An estimate of Rupees (81,020) eighty-one thousand and twenty, has been entered in the outgoing Budget, for the construction of a road, and two Ghauts from Byreddypully nearly midway between Palmanair and Vencatagberry Cottah to Gooriattum.

3. A roadway has been completed, and an estimate is now under preparation for continuing the Palmanair and Vencatagberry Cottah road to Coopum, commonly known as Congoody Coopum. From that place to Vanniembady the line of ghaut has not yet been determined by the District Engineer.

4. An estimate of Rupees (740) seven hundred and forty, has also been entered in the outgoing Budget, for restoring a portion of the old Pioneer road west of Vencatagberry Cottah to the Mysore frontier, which will give access from that territory via the proposed Ghaut to the Railway at Vanniembady.

Ordered to be communicated to the Financial (Railway) Department, with reference to an Extract Minutes of Consultation in that Department, dated 6th December 1856, No. 446.

2. The Chief Engineer is requested to forward at an early date the estimate which is stated to be under preparation for continuing the Palmanair and Vencatagberry Cottah road to Congoody Coopum. He will also instruct the District Engineer to take an early opportunity of examining the line from that place to Vanniembady and submit an estimate for this portion of the road also.

3. The road from Yercaud to Mulliapoorum it is observed is entered in the Budget of 1857-58 and will be retained in that document.

(A true Extract.)

(Signed) H. FORBES,

Acting Secretary to Government.

Ordered to be communicated to the Consulting Engineer for Railways with reference to paras. 43 and 100 to 109 of his report of 27th September, No. 189.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

MADRAS RAILWAY,
MADRAS, 18TH NOVEMBER 1856.

No. 812.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to transmit herewith a tracing of a Survey which has been prepared showing the line of direction of a road which it may be considered desirable by the Government to have constructed to connect the Trivellum Station with the Chittoor road. The road from the Station to the nearest public road, viz., the old Pioneer road, will be made, I presume, at the expense of this Company, and I request that Government may be pleased to authorize the necessary outlay for the same.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 24th January 1857.

MADRAS, 20TH NOVEMBER 1856.

No. 625.

TO MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

With reference to your letter No. 812 of the 18th instant, I have the honor to request I may be informed at what point on the road, referring to the mile stone, and at what distance from Trivellum the proposed road would strike on to the Chittoor road—also the distance of the station from the Trivellum bungalow by the Pioneer road.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 22ND JANUARY 1857.

No. 55.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 625, dated 20th of November, I have the honor to acquaint you that the Acting Chief Engineer has this day informed me that the proposed road from the Trivellum station to the Chittoor road will strike that road, at the 78th mile stone from Madras, and 2 miles from the temple on the river bank at Trivellum.

2. The distance from the Railway station to the Traveller's Bungalow at Trivellum by the Pioneer road is 1 mile and 60 chains.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted with observations for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 24th January 1857.

MADRAS, 24TH JANUARY 1857.

No. 88.

TO MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letters Nos. 812, and 55, dated severally the 18th November 1856, and 22nd January 1857. I have the honor to convey to you the sanction of Government to such expenditure as may be necessary to complete the communication between the Trivellum station and the old Pioneer road.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

No. 24.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 812 and 55, dated 18th November 1856 and 22nd January 1857, respectively.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwards a survey of a line of road, which will be much required when the Railway is opened as far as Trivellum, to perfect the communication between the Chittoor road and that station. At the same time sanction is requested to the construction, at the cost of the Railway, of a short branch line to connect the station with the high road, known as the old Pioneer road. With the latter work the Agent has been authorized to proceed.

2. With respect to the other road, survey of which is now submitted, it might appear at first sight a question, whether it also should be made by the Railway Company, or by the Government.

3. I have carefully considered the subject and am of opinion, that if the Company form a communication between this station and the nearest high road—bad though the present condition

of that road may be, they do all that can be required of them, though perhaps not all that in many cases it might be to their own interests to do.

4. The road, of which survey is now forwarded, is not absolutely necessary to enable traffic from Chittoor to reach the station, but it would greatly shorten the distance and thus prove a great convenience to the public.

5. Without this road a cart from Chittoor has to follow the present high road to Trivellum, and from thence turning back to reach the station by the old Pioneer road.

6. Thus the distance from the point where it is proposed that the new road should leave the present high road (marked on the Survey A) to the station would be by the existing roads, *via* the village of Trivellum, about 4 miles, whereas by the proposed new road it would be a mile and a half.

7. With these observations I would recommend the construction of the road in the Public Works Department, to the favorable consideration of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 24th January 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 59.

Extract from the Minutes of Consultation, dated 3rd February 1857.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 24th January 1857.)

The Government approve of the Agent having been authorized to proceed with the construction, at the cost of the Railway Company, of a short branch line to connect the Trivellum station with the high road known as the old Pioneer road, and resolve to refer for consideration in the Public Works Department the proposed line of road, of which a survey is submitted, to perfect the communication between that station and the Chittoor road.

(True extract.)

(Signed) T. PYCROFT,

Chief Secretary.

Communicated to the Agent and Manager in letter, No. 137 dated 3rd February 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 124.

Extract from the Minutes of Consultation, dated 12th March 1857.

Read the following.

PUBLIC WORKS DEPARTMENT.
Public.

No. 431.

Extract from the Minutes of Consultation, under date the 5th March 1857.

Read the following Extract from the Minutes of Consultation in the Financial (Railway) Department.

Approving of the Agent having been authorized to proceed with the construction at the cost of the Railway Company of a short branch line to connect the Trivellum station with the high road, known as the old Pioneer road, and referring for consideration in the Public Works Department, the proposed line of road, to perfect the communication between that station and the Chittoor road.

(Here enter 3rd February 1857, No. 59.)

In the above paper the formation of a road to connect the Chittoor road with the Trivellum Railway station is proposed. The entire distance of this route from Chittoor appears to be

nearly 22 miles. The Railway it is observed intersects the road from Chittoor to Vellore at a point nearer to Chittoor. It is therefore very likely that passengers and traffic from Chittoor will join the Railway at the Vellore station rather than at the Trivellum station, when the line is opened to the former place, and the proposed new road will in consequence not be of much use. The Vellore station moreover is on the road from Chittoor to Vellore, and no branch will be necessary. The Government also question whether the old Pioneer road can be properly considered a high road, and they are of opinion that, if it be necessary to unite the Chittoor and Madras road with the Railway as proposed, the work should be done at the expense of the Railway Company.

2. With these remarks, it is resolved to return the papers to the Financial (Railway) Department for further communication with the Consulting Engineer.

(A true Extract.)

(Signed) H. FORBES,

Acting Secretary to Government.

Ordered to be communicated to the Consulting Engineer for Railways, with reference to paras. 4 and 7 of his observations under date 24th January last, No. 24.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

MADRAS RAILWAY,
MADRAS, 20TH APRIL 1857.

No. 347.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

1. In advertence to my letter No. 346, of this date, I have the honor, in obedience to the instructions of the Board of Directors of the Company, contained in the 11th paragraph of their letter No. 109, dated the 22nd of January, to request that you will have the goodness to bring to the notice of Government, the fact of the want of cross roads of communication between the Railway stations and the main road and villages, in their neighbourhood, as my directors observe, it must be obvious that so long as such a want exists, the use of the Railway must, in a great degree, be interdicted to the Public, and the extension of its traffic thereby prevented.

2. I therefore request that you will move the Government to be pleased to cause the speedy completion of the roads leading to the stations of the line, and in particular the road connecting the Trivellum station with the main Chittoor road.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of the Government.

Madras, 22nd May 1857.

T. T. PEARS,

Consulting Engineer for Railways.

No. 416.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor, by order, to acknowledge the receipt of your letter, No. 347, of the 20th instant, bringing to the notice of Government the fact of the want of cross roads of communica-

tion, between the Railway stations and the main roads and villages, &c., and I am directed to request you will have the goodness to state more particularly the stations and roads to which you allude, as the Government are not aware of any previous communication or suggestions having been received from you on the subject.

2. You are aware, that it has been determined that all roads leading exclusively to a Railway Station are to be executed at the cost of the company; and the Government are prepared to receive and consider favorably any proposal that you may make for the construction of such roads. One such proposal has been made by you, viz., the construction of a road between the Trivellum station and the old Pioneer road leading into that Town. Sanction was given to the construction of that road by your Company on the 24th January last, but no progress appears yet to have been made in the work.

3. With regard to the particular line of road mentioned by you and which you request the Government to make, viz., that connecting the Trivellum station with the main Chittoor road, the Government are of opinion that if it be necessary to unite the Chittoor and Madras roads with the Railway, as proposed, the work should be done at the expense of the Railway Company.

4. Should you, therefore, desire on the part of the Company to make this road you will be good enough to submit an estimate for sanction.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th April 1857.

(A true Copy.)

T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 18TH MAY 1857.

No. 425.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter No. 416, dated the 27th ultimo, I have the honor to state that under the circumstances as set forth in the order of Government, No. 329, dated the 24th December 1855, I am not prepared to submit a recommendation for the construction of roads from Railway stations to towns and villages at the expense of this Company.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

Madras, 22nd May 1857.

T. T. PEARS,

Consulting Engineer for Railways.

No. 186.

On a letter from the Agent and Manager of the Madras Railway Company, Nos. 347 and 425, dated 20th April and 18th May 1857 respectively.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent in the first of these letters brought to the notice of Government the fact of the want of cross roads of communication, between the Railway stations and the main road and villages.

T

Trivellum. 2. One such case was alone specified in that letter, and that one had been already under the consideration of Government and, as it appeared that the Agent was not aware of the extent to which the subject had already been under consideration, or of the work either actually done or in contemplation, I requested that Government might be informed what stations or roads he more particularly alluded to.

3. The Agent merely states in reply, that he is not prepared to submit a recommendation for the construction of such roads at the expense of the Company.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 22nd May 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 296.

Extract from the Minutes of Consultation under date the 8th June 1857.

Read Observations by the Consulting Engineer on letters from the Agent and Manager of the Railway Company.

On the subject of Cross roads of communication between the Railway Stations and the main road and Villages. (Here enter 22nd May 1857, No. 186.)

The Government do not feel called upon to pass any orders on the subject of the correspondence submitted with the foregoing observations. It is observed that in Bengal all projects of roads, exclusively for Railway objects, have originated with the Railway Officers, and the Railway Agent here states that he is not prepared to submit a recommendation for the construction of such Roads at the expense of the Madras Railway Company.

(True Extract.)

(Signed) E. MALTBY,

Acting Chief Secretary.

Communicated to the Agent and Manager, in letter No. 572, dated 17th June 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 449.

Extract from the Minutes of Consultation under date the 16th September 1857.

Read the following letter from the Consulting Engineer for Railways; to E. MALTBY, Esq., Acting Chief Secretary to Government, dated 21st August 1857, No. 297.

SIR, On the 4th of last month I addressed a letter to the Chief Engineer, D. P. W., copy of which I have the honor to annex, upon the subject of two roads which it had been proposed to make as feeders to the Railway, the one being that from Caverypauk to the Sholinghur Station, the other from Pollicondah to Goriattum, crossing the Railway at the Station near this latter place and connecting the High Western road with the Synegoontolah pass to Palmanair.

No. 139, dated 4th July 1857. 2. The Chief Engineer has informed me in reply (appended in original) that a portion of the former line of road was sanctioned, but is now suspended and that the execution of the latter is deferred until 1858-59.

3. I am aware of the necessity that has arisen for a temporary stoppage of many important public works, but I venture to recommend to the favorable consideration of Government the pro-

secution of two undertakings which are indeed connected with the Railway, and of great importance to the proprietors of that undertaking, and to the country at large, but which can at the present moment only be preferred to other similar works on a reference to their Military importance. I allude to the bridge across the Palar at Vellore, and the road from Pollicondah, *via* Goriattum to Palmanair, including the improvement, much of which has been already effected, of the Synegoontolah pass.

4. The Vellore bridge is complete up to the springing of the arches. It is absolutely necessary to establish certain communication between the Railway and the Town and Cantonment of Vellore, that broad river being, when in fresh dangerous, and even for many days together impassable.

5. There is every reason to believe that the line of Railway will be opened to Goriattum, 15 miles beyond Vellore, by the end of the year. This would bring troops, on route to Bangalore to within 17 miles of the top of the Ghauts, while another short march of 9½ takes them to Palmanair.

6. If the line should be opened to Goriattum, and the road in question not be completed, troops can avail themselves of the Railway no further than Vellore from whence to Palmanair is 41 miles, part of that line of road being very unhealthy, and the pass to be ascended being 5 miles in length.

7. On the other hand, that portion of the road in question which lies between Pollicondah and the Goriattum Station, about 3 miles, including the passage of the Palar river, might be made at no great cost, and while completing an important communication between the high western road and Palmanair, is necessary to establish a connection between the Goriattum station and the great western road.

8. It may be necessary to observe that these are not roads for the Railway Company to make, inasmuch as that now proposed from Pollicondah to Goriattum forms one of the ordinary communications of the country, and has been proposed as an improvement, or as a substitute for an existing but very bad road, between those two towns, and is taken now, as a matter of convenience to all, near to the Railway Station, the old road lying along the bank, and occasionally in the bed of the Goriattum river.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

From Lieutenant Colonel T. T. PEARS, c. B., Consulting Engineer for Railways; to Colonel C. E. FABER, Chief Engineer, D. P. W., Fort Saint George, dated 4th July 1857, No. 139.

SIR,

There are two lines of roads on the subject of which I have on a former occasion addressed the Government, considering that their improvement was a matter of importance both to the people of the country, and to the Railway Company. I allude to the lines from Caverypauk to Sholinghur by the Sholinghur Railway Station, and that from Pollicondah to Goriattum. The latter is a line of far greater importance than the former, inasmuch as it affects, not merely the movement of local produce, but the conveyance to the Railway of the Traffic from Palmanair, &c., by the Synegoontolah Ghaut on the one hand, that of the accumulated Traffic from Vaniembady on the other.

2. I shall feel much obliged if you will favor me with your opinion as to the probability of these roads being put in hand soon. I understand that the line of Railway is likely to be opened as far as Goriattum in a very few months.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

(True Copy.)

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Extract from the Proceedings of the Chief Engineer in the Department of Public Works, Fort Saint George, under date the 6th August 1857, No. 2727.

Read again the following letter from the Consulting Engineer for Railways, No. 139, dated 4th July 1857, and recorded in Diary 8th July 1857.

Resolved in reply to the foregoing letter No. 139, dated 4th ultimo, to inform the Consulting Engineer for Railways that of the two roads referred to, viz., from Caverypauk by the Sholinghur Railway Station to Sholinghur, and from Pollicondah to Goriattum, an estimate of Rupees (12,600) twelve thousand and six hundred for a portion of the former from the Sholinghur Railway station to near Perancangee on the road from Wallajanugger to Sholinghur, Tritany, Naggery, &c., was entered in the current budget for execution, but the work has now been stopped under the late restrictive order from the Government of India. For the latter road an estimate of Rupees (13,188) thirteen thousand one hundred and eighty-eight is also entered in the current budget, but its execution is deferred till 1858-59.

(A true Extract.)

P. O'CONNEL, LIEUTENANT,

*In temporary charge of Superintending Engineer's Office
C. Circle of P. W.*

Colonel Pears reports that, under the operation of the late restrictive Orders passed by the Supreme Government in the Public Works Department, the Chief Engineer has stopped the execution of two very important Works, whether regarded as feeders to the Railway or in a Military and Political point of view, they are :

- A. from Caverypauk by the Sholinghur Railway Station to the town of that name.
- B. from Pullicondah to Goriattum; and he requests that the subject may be re-considered.

2. The Government are of opinion that Colonel Pears has shown it to be in every way expedient that these two roads should be proceeded with as rapidly as possible; orders will be passed to this effect in the Department Public Works.

(True Extract and Copies.)

(Signed) E. MALTBY,

Acting Chief Secretary.

GATES AT LEVEL CROSSINGS.

FINANCIAL RAILWAY DEPARTMENT.

No. 277.

Extract from the Minutes of Consultation under date the 25th May 1857.

Read the following letter from W. ROBINSON, Esq., Acting Collector of Malabar; to E. MALTBY, Esq., Acting Chief Secretary to Government, Fort St. George, dated 16th May 1857, No. 11.

SIR,

In forwarding the accompanying copy of correspondence I have the honor to request the Orders of Government on the subject of the manner in which Railway Gates are to be hung where the Rail crosses the Public roads of this District.

2. In Malabar the Gates are now being hung so as to cut off the Public road, instead of, as is usual, being hung across the Railway line. Were the latter course followed the Gates would only require to be attended to when Trains are expected, and not as now, throughout the 24 hours to let every cart and bullock or cultivator's cattle pass.

3. I consider the manner proposed open to many obvious objections, and to be an unnecessary obstruction. The number of Trains passing in 24 hours must be comparatively very small and their hours are well ascertained. On the other hand the Traffic along the roads is constant, especially at night and in the early morning hours, when absent or drowsy Gate-keepers must prove a great inconvenience to the public. The fear of opening a door to petty exactions by Gate-keeper, has retarded the introduction of Toll, but I believe power of stopping the Public, and the Traffic of the country at a number of gates on the Railway line, will prove a far more extensive and less easily controlled source of abuse.

(Signed) W. ROBINSON,

Acting Magistrate.

From W. ROBINSON, Esq., Acting Magistrate; To G. H. FENWICK, Esq., Resident Engineer, Beypoor, dated 12th May 1857, No. 1474.

SIR,

I have the honor to observe that I consider that the way the gate at the level crossing near Beypoor is put up, is objectionable, as cutting off the public road by double gate, whereas I believe the usual way is to leave the road open and to cut off the railway. As I consider that this point should at once be brought to a clear understanding, I beg you will kindly inform me whether it is your intention to have all the gates at level crossings of the public road hung in this manner, and whether you see any objection to changing the position of that at Beypoor.

(Signed) W. ROBINSON,

Acting Magistrate.

From G. H. FENWICK, Esq., Resident Engineer; to W. ROBINSON, Esq., Acting Magistrate, Beypoor, 14th May 1857.

SIR,

I have the honor to acknowledge the receipt of your letter of the 12th instant, relative to the gates at the level crossing at Chaliu as well as to those to be put up at other places.

With regard to those at Chaliu being objectionable in consequence of their folding across the public way, I beg to call your attention to the fact that the road crossing at this place is only an accommodation-way from the fishing hamlet to the bazaar at Chaliu, and that it is seldom or ever used for bandies; notwithstanding the little Traffic there is, a gate house has been put up so that a Gate-keeper will be in attendance at all hours day and night.

With regard to those to be put up at other places on the line, I am of opinion that the same nature of crossing will answer, as in no case is the road traffic so heavy that there will be any impediment to it. Gates folding across a Railway are only put up in the vicinity of towns where there is a continual line of Traffic, at the same time I must observe it has been found very objectionable, as it is necessary to have the Gates thrown open some time before a Train is due, consequently there is no protection at the very time there should be most. In England, the system of using gates across the public way has become more general for the above reason.

(Signed) G. H. FENWICK,

Resident Engineer.

(True Copies.)

(Signed) W. ROBINSON,

Acting Magistrate.

Resolved to refer these papers for the opinion of the Consulting Engineer.

(True Extract and Copy.)

(Signed) E. MALTBY,

Acting Chief Secretary.

From Lieutenant Colonel T. T. PEARS, c. B., Consulting Engineer for Railways; to E. MALTBY, Esq., Acting Chief Secretary to Government, dated 4th June 1857.

SIR,

I have the honor to acknowledge the receipt of an Extract Minutes of Consultation, in the Financial Railway Department, No. 277, dated 25th May 1857, forwarding for my opinion a correspondence between the Collector of Malabar and the Railway Resident Engineer in that District, relative to Gates at level crossings.

2. Mr. Robinson objects to the Gate at the level crossing, as cutting off the public road, whereas he believes the usual way is to leave the road open.

3. The Gates thus objected to are those prescribed in the Rules and Regulations, approved by the Supreme Government, para : 8, for all public roads ; and no Gates are to be made to close across the Line of Railway, except in great thoroughfares, or under special sanction of Government.

4. The usual way is to leave such Gates open except when a Train is expected, and then, and then only, they are closed. The public road can, therefore, be left perfectly unobstructed without the Gates being made to swing across the Railway.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

ORDER THEREON, No. 305; DATED 12TH JUNE 1857.

Government concur with the Consulting Engineer in deeming it inexpedient to alter the arrangements for public roads and gates which have been fixed on after full consideration as best suited to this Railway.

(Signed) E. MALTBY,
Acting Chief Secretary.

STATE OF THE WORKS ON THE LINE BETWEEN VELLORE AND GORIATTUM.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 849.

TO THE AGENT AND MANAGER OF THE MADRAS RAILWAY COMPANY.

SIR,

As the works on the line of Railway between Vellore and Goriattum must now be in a sufficiently advanced state to admit of the line between those places being thrown open to the public very shortly, I have the honor, by order, to request you will report, for the information of Government, upon the present state of the works on the portion of the line referred to—what arrangements, temporary or permanent, have been made with regard to the Station buildings at Goriattum, and when it is probable the line may be expected to be opened?

I have, &c.,

(Signed) C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

(True copy.)

(Signed) C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 1st October 1857.

MADRAS RAILWAY.

No. 906.

TO CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

With reference to your letter No. 849, dated the 1st October last, calling for a report upon the present state of the Line between Vellore and Goriattum, I have the honor to annex for your information a copy of a letter from the Chief Engineer, No. 218, dated the 17th November, affording the information called for, by which it will be seen that the opening of that portion of the Line cannot take place in less than four months.

2. I also annex a copy of a letter from the Traffic Manager, giving his opinion upon the requirements of his Department previous to the Line being opened to Goriattum.

3. I beg to draw your particular attention to the great desirability of roads being opened from Palmanair to Goriattum, and from Pallicondah to that station, or there will be no outlet and consequently but little traffic by rail to that place, as a terminus.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 7th December 1857.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 11th December 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 17TH NOVEMBER 1857.

No. 218.

TO MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway.

SIR,

Yours No. 856, October 2nd enclosing letter of Officiating Consulting Engineer No. 849, October 1st.

The present state of the works between Vellore and Goriattum is as follows. The earth-work may be said to be finished, as what little remains will be done easily before other operations can be completed. Nine miles of ballasting and permanent way have been executed, leaving six to complete; out of 99 Bridges and culverts, 45 are finished, 25 want only the arches, 15 have the abutments in progress, and 14 are not yet begun. At the average rate at which masonry is being turned out, it would require six months from the present time to complete these works, but the Resident Engineer is using every exertion to get them pushed forward, and I hope will succeed in diminishing it, I fear however that the opening of this portion cannot now be looked for under any circumstances in less than four months.

The arrangement of the Goriattum Station is similar to that at Trivellum. The buildings have been set out and the foundations of the Goods shed commenced. A temporary Passenger shed has been erected; to this will have to be added a temporary Engine shed, and a shed for the reception of our permanent way materials, which will also answer the purpose if required of a temporary Goods shed.

I have, &c.,

(Signed) J. M. HEPPEL,
Chief Engineer.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
26TH NOVEMBER 1857.

No. 72.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway.

SIR,

I have the honor to acknowledge the receipt of your letter No. 138, of the 19th instant, enclosing copies of letters as per margin upon the subject of the extension of the Line to Goriattum.

2. I would beg to bring to your notice that it is very desirable indeed that a Goods shed, Salt godown, and Station house with godowns should either be completed before the line is opened or Traffic, or that they should be in a much more forward state than other stations have been at the opening of the Line, since experience tells that from some cause or other there is a great length of time elapses before these requisites in this department are completed, which exercises without doubt a prejudicial effect upon the Traffic.

3. I would also beg leave to draw your attention to the great importance of the construction of Roads to the Goriattum station. There should be one from the Main or Great Western Trunk Road at or about Policondah to the station, and another from the station connecting it directly with Palmanair.

4. I had intended visiting Goriattum for the express purpose of reporting to you upon these Roads, with a view to their being constructed and ready for public use by the time the Line may be extended to that place, but have not been, from pressure of other business, able to carry out this intention.

5. I have every reason to believe that with such facilities as I now hope we shall obtain to aid in the development of Traffic, that the large trade now passing over the Western Road and from Mysore through Bangalore and Palmanair will be attracted to Goriattum so long as it may remain over Western Terminus.

I have, &c.,

(Signed) H. A. FLETCHER,

Traffic Manager.

(True Copies.)

T. A. JENKINS,

Agent and Manager.

No. 409.

On a letter from the Agent and Manager of the Madras Railway Company, No. 906, dated the 7th December 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

With this letter the Agent submits copies of communications from the Chief Engineer and Traffic Manager respectively, regarding the present state of the Line between Vellore and Goriattum, and the arrangements required to be made previous to that portion of the Line being opened for traffic.

* No. 849.

2. It will be observed that my letter, copy of which is enclosed, calling for this information is dated 1st October.*

3. It appears that more than one half of the Bridges to be built between Vellore and Goriattum are not yet completed, and of these again more than one half are either not yet, or only, just begun. Six miles of Ballasting and Permanent way have yet to be laid. And as regards the

Station, which was sanctioned on the 28th October 1856, the buildings have been set out; but it does not appear that the foundations have been commenced yet.

4. The foundations of the Goods shed for which no sanction has ever been granted or applied for, are stated to be commenced, and a temporary Passenger shed, likewise unsanctioned, has been erected, while other sheds are about to be added.

5. The Government will doubtless be disappointed in the Report now submitted, showing as it does the backward state of the line between Vellore and Goriattum, and the deficient arrangements at the latter station; and I regret being obliged to bring to notice this further instance of disregard of the orders of Government in delaying authorized, and commencing to erect unauthorized buildings.

6. The suggestion of the Traffic Manager for the formation of roads to the Goriattum station calls for no remark, as the question has already been disposed of by the order of Government, conveyed in Extract Minutes of Consultation, No. 449, dated 16th September 1857.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 11th December 1857.

FINANCIAL RAILWAY DEPARTMENT.

No. 614.

Extract from the Minutes of Consultation, under date 23rd December 1857.

Read observations by the Officiating Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

Annexing copies of letters from the Chief Engineer and Traffic Manager, giving their opinions relative to the extension of the Line to Goriattum.

(Here enter 11th December 1857, No. 409.)

The Right Honorable the Governor in Council regrets the delay which it seems is still likely to occur in opening the Railway to Goriattum and for which no explanation is attempted. He trusts that the works both on the Line and at the station will be prosecuted as rapidly as possible.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

MADRAS, 26TH DECEMBER 1857.

No. 1124.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

With reference to your letter No. 906, of the 7th instant, I have the honor by order to inform you that the Right Honorable the Governor in Council regrets the delay which it seems is still likely to occur in opening the Railway to Goriattum, and for which no explanation is attempted. He trusts that the works both on the line and at the station will be prosecuted as rapidly as possible.

2. With regard to the roads, alluded to in para. 3 of your letter under reference, I have to inform you that, at the suggestion of Colonel Pears, Government ordered their construction some time ago.

3. In the 3rd para. of his letter* to your address, Mr. Heppel states. "The arrangement of the Goriattum station is similar to that at Trivellum. The buildings have been set out and the founda-

"tion of the goods shed commenced. A temporary Passengers shed has been erected, to this will "have to be added a temporary Engine shed," &c. I have to remind you that no authority appears to have been given by Government for the construction of either the permanent Goods shed, or the temporary Passengers shed, and however essential these buildings might be for the traffic, they ought not to have been commenced without authority.

4. I have now to request you will be good enough to submit for the sanction of Government, the necessary plan, sketch, and estimates for the Goods and Passengers sheds with as little delay as possible.

(Signed) C. C. JOHNSTON, CAPTAIN,
Offg. Consulting Engineer for Railways.

REPORTS ON THE LINE OPENED BETWEEN AMoor AND VelloRE.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 150.

To T. PYCROFT, Esq.,
Chief Secretary to Government, Fort St. George.

SIR,

The Agent and Manager of the Madras Railway having reported that the line between Arcot and Vellore is in a sufficiently advanced state to admit of its being opened to the public on the 1st proximo, I have the honor to suggest that, should the result of the inspection, which I propose making without delay, prove favorable, I may convey to the Agent at once the authority of Government for declaring that portion of the line open on the day specified.

2. The usual reports of the line have been received, and will be submitted with my inspection report.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 21st April 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 216.

Extract from the Minutes of Consultation, dated 23rd April 1857.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 21st April 1857, No. 150.)

The Consulting Engineer will convey to the Railway Agent and Manager authority for opening the line between Arcot and Vellore to the public should the inspection which he is about to make prove satisfactory.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

MADRAS RAILWAY,
20TH APRIL 1857.

No. 346.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

1. I have the honor to acquaint you that the Chief Engineer of this Company reports that the Line from Arcot to Vellore is, as far as the Permanent way is concerned, in sufficiently good order for the running of Trains, but that the station accomodations at Vellore are not quite complete, and those at Trivellum have been suspended for reasons as set forth in his letter, No. 75, dated the 16th of April, a copy of which is annexed.

2. Having referred the subject in regard to Traffic arrangements to the Traffic Manager, I annex a copy of his reply, No. 25 of this date, to the effect that, although the buildings are not completed, still he sees no sufficient reason to recommend that the opening of the line be deferred on that account.

3. In respect to the Trivellum station, it being isolated, from there being no road to connect the station with the plain road to Chittoor, it is proposed that the station be not opened for Traffic at present. I therefore beg to recommend that the Government may be pleased to sanction the line being declared open for Traffic from Arcot to Vellore on the 1st proximo.

4. I beg to forward herewith the usual statements as called for by you.

I have, &c.,

(Signed) T. A. JENKINS,
Agent and Manager.

Submitted for the information of Government with reference to Extract Minutes of Consultation, No. 216, dated 23rd April 1857.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 28th April 1857.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 16TH APRIL 1857.

No. 75.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

1. I have the honor to forward the necessary information for Government, with reference to the opening of the line as far as Vellore.

2. So far as the permanent way is concerned the line is at present in sufficient order for the running of Trains, and by the 1st of May I hope the station accommodations at Vellore, although not complete for Goods, will be sufficient for the Traffic we may at first expect.

3. Owing to repeated attacks of Cholera the works at Trivellum station are entirely suspended at present, and I do not expect that we shall be ready there by the 1st of May for Goods Traffic, but the temporary passenger arrangements will be complete. It is a question however whether passengers only would pay the working of this station.

4. It depends on a supply of powder from the Government powder stores here, when we can have the Engine turn table fixed at Vellore, it has to be founded on solid rock and the whole requires blasting, this work has been suspended owing to the want of powder, an indent

on Madras store for powder was received on 26th March last, but the Government it would appear up to this time have none to spare, but I am daily looking for a supply.

(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

MADRAS, 20TH APRIL 1857.

No. 25.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

1. I have the honor to acknowledge the receipt of your letter, No. 60, of the 18th instant, enclosing letter from the Acting Chief Engineer, No. 75, of the 16th, reporting that the line between Arcot and Vellore so far as the permanent way is concerned is at present in sufficient order for the running of Trains.

2. I have the honor to report to you that I accompanied the Acting Chief Engineer this morning by Special Train from Arcot to Vellore and back, and that I consider the permanent way is in a most efficient state, and is in the best order of any Line I have seen not open for Traffic.

3. The Station arrangements at Trivellum for both passengers and Goods Traffic are incomplete, Station house is not built; in fact the walls are only on a level with the platform, and the Goods Warehouse although in a more advanced state cannot be ready for some time. The passenger platform is very nearly complete—nothing appears to have been done relative to the construction of a road from this station to the nearest Trunk road. I have no doubt we can carry on the business by temporary arrangements being made for booking the passengers; the Goods if any offered could be loaded on the passenger platform, but the absence of a road is a difficulty not so easily met, and I would suggest to you that it might be desirable not to open this station in the first instance or until the road has been made, by which time probably the station arrangements would be complete.

4. The station arrangements at Vellore are much further advanced. The necessary station house is complete and will be sufficient for the Traffic at present. The Passenger platform is finished and in capital order. The sidings are very nearly finished as well as the carriage dock and loading platforms. The Goods Warehouse will not be ready by the 1st of May or probably for a month after, but we can arrange to transact the Goods business without serious inconvenience until the arrangements are completed.

5. The delay in obtaining powder has prevented the engine Turn table being laid down and the arrangements for the Locomotive Department are not in a forward state. I have had a conversation with the foreman of the Locomotive Department upon the arrangements and we are of opinion, that although some inconvenience may be experienced immediately at the opening, that they are such as should not prevent the line being opened to the public on the 1st May. Houses for the accommodation of the men employed in both the Traffic and Locomotive Departments are being erected, and although they cannot I think be ready by the 1st proximo, temporary arrangements may be made for their accommodation.

6. I have the honor under a review of all the circumstances to recommend that the extension line should be opened for Traffic on the 1st proximo to Vellore, and that the Trivellum station should not be opened until further notice.

I have, &c.,
(Signed) H. A. FLETCHER,
Traffic Manager.

(True Copies.)

T. A. JENKINS,
Agent and Manager.

MADRAS RAILWAY,
MADRAS, 24TH APRIL 1857.

No. 357.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to my letter, No. 346, dated 20th instant, reporting that the Line of Railway is sufficiently completed to enable us to open for Traffic on the 1st proximo, to Vellore, I have the honor to submit for the sanction of Government that the hours of running the Trains be fixed as follows, and beg to annex a copy of a letter* from the Traffic Manager, stating his reasons for fixing upon the hours as specified.

* No. 26-24th April.

Passenger Train from Vellore to Madras.....	6.30 A. M.
Do. arriving at Madras	10.30 A. M.
Do. from Madras to Vellore.....	3. 0 P. M.
Do. arriving at Vellore.....	7. 0 P. M.
Goods Train from Vellore to Madras.....	11.24 A. M.
Do. arriving at Madras.....	7.24 P. M.
Do. from Madras to Vellore.....	5. 0 A. M.
Do. arriving at Vellore.....	1. 0 P. M.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted for the information of Government with reference to Extract Minutes Consultation, No. 216, dated 23rd April 1857.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 28th April 1857.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
24TH APRIL 1857.

No. 26.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

1. As the Line will probably be open for Traffic to Vellore on the 1st proximo, I have the honor to propose that the Trains, Passengers' and Goods', should run between Madras and Vellore as follows:—

Passengers' Train from Vellore to Madras.....	6.30 A. M.
Do. arriving at Madras.....	10.30 A. M.
Do. from Madras to Vellore.....	3.0 P. M.
Do. arriving at Vellore.....	7.0 P. M.
Goods' Train from Vellore to Madras.....	11.24 A. M.
Do. arriving at Madras.....	7.24 P. M.
Do. from Madras to Vellore.....	5.0 A. M.
Do. arriving at Vellore.....	1.0 P. M.

2. I would beg to remark that the objections to an earlier departure from Vellore than 6.30 A. M. for the Passengers' train are the same as were urged when the train left Arcot at an earlier hour; I therefore think it unnecessary to make any special remark upon this point further than that I think an earlier hour would prejudice our traffic.

3. I have proposed that the Train now leaving Madras at 3.30 P. M. should depart at 3.0 P. M. as being more generally convenient for the people of Arcot and Wallajanugger than the present hour, and to avoid running in the dark as much as possible.

4. I have the honor to remark that the times of Trains as above are made in accordance with the orders of Government that there shall not be mixed trains now of Passengers and Goods, and that the speed of the Goods Trains shall not exceed 10 miles per hour.

5. I am of opinion that these orders of Government militate against the interests of the Company, and I beg to observe that in proposing the hours as above I by no means consider that the arrangements are the best that could be made, but I think they are the best which the Government will allow us to suggest.

(Signed) H. A. FLETCHER,
Traffic Manager.

(True Copy.)

T. A. JENKINS,
Agent and Manager.

To MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

No. 417.

SIR,

Having inspected the line between Arcot and Vellore, I have been instructed with reference to your letter, No. 346 of the 20th instant, to inform you that Government sanction the opening of that portion of the line to public traffic on the understanding that the following arrangements shall be first made,

2. Substantial gates to be placed near the Vellore station at the crossing of the Chittoor road. These gates are to be double, closing across the rail as well as at other times across the high road, but if such gates are not now ready—gates closing across the high road on each side of the rail, will suffice as a temporary arrangement.

2ndly. Scotch blocks to be provided at once on the main siding at the Vellore station.

3rdly. A signal post to be erected at Trivellum and Scotch blocks provided on the siding.

4thly. Some arrangement must be made for securing a clear view from the westward of the signal at the Arcot station, at present this is obscured by the temporary engine shed; it is necessary therefore either that the shed be at once removed or another signal post erected west of the station.

3. Having taken the necessary steps for making these arrangements in time, you are requested to report and notify to the public the day upon which you propose to open the line, and you will be good enough before that day arrives to report for the satisfaction of Government that the deficiencies above noticed have been fully supplied.

4. The Government approve of the Trivellum station being not for the present opened, but desire that every exertion be made to complete the arrangements mentioned by Mr. Fletcher, as necessary for booking the passengers, &c., and that the station be thrown open as soon as possible. They do not consider that the want of a road from the station to the Chittoor Trunk road is a sufficient reason for not making use of the station, and they desire me to remind you that your application, for permission to construct a road between the station and the old Poiner road, by means of which communication with the Town of Trivellum would be effected, was complied with on the 24th January last, although no progress appears to have been made with the work.

5. The Government trust that every exertion will be used to complete the station buildings and such other works, the turfing, fencing, &c., as in their minor details are yet incomplete, and you are reminded that from the date of opening, the expenses in the Engineer Department will be carried to capital account for one year only.

6. I am desired at the same time to acknowledge the receipt of your letter, No. 357 of the 24th instant with its enclosure, and to inform you though it appears to the Government doubtful whether an earlier hour of departure from the Western Terminus, would not have been more convenient and agreeable to the Public at large, they will not object to the adoption for the present, of the time proposed by your Traffic Manager.

7. You are requested to cause a time table to be prepared accordingly, and 6 copies thereof to be forwarded to this office without delay.

I have, &c.,

T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 2ND MAY 1857.

No. 384.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter, No. 417, dated 27th April, I have the honor to annex a copy of a letter from the Traffic Manager, and transmit herewith six copies of proposed Fare and time Table between Madras and Vellore as required by you in your letter No. 417, dated 27th April.

2. I request for the reasons set forth by Mr. Fletcher, that Government may be pleased to authorize my publishing these Notices in the Public papers; the Line to be opened between Amoor and Vellore, on Monday the 11th May next.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 6th May 1857.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
2ND MAY 1857.

No. 29.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

I have the honor to inform you that I had an interview with the Acting Chief Engineer this morning and have learnt from him that he has not yet received intimation from the Resident Engineer, Mr. Collins, that the different requirements of the Consulting Engineer before opening the Line to Vellore have been completed.

2. I presume that it is now quite impossible to open the line as proposed on Monday next the 4th instant, inasmuch as you cannot obtain sanction to open, in the absence of the required report from the Engineers.

3. As no notice has yet been given to the public of the opening of the Line, and as there can be no doubt whatever that all will be completed as required by the Consulting Engineer by

Monday the 11th instant, I beg to suggest that the opening take place on that day and that in the meantime advertisements may be sent to the Newspapers.

I have, &c.,

(Signed) H. A. FLETCHER,

Traffic Manager.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

MADRAS RAILWAY,
MADRAS, 29TH APRIL 1857.

No. 378.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

I have the honor to annex a copy of a letter from the Acting Chief Engineer, No. 89, dated the 29th instant, in which he reports that he has given instructions for the carrying out of the arrangements on the Line and at Vellore as required by you; that it is possible that the same may be completed by the 1st proximo, but it is more than probable that the whole will be so by Monday next.

To obviate delay in waiting for the report that all arrangements have been completed, I request the Government will be pleased to authorize the Line being opened for Traffic without waiting for the same.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 6th May 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 29TH APRIL 1857.

No. 89.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

I have the honor to acknowledge receipt of yours, No. 368, of yesterday's date, enclosing No. 417, from the Consulting Engineer, having reference to the opening of the Line to Vellore.

2. I have ordered the arrangements stated in para. 2 of the Consulting Engineer's letter to be carried out; at the same time I think it necessary to make some remarks on them.

3. The gates over the Chittoor road referred to are beyond the Vellore station, and would only be required in the event of the Engineer's proceeding to the temporary Engine shed.

4. The Scotch blocks on the main sidings at the Vellore station, the Traffic Manager informs me, are not required by him, neither can they be required at Trivellum, as we are not to open for Goods Traffic.

5. As requested in the 2nd para. of your letter I shall communicate to you when these arrangements are carried out; but I leave it with you to consider whether it is necessary to delay the opening until this information can be given to Government.

6. It must necessarily take some time after the arrangements are completed, as the Resident Engineer will have to see that they are done, and will then report to me, I will have to communicate with you and you with Government.

7. For your information I may state that the arrangements may be completed by the 1st of May and cannot, I think, remain unfinished on Monday next, and I may also state that whether they are or are not finished there is in my opinion no reason why the Line should not be opened at once, none of the arrangements called for are necessary for the safe conduct of the Traffic, although, as far as the gates and signals are required, it is advisable to have them put up as soon as possible.

I have, &c.,

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

(True copy.)

T. A. JENKINS,

Agent and Manager.

MADRAS, 30TH APRIL 1857.

No. 440.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor under the orders of Government to acknowledge the receipt of your letter, No. 378 of the 29th instant, forwarding copy of a letter from your Chief Engineer, and requesting the Government will authorize the line between Arcot and Vellore being opened for Traffic without waiting for the report of the arrangement required by my letter, No. 417 of the 27th instant, having been made.

2. I am directed in reply to inform you that the Government wish the line to be thrown open as soon as possible, but desire that this shall not be done until the works named in the arrangement required in the above letter shall have been completed.

3. You will be good enough to arrange that the report called for be forwarded at the earliest possible period, and in the meantime the Government request, that you will satisfy yourself before opening the line that the deficiencies noticed have been all made good.

4. With reference to the remark made by your Chief Engineer that the Scotch blocks are not required at Trivullum, I am directed to observe that since that station is not to be brought into use at present, should you not contemplate turning the sidings to account in ballasting, it is optional with you either to fix the Scotch block and Signal post or to remove the points.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 5TH MAY 1857.

No. 393.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

1. With reference to your letter, No. 440, dated the 30th ultimo, I have the honor to inform you that the Acting Chief Engineer reports that all the requirements as set forth in your

letter, No. 417, dated the 27th of April previous to the opening of the Line to Vellore were completed by the morning of the 3rd instant.

2. In advertence to the 2nd paragraph of your letter, No. 453, dated the 4th instant I beg to state that the line will be opened between Madras and Vellore for traffic on Thursday the 7th instant.

I have, &c.,
(Signed) T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 6th May 1857.

No. 165.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 378, 384, and 393, dated 29th April, 2nd and 5th May 1857, respectively.

OBSERVATIONS BY THE CONSULTING ENGINEER.

In his letter, No. 393, the Agent reports that the line between Arcot and Vellore will be opened to the public on the 7th instant.

2. On the 25th ultimo, I inspected this portion of the line, in company with the Agent, Chief Engineer and Traffic Manager.

3. The portion of line now to be thrown open is 15½ miles in length extending from the 65½ to the 80½ mile from Madras. The first 7½ miles, including the Poiney Bridge, belong to District III, the remaining 7½ miles to the 1st section of District IV. An Engineer was appointed to the latter District in June 1854. The survey of the 1st section, that now reported complete, was received in May 1855, and having been sent to the Collector for his guidance in the transfer of the land, the Agent was authorized to take possession and begin work in August 1855.

4. The works of masonry, the earthwork, the Permanent way and much of the ballasting have been now completed, as far as the Vellore station; and the works appear to me in every respect excellent.

5. The whole of the works of masonry, including the Bridge across the Poiney, which has been already reported on, are of rough dressed granite, and have a handsome substantial appearance. The earthwork on this portion of the line includes much heavy rock cutting. The banks have been thrown up and finished off in a business like manner, the slopes being well preserved and already, for the most part turfed.

6. The permanent way is laid throughout with the light 65lbs. rails having 7 sleepers under each length of 20 feet.

7. There are but two stations in this portion of the line, viz. the Trivellum station about 1½ mile west of the village of that name, and the Vellore, for the present, the western terminal station.

8. The necessary buildings are not yet provided at the former, and it is not proposed to make use of it therefore at present. At the latter the permanent Goods shed is making good progress, and a temporary building, affording sufficient accommodation for passengers, has been erected.

9. The high road from Vellore to Chittoor crosses the line immediately to the west of the Vellore station—as it is proposed to place a turn table and other station buildings west of the road again, it will, I think, be necessary hereafter to turn it so as to carry it wholly outside the Station premises.

10. I pointed out to the Agent that, in the meantime, it would be necessary before opening the line to place substantial gates at this road; and I further requested that Scotch blocks might be provided at once to the main siding at the Vellore station, that a signal should be erected at the Trivellum station, and Scotch blocks to that siding. I requested also that some arrangements might be made for securing a clear view, from the westward, of the signal at the Arcot station, which was then obscured by the temporary Engine shed.

These arrangements I understood would probably be completed by the 1st instant.

11. On the 29th ultimo, the Agent addressed a letter* to this office stating, that it was possible they would be completed by the 1st instant "more than probable the whole would be so by Monday next," (the 4th instant) and as it appeared from a letter from the Chief Engineer that it was in contemplation not to use the Trivellum siding, I informed the Agent that should he not contemplate turning that siding to account in ballasting, it was optional with him either to fix the Scotch blocks and signals, or to remove the points.

12. Having required that these important points should be attended to, it appeared to me sufficient to request the Agent to use every exertion to complete as soon as possible the station buildings, and such other works as turfing, fencing &c., as in their minor details are yet incomplete.

13. I have only to add, that I consider the character and condition of the works on this portion of the line highly creditable to the Railway Engineer Department. They are exactly such as are to be desired in this country, plain, solid, well, and, as I believe, the accounts when closed will show, economically executed.

14. I beg to submit 4 copies of the revised time tables, forwarded with the Agent's letter No. 384 of the 2nd instant.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 6th May 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 250.

Extract from the Minutes of Consultation, under date the 13th May 1857.

Read the following observations by the Consulting Engineer for Railways on letters from the Agent and Manager of the Madras Railway Company.

Relative to the line between Arcot and Vellore being } (Here enter 6th May 1857, No. 165.
open for Traffic on Thursday the 7th instant.

The Proceedings reported in the foregoing communication of the Consulting Engineer are approved.

(True Extract.)

(Signed) E. MALTBY,
Acting Chief Secretary.

STATE OF THE WORKS ON THE LINE BETWEEN MADRAS AND VELLORE.

MADRAS, 29TH OCTOBER 1857.

No. 934.

To MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway Company.

SIR,
Having learnt from Lieutenant Roberts, Deputy Consulting Engineer, who came down from Vellore by Rail this morning, that some of the masonry works on the line have been injured

during the recent heavy rains, I have the honor, by order, to request that you will favor Government at an early date, with a special report on the present condition of the works generally on the line from Madras to Vellore.

I have, &c.,
(Signed) C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 816.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

1. I have the honor to acquaint you that consequent upon the very heavy rains, the country has been flooded to such an extent as to affect the Permanent way and some of the works, whereby the running of the Trains has been impeded to some extent.
2. It was found on Monday the 26th that some parts of the Line between Madras and the 12th mile had been washed away, consequently the 4.50 west Goods Train was detained at Madras, and a Pilot Engine despatched to render assistance in procuring materials and ballast to repair the damage. This was effected so as to enable the 6.30 A.M. East Passenger Train to proceed to Madras, where it arrived two hours after time.
3. The Chief Engineer and Traffic Manager proceeded by special Engine along the Line, preceding as a Pilot Engine the 3 P.M. West Passenger Train on the 26th instant, when the Chief Engineer inspected the doubtful portion of the Line. The Passenger Train arrived at Vellore at one hour and 50 minutes behind time. It has been deemed desirable to run a Pilot Engine before each Passenger Train and to stop the running of the Goods trains until the weather becomes more settled and the line is in a better state. A few goods wagons have been attached to the Pilot Engine. The Chief Engineer informs me that some considerable slips in the banks have occurred in various places and some of the masonry work has been damaged. This latter has chiefly been the case with wing-walls of Bridges when the foundations have been undermined by a rush of water. In one case however a portion of the abutment of a Bridge consisting of 29 feet openings has been carried away, all these places are closely watched, at present the Line is considered to be perfectly safe, particularly with the precaution of running a Pilot Engine. A full Report from the Chief Engineer will be transmitted to you in due course.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 29th October 1857.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 30th October 1857.

No. 370.

On a letter from the Agent and Manager of the Madras Railway Company, No. 816, dated 29th October 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.
It having been reported to me by Lieutenant Roberts, that he had observed that some of the masonry works on the line of Railway, between Madras and Vellore, had been injured during the late heavy rains, I called upon the Agent and Manager, yesterday, to favor Government with

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a special report on the present condition of the works generally, on the portion of the line referred to.

2. The Agent however in a letter dated yesterday (received this day) reports in general terms on the injuries sustained by the works, and promises to forward a full report on the same from the Chief Engineer in due course.

3. The Agent likewise reports the measures taken for the safety of the passenger train, by running a Pilot Engine, and that it has been deemed desirable to stop the running of the goods train, until the weather clears up, and the line is put into better order, than it would appear to be at present on some portions.

4. To obviate in some measure the inconvenience arising from the stoppage of the goods train, it would appear that some goods wagons have been attached to the Pilot Engine, thus carrying the goods at double the authorised speed, and consequently at an enhanced expenditure. Such a proceeding being in direct contravention of the orders of Government, the Agent might be called upon to report fully his reasons for authorising it.

5. I propose, with the approval of Government, deputing Lieutenant Roberts to inspect and report specially on the line of Railway between Madras and Vellore; as it is highly desirable that the causes of the failure of the masonry works should be strictly and carefully ascertained.

(Signed) C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 30th October 1857.

RAILWAY DEPARTMENT.

No. 523.

Extract from the Minutes of Consultation, dated 3rd November 1857.

Read the following observations by the Officiating Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

(Here enter 30th October 1857.)

Government approve of Lieutenant Roberts being deputed on the proposed duty.

(True Extract.)

(Signed) E. MALTBY,
Acting Chief Secretary.

RAILWAY DEPARTMENT,
DEPUTY CONSULTING ENGINEER'S OFFICE.

No. 5.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

I have the honor to inform you that pursuant to the instructions of Government, as conveyed in Extract Minutes of Consultation, No. 523, dated 3rd instant, I proceeded per Passenger Train to Vellore on the 4th idem, and in company with the Chief Engineer Mr. Heppel, who had kindly arranged to accompany me, I commenced on the following morning: my inspection Eastwards on a special Engine, leaving Vellore shortly after the morning Passenger Train.

2. Believing the wishes of Government to be to ascertain in what way the line had stood the effects of the late heavy rains, and that my Report should be restricted therefore more to a description of the damages it had thus received rather than comprise the result of a close and minute survey of each and every work along the line, to examine which even superficially, would be the work of many days, I resolved on proceeding leisurely over the line, stopping only at such places as either appeared to have, or I could learn had, suffered during the late outburst of the monsoon.

3. The following account will put you in possession of all the facts necessary to give you a clear idea of the present state of each stage of the Line.

4. Vellore to Trivellum 80th to 73rd mile.—This portion of the line has stood the rains remarkably well. There is a slip in the bank in the 77th and again in the 74th mile, but with these exceptions, and they do not interfere in any way with the working of the line, the whole stage is in capital working order. The ballast is well up, and the line scarcely at all shaken by the rains. The Bridges appear all right.

5. The only place where a settlement of ballast was apparent, was in the approaches of the Timber Bridge over the Pioneer road in the 73rd mile. These having sunk a little, while the Bridge retains its original level, rather an unpleasant motion to the Passenger is given by the rising and sinking of the carriage as it goes over the Bridge and its approaches.

6. Trivellum to Amoor (73rd to 66th mile).—As I had heard, casually, that some of the Bridges on this portion of the line had been injured, and were in a dangerous state, I stopped frequently, and assured myself by continuous examinations that the report was quite unfounded. The Bridges here, appear to have stood remarkably well. All those I examined were without cracks or flaw worth speaking of.

7. The way itself is rougher than on the last stage, the ballast having apparently settled a good deal, the portion between Poiney and Amoor is especially wavy. But the worst places have been already lifted and ballasted up.

8. Amoor to Sholinghur (66th to 56th mile).—The line on this stage is still in very fair order and though undoubtedly rougher than before in many places, yet it has not been seriously hurt by the rains. There are a few slips in the slopes of the cutting in the 58th mile, but nothing serious, i. e. to interfere with the Traffic or even Drainage.

9. Sholinghur to Companypett (56th to 46th mile).—The line is unimpaired on this stage but the road becomes rather rough towards Companypett. There are two slips in the bank in, the 53rd mile, as also one in the 50th, and one in the 47th mile near Companypett.

10. Companypett to Chinnamapet (46th to 37th mile).—Throughout this stage the road is somewhat uneven, settlements having taken place, in different portions, in ballast sleepers, and earth. The banks have slipped here and there, but are being repaired rapidly.

11. In the 42nd mile, the wings of a Bridge of one arch (6 feet span) were severely tried by the scour of the water rushing through, which caused a deep pit to be formed in rear of the wing walls, fortunately however, the Bridge received no injury, and a retaining wall which I am informed is about to be built, to connect the rear wing walls, will prevent for the future all risk of accident from a similar cause.

12. Chinnamapet to Trivellore (37th to 26th mile).—This stage has received more damage than any other portion of the Line. The banks have sunk slightly in many places, and 3 Bridges have been more or less injured.

13. The 1st of these Bridges is close to the 35th mile, and has 2 arches of 9 feet each. Here, both the wing walls and the cut water on the down side, as also a portion of the pier and eastern arch, have tumbled down. The western wing wall, of the upper face, is also down, and the corresponding eastern wing cracked. It is very clear that the solid stone inverts to each arch has been the saving of this Bridge. The water appears to have rushed through the bridge with great violence, tearing up, by its force, the bed of the nullah, below bridge, where no longer protected by the inverts and forming deep holes below these, in a line with the face of the arches, causing the cutwater and the 2 wing walls, all of which had little or no depth of foundation, to be undermined and thrown down. In its fall the cutwater brought down a portion of the main body of the pier above, which again carried with it part of the eastern arch, as above described.

14. Fortunately the injured portion of the arch is on the opposite side of that on which the rails lie, the Bridge being built for a double way, and as the damage done causes no hinderance to the traffic, so the repairs can be carried on without interfering with it in any way whatever.

15. These repairs are being carried out very vigorously, and as each set of wing walls will now be joined together by a retaining wall and the intervening space be filled up with a stone

apron, no fear need be entertained of the future stability of this Bridge. I would only recommend that a stone pitching, or rough stone apron, be thrown down below the lower retaining wall, to prevent its being undermined by the force of the water rushing over it.

16. 1 single 12 feet opening over the road from Conjeveram to Trivellumgoody, close to 35th mile, was subjected to very much the same treatment as the Bridge above described; the soil in this case, however, being of greater consistency, the erosion was not so deep, and though the foundations of the wing walls were laid bare, no damage happened to the Bridge.

17. At 34 miles 75 chains, a Bridge, consisting of 1 opening of 6 feet, lost both the lower wing walls on its lower side, and got those on the upside cracked; the arch, protected by its invert, remained secure. This, and the Bridge, alluded to in the above para. are to have retaining walls and aprons as already described.

18. From Trivellore to Tinnanore (26th to 18th mile).—The Line has received little or no damage in this portion from the rains; in fact it appears in quite as good order as it ever was.

19. From Tinnanore to Avady (18th to 13th mile).—There is a considerable land-slip in the bank in the 16th mile, but with this exception the Line appears to be in very good order.

20. From Avady to Perambore (13th to 4th mile).—In the 12th mile, the ballast was washed away in large quantities during the rains and the ends of the sleepers were exposed to view; these have since been all ballasted up. Ballast has been deposited to protect the much-damaged slopes of the bank through the Umbatoor Tank, and the Mangrove, a hardy plant well adapted for the purpose is now being planted to protect these slopes from the force of the waves.

21. Near the 7th mile, one 6 feet opening has its Eastern wing-wall, on the down face, destroyed, and a portion of the arch is cracked. A very effective and expeditious mode of repair has been resorted to here, viz., stuffing up the whole archway with ballast. Nothing else can well be done until the close of the monsoon.

22. In the 6th mile to the East of and close to the Coonoor station, a great deal of mischief was done to the ballasting by a kind of back Eddy from a neighbouring nullah. A considerable quantity of earth and ballast was thus carried away, rendering the line almost dangerous until repairs could be effected and matters put straight again which they now are.

23. From Perambore to Madras.—In 3rd mile one 6 feet span Bridge has the western wing on lower side detached from the body of work. The arch, I am informed, was cracked before, and is one of those over which timbers are placed to relieve it of the weight of passing Trains, an apron and retaining walls are to be built for the protection of this Bridge.

24. The soil of the banks in nearly the whole of this portion being of a very inferior quality, the slopes are studded with holes all over; the effect of the rain has been to melt away, as it were, the earth, which, in the form of slush, has oozed out at the foot of the slopes, leaving great fissures above.

25. Gantz road Bridge, in 3rd mile. This is a girder Bridge, and as far as its stability goes, it is as sound as ever since the abutments are untouched; the western wing-wall, on the lowest side, is however badly cracked and will have to be re-built, in portion. This road is indifferently a road or a nullah, as the exigencies of the season may require. The late rains have quite destroyed its surface as a roadway, while the approaches to the road; close by, over the Railway have been much cut into from the same cause.

26. As a summary then, in regard to the present condition of the Railway, may be said that from Vellore to Arcot the road, considering its comparatively recent date of opening, is in very fair order, that from Arcot to Companypett it is very good, from Companypett to Chinnamapet only pretty good, from Chinnamapet to Trivellore very bad, from Trivellore to Tinnanore very fair, from Tinnanore to Madras very good indeed.

27. Considering the very heavy burst of the monsoon* to which the Railway has been subjected, a fall of rain of almost unprecedented amount and continuance, I think it must be a matter of congratulation that the works have stood so well. Certainly where they have failed, the labors of the Engineer

* Between the 20th and 26th October 1857 there fell 27.167 inches of rain.

Department have been indefatigable in putting the line at once out of the reach of all danger, and in carrying on the more permanent repairs with unprecedented vigor.

28. In conclusion, I have the honor to report that I took the opportunity of having an Engine at my disposal to test the deflection of Rail girder Bridges when an Engine passes over them. Some of these Bridges, since their first construction, have been supported by transverse and longitudinal beams. I found the deflection of these latter to be, in the middle, 0.2 feet, the bearing in each case being 12 feet.

I have, &c.,

RICHARD A. ROBERTS, LIEUT.

Deputy Consulting Engineer for Railways.

Madras, 10th November 1857.

Submitted (with observations) for the information of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 11th November 1857.

No. 380.

On a letter from the Deputy Consulting Engineer for Railways, dated 11th November 1857, No. 380.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

With reference to Extract Minutes of Consultation, No. 523, dated 3rd instant, the Deputy Consulting Engineer in the foregoing letter submits a report on the effects of the late heavy rains on the line of Railway between Madras and Vellore, and the result of his examination on the whole may be considered satisfactory as to the stability of the works.

2. A settlement of the embankments as was to be expected, has taken place in many portions of the line, but no land-slips either in the embankment slopes or cuttings, have been of sufficient extent to interrupt the Traffic.

3. From the wash of the waves in the large Umbatore tank, through which the line passes in the 11th mile, the side slopes have been much damaged; and again in the 6th mile, by the back eddy from a nullah, the earthwork and ballasting were so much washed away as to necessitate the immediate execution of repairs, to allow of the trains passing without risk of accident.

4. Insufficient foundations, and the want of retaining walls and aprons to prevent scour, have been the cause of the injuries noticed to some of the bridges on the line, a circumstance to which the Agents special attention might be called, with a view to his communicating the same for the future guidance of the Engineer Department.

5. The necessary precautions to secure the bridges will now be taken, and judging from Lieutenant Roberts' report, it appears that the entire line may soon be put into good working order again.

6. The summary as given in para. 26 is that the line from

Vellore to Arcot	15½ miles	is in very fair order.
Arcot to Compnaypett	19½ do.	very good.
Compnaypett to Chinnamapett	9½ do.	pretty good.
Chinnamapett to Trivellore	10½ do.	very bad.
Trivellore to Tinnanore	8 do.	very fair.
Tinnanore to Madras	18 do.	very good indeed.

7. Lieutenant Roberts in concluding his report notices in high terms the great exertions made by the Engineer Department in securing the line at once from all danger, and in carrying on the more permanent repairs.

(Signed) C. C. JOHNSTON, CAPTAIN,

Offg. Consulting Engineer for Railways.

Madras, 11th November 1857.

Extract from the Minutes of Consultation, under date the 20th November 1857.

Read observations by the Officiating Consulting Engineer on a letter from the Deputy Consulting Engineer for Railways.

Submitting a report on the effects of the late heavy rains on the line of Railway between Madras and Vellore. (Here enter 11th November 1857, No. 380.)

The Government are gratified to learn from the report submitted with the foregoing observations that the damages which the line of Railway from Madras to Vellore sustained during the late heavy rains have not been so extensive or serious as to interrupt the Traffic, and that the result of the Deputy Consulting Engineer's examination is on the whole considered satisfactory as to the stability of the works. They also notice with much satisfaction the terms in which Lieut. Roberts speaks of the great exertions made by the Engineer Department in securing the line at once from all danger and in executing the more permanent repairs.

2. As suggested in para : 4 of the Officiating Consulting Engineer's report, he will call the special attention of the Railway Agent to the cause of the injuries sustained by some of the bridges on the line, in view to his communicating the same for the future guidance of the Engineer Department.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

MADRAS, 24TH NOVEMBER 1857.

No. 1009.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

I have the honor, by order, to inform you that the Deputy Consulting Engineer's report of his late inspection having been laid before Government, they are gratified to learn from it that the damages which the line of Railway from Madras to Vellore sustained during the late heavy rains, have not been so extensive or serious as to interrupt the Traffic, and that the result of the Deputy Consulting Engineer's examination is on the whole considered satisfactory as to the stability of the works. Government also notice with much satisfaction the terms in which Lieutenant Roberts speaks of the great exertions made by the Engineer Department, in securing the line at once from all danger and in executing the more permanent repairs.

2. I am, however, directed to call your special attention to the cause of the injuries sustained by some of the Bridges on the line, viz., insufficient foundations and the want of retaining walls and aprons to prevent scour, in view to your communicating the same for the future guidance of the Engineer Department.

3. It is likewise observed from Lieutenant Roberts' report, that some of the Rail girder Bridges, since their first construction, have been supported by transverse and longitudinal beams, regarding which there appears to have been no report whatever made to the Government office.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

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MADRAS RAILWAY.

No. 848.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

Sir,

With reference to your letter No. 934, dated the 29th October and my letter No. 816 of the same date, I have the honor to annex for the information of the Government; a special report* from the Chief Engineer of the Railway, on the condition of the works generally on the line from Madras to Vellore.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 17th November 1857.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 9TH NOVEMBER 1857.

No. 207.

To MAJOR T. A. JENKINS,

Agent and Manager.

Sir,

Your memorandum of October 30th enclosing letter from Officiating Consulting Engineer, No. 934, October 29th.

The floods consequent on the heavy rains which fell on the 24th and 25th ultimo have had the effect of injuring considerably certain parts of the works between Madras and Vellore. The points where the chief damage has occurred are the following.

Gantz Road, Bridge and level crossing 2 miles 22 chains. The end of the west wing wall on the South side has been undermined by the rush of water, occasioned I am informed by the bursting of an adjoining tank, and broken off. The pitched apron between the wings is also washed away and the road beyond it much cut up. The adjacent slope of the bank of the crossing approach has also slipped considerably in consequence of the scour along the foot of it.

6 feet culvert, 3 mile, west wing on South side undermined and cracked down close to abutment.

6 feet culvert, 6 mile 70 chain, entire North half undermined and carried away, at present entirely filled up with ballast.

6 feet culvert, 34 miles, both wings on North side undermined and carried away, East wing South side slightly cracked.

Bridge, 35 mile 2 chain, two 9 feet arches, on north side both wings, point of cut water and portion of east abutment as far as first counterfort undermined and carried away, corresponding portion of arch fallen—On South side East wing slightly undermined and cracked—West wing completely undermined and carried away. This work has suffered more severely than any other and at the time when I saw it in the evening of the 26th ultimo, its entire destruction appeared extremely probable—There was a head of water of at least 2 feet on the upperside and a most violent rush of water through. The large blocks of stone washed out from the invert and abutment were carried 40 to 50 yards before settling.

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The greatest attention was paid to the bridge, though during the height of the flood little, could be done beyond carefully watching it, so as to stop the Traffic if it should have become unsafe—fortunately the rain abated considerably on the night of the 26th so as to allow of the establishing of a dam across the upper side. By this means the rush of water was stopped and the further washing out of the masonry on the lower side prevented; a large gang of coolies was immediately set in to secure the foot of the embankment, and the regular restoration of the damaged masonry commenced.

These as far as I have been able to ascertain are the only cases of any severe damage inflicted on masonry works by the late rains, any others if they exist are of a trifling character. At the same time there are many Bridges and culverts which though uninjured at present, would evidently if the floods had continued, have very soon become so, and the same additional protective works have clearly been shown to be requisite for the one as for the other.

Besides the damage to the masonry works the earthworks have in places been injured all along the embankments, on each side of the Bridge over the canal near Madras, the north side has suffered considerably, the slope having in some cases slipped and in others the violence of the rain has washed the unballasted surface into holes, and consequently penetrated from these in an oblique direction through the bank to the face of the slope, washing out with it the material from the interior of the bank, this has however no where endangered the running line which is in the other side of the embankment.

At 6 miles 0 chains just by the the Conoor bungalow, a heavy wash took place in the angle between the south slope of the Railway bank and the crossing approach. This at one time threatened the temporary stoppage of the line, it was however protected provisionally by drawing a line of stakes along the face of the exposed earthwork, and is now made quite safe by a considerable extension of the bank, at 12 miles 10 chains the water being bunded up on the north side of the line poured through the cutting, and though not effecting any permanent damage, threatened to interrupt the traffic, by washing out the ballast. This is now quite repaired, but to obviate a similar occurrence it will probably be necessary to increase the waterway of the 1st culvert west of the cutting.

At 16 miles 50 chains, a considerable slip has taken place on the south slope of the embankment, which it has not been possible to repair effectually on account of the wet state of the ground at the foot of it. The safety of the line has in the meantime been provided for by shifting it over towards the other side of the bank.

Beyond the above there is very little damage to mention, the banks between Arcot and Vellore in the first instance settled in places considerably, so as to make some additional caution necessary in running over them, but they are all now restored to a fair average condition.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

T. A. JENKINS,

Agent and Manager.

No. 386.

On a letter from the Agent and Manager of the Madras Railway Company, No. 848, dated the 11th November 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

* No. 943, dated 29th October 1857.

With reference to a letter* from this office calling for a Report for the information of Government on the condition, after the late heavy rains, of the works generally on the line from Madras to Vellore, the Agent forwards, with the above letter, a Report† from his Chief Engineer.

† Dated 9th instant.

2. Mr. Heppel's Report is very satisfactory, showing 1st. that the Line, though damaged in places, was not sufficiently so to be closed altogether, and 2ndly. that where the chief damage did occur the repairs were so speedy and effectual, as to admit of the usual Trains being run with only one or two days intermission.

* Dated 12th instant 3. As in forwarding on the 11th instant Lieutenant Roberts' Report * on the same subject (which Report agrees in all particulars with that now forwarded, with the exception that Lieutenant Roberts mentions only an extensive land-slip and not the temporary alteration of the line at 16 miles 50 chains) I have so recently submitted observations on the state of the line, it does not appear necessary for me to enter into further remarks here.

4. I would only recommend that the Agent be called upon to keep a distinct account of the expenditure incurred in the repairs under notice, and to forward an estimate showing the probable cost of the whole of the "protective works" alluded to by the Chief Engineer as shown to be requisite for several Bridges and culverts, in addition to those specially detailed in his Report.

(Signed) C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 17th November 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 566.

Extract from the Minutes of Consultation, under date the 25th November 1857.

Read observations by the Officiating Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

Annexing a report from the Railway Chief Engineer on the condition of the works generally on the Line from Madras to Vellore.

(Here enter 17th November 1857, No. 386.)

The Government concur with Captain Johnston in considering the Chief Engineer Mr. Heppel's report on the condition of the Railway works after the late heavy rains, to be very satisfactory. They have already noticed the expeditious and efficient manner in which the damages sustained by the works were repaired; and they now desire that, as suggested in the last para: of the foregoing observations, the Agent be requested to keep a distinct account of the expenditure incurred in the repairs, and to forward an Estimate of the probable cost of the whole of the protective works shown to be requisite for several Bridges and culverts, in addition to those specially detailed in Mr. Heppel's report.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

Communicated to the Agent and Manager in letter, No. 1026, dated 28th November 1857.

ACCIDENTS.

No. 910.

MADRAS RAILWAY,
MADRAS, 15TH DECEMBER 1856.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

I have the honor to report that an Accident occurred to the 3.30 P. M. train proceeding last evening to Arcot at the Perambore station. It appears from a report from the Traffic

Manager, copy of which I annex, that it was caused, it is supposed, by the Trenails breaking on a slight curve; regarding this point I shall report more fully hereafter.

2. The Train was delayed seventeen minutes.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 17th January 1857.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
MADRAS, 15TH DECEMBER 1856.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,
I have the honor to report to you that an accident occurred to the 3.30 P. M. west Passenger Train yesterday, Sunday the 14th instant, at the Perambore station.

2. It appears that upon the Train which consisted of a small Passenger Tank Engine, 1 Guards van, 1 Composite, 4 Third class, 1 Horse Box, and 1 carriage Truck, approaching the station and after passing through the points into the through siding, that the four 3rd class carriages, the Horse Box, and Carriage Truck were thrown off the Rails. The train after a delay of 17 minutes as reported by the Guard proceeded on its journey, the passengers being all placed in the break van, and composite carriage.

3. I am unable satisfactorily to account for the accident, but as Mr. Latham the Assistant Engineer was on the spot I requested him to take such notes as would enable him to report upon the accident, and to assign if possible a reason and I assume that Gentleman will report to his official superior in due course.

4. I may say that the Station Master informed me that the Train was approaching the station at a greater speed than usual, but I cannot attribute the accident to that cause.

5. The Carriages were got upon the line in the course of the night, and the siding re-laid, I think it right to bear testimony to the exertion of Inspector Edmonds of the Engineers Department, Messrs. Leggatt, and Charlton of the Locomotive Department, and of Coleman of this Department on the occasion.

I have, &c.,

(Signed) H. A. FLETCHER,
Traffic Manager.

(True Copy.)

T. A. JENKINS,
Agent and Manager.

MADRAS RAILWAY,
MADRAS, 29TH JANUARY 1857.

No 74.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,
With reference to your letter No. 777, dated 24th ultimo, I have the honor to annex a copy of a letter from Acting Chief Engineer No. 23, dated the 26th of January, and its enclosure,
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being a letter from the Officer in charge of Permanent way, regarding the accident which occurred at the Perambore Station to the 3.30 P.M. Passenger train on the 14th ultimo.

2. I beg to acknowledge the receipt of your letter No. 95, dated the 27th instant, and to express my regret that any delay should have taken place in the submission of the Engineer's Report now sent.

3. I shall communicate the subject matter of your letter to the Acting Chief Engineer, and shall give strict injunctions to Departments in respect to carrying out the orders of the Government adverted to therein.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 2nd February 1857.

MADRAS RAILWAY, MADRAS DIVISION,
RESIDENT ENGINEER'S OFFICE,
MADRAS, 8TH JANUARY 1857.

To ALEXANDER BEATTIE, Esq.,
Acting Chief Engineer.

SIR,

I have received a letter No. 98, dated 26th December, from the Agent and Manager, in which I am called upon for a report on the accident which occurred at Perambore Station to the 3.30 P. M. Passenger train west, on Sunday the 14th December.

2. In reply, I have the honor to state that I was at Arcot, and when I returned by 5.30 A.M. Passenger train on the following morning, the damage had been so far repaired, as to make it impossible for me to form, from my own observation, any opinion as to the cause. I have however been furnished with careful measurement of the positions of the displaced rails and carriages, taken by Mr. Latham immediately after the occurrence.

3. I think it cannot be assumed as a certainty that the cause of the Trenails giving way is to be attributed to any defect in the Permanent way, but rather that there are numerous reasons for supposing that it was caused by the train coming round the curve into the siding at too great a speed. The guard of the Train states that it came into the siding so slowly that he was obliged to take off the brake to allow it force to run up to the platform; but this statement, I am of opinion, is ill borne out by an examination of the displaced rails, and on the other hand the Station Master who was on the platform says that he thought the Train was approaching much faster than usual.

4. An examination of the broken materials shows that there was no defect in them; the trenails which were broken off close under the chairs being all perfectly sound, and the only other defect, supposing it to have existed, which I think would have caused the accident is the outer rail of the curve not being sufficiently elevated, to counteract the centrifugal motion of the train, but I think the portion of the displaced rails goes to prove that it was the effect more of the sudden blow, excessive speed would have caused, than of the more gradual pressure which would have resulted had the injury been done while the train passed through at a slow speed. How else could the end of one rail have been thrown out 5 feet 1 inch, and another 2 feet, while none of the carriages were more than 10½ inches beyond the rail.

5. If the train had passed into the siding at 5 miles an hour, the speed laid down in the regulations, this surely could not have been the case.

6. It is of course impossible where the road has been broken up as in this instance, to say what amount of cant it had, or in fact to judge of anything connected with it, except the soundness of the materials, and the state of the ballast and ground under but there is nothing to lead any one to suspect that it was not sufficient.

7. In conclusion, I have the honor to add, that in order to guard as much as possible against accident of a similar nature, the Chief Engineer shortly before departure ordered iron spikes, to be made and to be substituted for Trenails in the curves of all sidings. These are now nearly ready, and shall be made use of as soon as possible.

I have, &c.,

(Signed) B. McMASTER.

(True copy.)

(Signed) ALEXANDER BEATTIE,
Acting Chief Engineer.

(True Copies.)

T. A. JENKINS,
Agent and Manager.

No. 32.

On a letter from the Agent and Manager of the Madras Railway Company, No. 74, dated the 29th January 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwards a report from the Resident Engineer on the accident which occurred at Perambore on the 14th December last, by which several carriages were thrown off the line, referred to in a late order* of Government.

2. The accident is not satisfactorily accounted for, and, under the circumstances of the case, it does not seem likely that it ever will be.

3. There can be little doubt that the train approached the station at too high a speed. There are two modes in which it appears possible the accident might have occurred.

1st. The pressure against the outer rail, due simply to the high speed, may have knocked off the rail and

2dly. The use of the break checking the speed as abruptly as possible at one moment, and relaxing it, as is stated to have been done, the next, might have given a jumping motion to some one of the vehicles, much more likely to damage the rail, than the simple centrifugal force due to the speed.

4. It appears highly probable, from the known practice of many of the drivers, that the train did enter the points at a higher speed than that permitted by the rules, viz., 5 miles an hour.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 2nd February 1857.

JUDICIAL DEPARTMENT.

No. 1353.

Extract from the Minutes of Consultation, under date the 23rd December 1856.

Read the following letter from C. WHITTINGHAM, Esq., Magistrate of North Arcot; To T. PYCROFT, Esq., Chief Secretary to Government, Fort Saint George; dated 9th December 1856, No. 249.

SIR,

1. I have the honor to submit for the consideration of Government the circumstances attending an accident which befell certain coolies who were working on the Railway at Darapurvadoo in the Trivallum Talook.

Magistrates Department.

2. The Head of Police of Trivullum reported in his Urzee, dated 21st October last, that on information being received by him from the Moonsiff of Darapurvadoo of the accident, he deputed the Talook Sheristadar, as he was himself unwell at the time, and Police Goomastah, to the spot to institute an enquiry into the matter. The Talook Sheristadar reported that the accident had occurred on the morning of the 18th October in consequence of the falling of an old wall, which had been caused by the coolies removing the stones of the foundation of it without having previously thrown down the superstructure. Two coolies were killed on the spot, and 13 others were wounded. Two of these died subsequently after having lingered for a short time. The remaining 11 were only slightly injured. The relatives of the deceased did not in the investigation before the Sheristadar impute blame to any one.

3. On receipt of this Urzee, from the Thasildar, I requested Mr. Pochin, the Head Assistant Magistrate, who has charge of the Talook in which the accident happened, to report whether in his opinion the loss of life was the result of the want of due care, and if so to whose negligence the failure of due precautions was attributable.

Mr. Pochin addressed a communication on the subject to Mr. Collins, the Resident Engineer, and copy of his reply is submitted. It appears, however, from the number wounded by the fall of the wall that those who wandered away from the rest could not have been as few as implied in that letter, and it seems difficult to imagine how with common vigilance they could have escaped notice, and been permitted to work in so dangerous a manner.

The Head of Police and Mr. Pochin concur in the opinion that the accident would not have happened had the Superintendents of the coolies attended to their duty. Copy of Mr. Pochin's letter is also enclosed.

4. It is the practice to award gratuities to the families of persons who lose their lives whilst engaged on Government Public Works; and the same boon should in justice be extended to those who suffer similar mishaps when working on the Railway, and the Railway Company called upon to grant gratuities in such cases, which are of rare occurrence.

From C. N. POCHIN, Esq., Head Assistant Magistrate North Arcot, to C. WHITTINGHAM, Esq., Magistrate of North Arcot, dated 17th November 1856.

SIR,
In reply to your letter No. 7, dated 1st November 1856, I beg to inform you that the Head of Police of Trivellum having reported himself unwell, deputed the Sheristadar to investigate the causes, &c., of the accident that befell some of the Railway coolies had Darapudvadoo in the Trivellum Talook, and states in his report that the death of the several parties would not have happened had the Superintendents of the coolies, attended to what was their duty.

2. The Resident Engineer, Mr. Collins, in reply to a letter from me, sends me the enclosed answer, but I must confess that I concur with what the Tahsildar states as his opinion. For if the coolies had been working in a place which the Superintendent of them had not ordered them, it was his duty to have recalled them. The Superintendent (Mr. Ross) as well as the Conicopilly (Sumpunghee) where both present, at the time of the accident.

(True Copy.)

(Signed) C. WHITTINGHAM,
Magistrate.

From JAMES COLLINS, Esq., Resident Engineer, Madras Railway; to C. N. POCHIN, Esq., Head Assistant Magistrate, North Arcot, dated 12th November 1856.

SIR,
In reply to your letter of yesterday, relative to the accident which took place at Darapudvadoo, on the 18th ultimo, I have the honor to annex for your information a copy of my report of the circumstance to the Chief Engineer of the Railway.

The information which I collected subsequently from an investigation on the spot, leads me to believe that the coolies were acting contrary to orders in touching the buildings, and must have gone to pull out stones from the walls merely as an excuse for idling. The accompanying Map will explain the matter perhaps clearer than any report.

The whole of the coolies including those killed and hurt were sent to work about seven o'clock in the morning to collect stone out of the little tanks, at a place marked in pencil A, supposing that they could collect stones easier, a few of the coolies wandered away from the work to the old walls near the point B. The Superintendent, Mr. F. Ross, and the Conicopilly, Sumpunghee, were both on the ground and did not notice among the crowd at work the absence of the coolies in question. The noise of the falling of the wall first directed their attention to the place. No orders had been given by me or the Superintendent or any one connected with the work to pull down the walls of the village, so that I conclude that the coolies, who suffered from the accident, did so for the purpose either of evading the supervision of the Superintendents, or else from the mistaken idea that the loose stones in the bottom of the walls were more easily obtained than those which formed the lining of the tank in which they were set to work.

MADRAS RAILWAY.

DISTRICT No. 4.

Extract from the weekly report of JAMES COLLINS, Esq., Resident Engineer; dated 22nd October 1856.

On Saturday the 18th, an accident took place at Agraharum, by which 1 coolyman, 2 boys and 1 girl lost their lives, and eight other persons were slightly wounded. The accident was caused by the falling of one of the walls belonging to the old huts in Agraharum. The coolies were employed to remove the tank stones from the sight of the foundation of the Vellore station, and to place them in heaps, from some cause, which cannot be explained, they left their work and commenced pulling stones out of the base of the wall of the old houses (they had not long been at this work which was done quite unknown to the Maistry and Conicopilly) when the wall fell on them, killing three persons at once, the man who died lingered about 10 hours, I have therefore given orders to have the whole of the walls of the village thrown down at once.

(True Copy.)

(Signed) JAMES COLLINS,
Resident Engineer.

(True Copies.)

(Signed) C. N. POCHIN,
Head Assistant Magistrate.

(True Copy.)

(Signed) C. WHITTINGHAM,
Magistrate.

Resolved that a copy of the foregoing letter be furnished to the Consulting Engineer for any remarks that he may have to offer; and that he be requested to explain why a report of the accident was not made from his Department.

(True Extract and Copies.)

(Signed) T. PYCROFT,
Chief Secretary.

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FINANCIAL (RAILWAY) DEPARTMENT.

No. 96.

Extract from the Minutes of Consultation dated 24th February 1857.

Read the following letter from the Agent and Manager through the Consulting Engineer for Railway.

(Here enter 11th February 1857, No. 46.)

The Government concur with the Consulting Engineer that no blame attaches to the Railway authorities in the matter of the accident near Vellore under report.

(True Extract.)

T. PYCROFT,

Chief Secretary.

Communicated to the Agent and Manager in letter No. 205, dated 26th February 1857.

MADRAS, 28TH JANUARY 1857.

No. 107.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

I have the honor by order to request that you will be so good as to obtain and submit to this office with as little delay as possible, a Report from your Consulting Physician on the circumstance noticed in the concluding sentence of the 1st para. of Mr. McMaster's letter forwarded with your's No. 67 of the 26th instant, viz. that the cooly whose leg was amputated was very soon after discharged from the hospital and died on his way home.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 17TH FEBRUARY 1857.

No. 147.

To LIEUTENANT COLONEL T. T. PEARS, c. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letters Nos. 107 and 171, dated the 28th ultimo and 13th instant respectively, I have the honor to annex a copy of a communication received through the Consulting Physician from the Surgeon lately in Medical charge of the sick of this Company at Vellore, by which it appears that the cooly that was sent from the Arcot Station to the Civil Dispensary at Vellore on the 15th ultimo with severe injuries of the leg necessitating amputation of the same, died a few minutes after the operation had been performed.

T. A. JENKINS,

Agent and Manager.

Submitted for the information of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 18th February 1857.

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CAMP NEAR CHITTOOR,
SUNDAY, FEBRUARY 8TH 1857.

DEAR SIR,

Your letter of the 3rd instant has only just reached me, as my Corps left Nellore on the 5th

I certainly think Mr. McMaster should have ascertained beyond doubt the truth of the statement about the cooly, before he put it forward in an official form, and as the report is one calculated to reflect upon my professional character, I request that you will be good enough to have it removed from the records of the Railway Department.

The journal of the Civil Dispensary at Vellore will give a detailed account of the cooly's case, but I can probably furnish you from memory with what will suffice for your present object. The man was received into the Vellore poor Hospital on the night of the 1st of January, with a comminuted compound fracture of the leg, in fact both bones were crushed into atoms and all the muscles dreadfully lacerated.

The man had been run over by a Railway Wagon and his friends stated that for some 30 hours he had been carried backwards and forwards between the Station and Arcot without being able to procure any Medical aid, and during which period a considerable quantity of blood was lost.

When the patient arrived at Vellore he was very much depressed and had a feeble pulse, but by the use of stimulants, artificial heat, and an anodyne draught he passed a pretty good night and by the following morning rallied to undergo amputation and for which operation he was most anxious.

At 10 o'clock on the morning of the 2nd I put the man under the influence of chloroform and removed the leg. The operation appeared to be borne very well, and although not two ounces of blood were lost, he did not survive the operation many minutes. Hoping this letter will prove satisfactory and convince Mr. McMaster how grossly facts have been misrepresented to him.

I am, &c.,

(Signed) T. MORROGH, M. D.,

Surgeon 19th Regt. and lately on Medical charge Railway Department, 4th District.

Dr. SANDERSON,

Consulting Physician M. R. Company.

(A True copy.)

(Signed) J. SANDERSON,

Consulting Physician M. R. Company.

(True copies.)

T. A. JENKINS,

Agent and Manager.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 128.

Extract from the Minutes of Consultation, dated 14th March 1857.

Read the following letters from the Agent and Manager of the Railway Company, submitted by the Consulting Engineer.

(Dated 26th January and 17th February 1857, Nos. 67 and 147.)

1. In the foregoing letters submitted by the Consulting Engineer, the Railway Agent reports an accident, attended with fatal result, which occurred on the 31st December last to a cooly while employed on the line in ballasting at the 50th mile.

2. The first communication on the subject was made to the Consulting Engineer on the 26th January last or nearly a month after the accident. This is now laid before Government with a further communication from the Railway Agent of the 17th ultimo, why earlier information was not given to Government is not explained.

3. The Government are not satisfied with these reports. They observe that no explanation is afforded of the circumstances under which the unfortunate man had, as stated by his friends, "for some 30 hours been carried backwards and forwards between the Station and Arcot, without being able to procure any medical aid, and during which period a considerable quantity of blood was lost". As it is to this circumstance the Surgeon, Dr. Morrogh, would seem to attribute the death of the man a few minutes after the amputation of his leg, they desire to be informed why arrangements were not at once made, when the accident was of so severe a nature, for conveying the cooly to the Civil Dispensary at Vellore, or bringing him down by the Train to Madras for Medical aid.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 89.

To T. PYCROFT, Esq.,

Chief Secretary to Government, Fort Saint George.

SIR,

With reference to para. 2 of Extract Minutes of Consultation, Financial (Railway) Department, No. 128, dated the 14th instant, I have the honor to explain that the apparent delay in this office in the transmission of the Agent and Manager's letter, No. 67, of the 26th January last, is owing to its having been considered necessary by me that Government should be furnished with a report from the Consulting Physician, on the circumstance noticed in the concluding sentence of the first para. of Mr. McMaster, the Resident Engineer's letter (appended to the Agent's), viz., that the cooly whose leg was amputated "was very soon after discharged from the hospital and died on his way home."

2. This report was called for under dates the 28th January and 12th February, and furnished only on the 17th idem, when it, with the former letter No. 67, was immediately submitted for the information of Government.

3. Government will have seen by Dr. Morrogh's letter to the Consulting Physician, that the death of the cooly did not transpire in the manner stated by the Resident Engineer.

4. I thought it advisable also to request the Magistrate of North Arcot to furnish any inquest report, which may have been made by the local police on the cause of the death of the cooly; and I now beg to forward the same for the information of Government.

5. In obedience to the order conveyed in para. 3 of the above Extract from the Minutes of Consultation, the Agent and Manager will be called upon to explain the circumstances of the cooly not having been taken directly to the Civil Dispensary at Vellore, or brought down by train to Madras for medical aid.

I have, &c.,

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 16th March 1857.

No. 174.

On a letter (No. 387) from the Agent and Manager of the Madras Railway Company, dated 4th May 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

With reference to an order of Government, No. 128, of the 14th March last, the Agent forwards with this letter further explanation of the circumstances attending the treatment and ultimate death of a cooly, injured on the Railway in the month of December last.

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2. Mr. McMaster, the Resident Engineer, explains, that the man was injured at the 50th mile—that is, about 15 miles East of Arcot, that he was taken to Arcot Station, and as soon as possible to the hospital at Raneepet.

3. It would seem from para. 5 of Mr. McMaster's letter, that the Guard and Driver paid every attention in their power to the unfortunate man, and acted, to the best of their judgment, rightly in taking him to Arcot instead of to Trivellum; knowing that there was a dispensary and an Apothecary sure to be found at the former place, whereas the Railway Apothecary might have been absent from the latter station.

4. Mr. King the Arcot Apothecary states, that he sent the man on to the Apothecary at Trivellum not having instruments to perform an operation; and recommended that he should thence be sent on to the Garrison Surgeon at Vellore, an unfortunate and thoughtless proceeding it would seem, inasmuch as Trivellum is not in the direct road to Vellore, and the man had a longer journey than was necessary, with the risk of being detained at Trivellum, to no purpose, if the Apothecary chanced not to be present.

5. With regard to Mr. McMaster's explanation (para. 6) that he could not be sent to Madras, because the accident happened at 2.45 P. M. and the train did not leave till 6.30 the following morning, I must observe, that the man was employed with a ballast Engine, that the Engine actually took him on 15 miles to Arcot station, and might equally well have brought him down 50 miles to Madras, at the same time, I think, the guard may be held blameless in this matter. He probably did not know either the full extent of the injury, or the limited capabilities of the Arcot medical establishment, and acted to the best of his judgment.

6. I would suggest that the Agent be requested to frame some general instructions, with reference to the medical aid within reach on different portions of the line, as to the course to be followed in cases of serious accident happening to persons employed, or travelling on the line.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 13th May 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 269.

Extract from the Minutes of Consultation, under date the 20th May 1857.

Read the following observations on a letter from the Agent and Manager of the Madras Railway Company by the Consulting Engineer for Railways.

Affording further explanation of the circumstances attending the treatment and ultimate death of a cooly injured on the Railway in the month of December last. (Here enter 18th May 1857, No. 174.)

The Government desire that, as suggested by the Consulting Engineer in the concluding para. of his observations, the Railway Agent be requested to frame some general instructions as to the course to be followed in cases of serious accident to persons employed, or travelling on the line.

(True Extract.)

(Signed) E. MALTBY,
Acting Chief Secretary.

Communicated to the Agent and Manager, in letter No. 525, dated 20th May 1857.

MADRAS RAILWAY,
MADRAS, 30th JANUARY 1857.

No. 83.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

It is with regret that I do myself the honor to report to you for the information of the Government that an accident took place on Wednesday the 28th instant upon the Railway near

to the Avady station, by two wagons loaded with stone, propelled by coolies, coming into collision with wagons used with ballast by which four men were thrown down and one of them severely injured, reported to be since dead.

2. All the parties having any knowledge of this affair have been ordered in, and an investigation will be made in the course of to-morrow, when I shall again do myself the honor to report the result of the enquiry.

3. I annex copies of letters from the Traffic Manager and Officer in charge of Permanent way.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations,) for the information of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 9th February 1857.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
30TH JANUARY 1857.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

I have the honor to report to you that it has just been brought to my notice that an accident took place upon this Railway near to Avady station on Wednesday the 28th instant in the afternoon, in consequence of which, I am informed that a man has died from the injuries received.

I am unable to report the particulars, but I am informed that it was caused by two wagons being upon the line collecting stones in a cutting near the Avady station coming into collision with two other wagons employed in taking ballast from a cutting on the line to the Avady station.

Both sets of wagons were pushed by coolies and were under the orders of the Engineers.

I have, &c.,

(Signed) H. A. FLETCHER,

Traffic Manager.

MADRAS RAILWAY, MADRAS DIVISION,
RESIDENT ENGINEER'S OFFICE,
MADRAS, JANUARY 30TH 1857.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

I regret to have to report an accident which occurred at Avady station on Wednesday last the 28th instant, of which I have just been informed.

Two wagons used by my Inspector for conveying ballast to the station yard from a ballast pit about $\frac{1}{4}$ of a mile distant, in the cutting, when returning to the pit empty were met by two wagons loaded with stone, a collision ensued and resulted in four men pushing the empty wagons being knocked down and one of them severely injured. I have heard, with what truth I cannot yet say, that he has since died.

The stone wagons had been left by the Traffic Department to be loaded with stone blocks for Madras, and were *not* in charge of our Department. These blocks were to have been brought in country carts to the station and there loaded as had been done previously, and the wagons should not have been let out of the station siding. My Inspector Mr. Charles has reported to me that

2 or 3 days before the accident occurred it had come to his knowledge that they were run out on the main line by the contractors supplying the blocks, and he had pointed out to the Station Master the irregularity and danger of the proceeding.

As the stones were to be brought to the station and there loaded like any other article of Traffic, the wagons were solely and entirely in the charge of the Station Master.

I have sent for all the persons in my Department who are concerned to come to my office by train to-morrow, and hope to be able to arrive at further particulars.

I have, &c.,

(Signed) BRYCE McMASTER,

Resident Engineer.

(True copies.)

T. A. JENKINS,

Agent and Manager.

No. 43.

On a letter from the Agent and Manager of the Madras Railway Company, No. 83, dated the 30th January 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent having reported in this letter the occurrence of a serious accident at Avady, by which it was believed that a cooly had lost his life, I considered it my duty to enquire into the circumstances, and with this view I proceeded, accompanied by Lieutenant Roberts, to the Railway Office at Royapuram on Saturday the 31st ultimo, and again on Monday the 2nd instant, where in the presence of the Agent and Manager, the Traffic Manager, and the Resident Engineer in charge of the 1st District of the line, certain individuals, more or less acquainted with the circumstances, were examined.

2. Copies of their depositions are annexed, and I have the honor to submit the following observations thereon.

3. It appears that on the 28th ultimo soon after the passing down of the Passenger train—Eastward—three wagons were taken out of the siding at Avady station; all three being employed by contractors; one by a stone contractor, engaged in supplying blocks of stone for works connected with the Terminal station at Madras, the two others by a ballast contractor, employed under the local Inspector John Charles.

4. The wagon engaged by the stone contractor was taken along the main line to a point, about $\frac{1}{4}$ of a mile west of the station, to be there loaded with blocks of stone lying in a cutting, the other two wagons employed by the ballast contractor, but working under the superintendence of a Conicopillay Ayasawmy—were plying on the same side of the station, between it and certain ballast pits, situated some distance short of the point where the stone was loading.

5. From the latter point to the station the line falls by one continued plane, at the rate of 10 feet in the mile.

6. The stone wagon was long in loading, the two ballast wagons had made two trips, were returning empty along the main line pushed by coolies, towards the ballast pits, when they were met by the loaded stone wagon. A collision took place, several people behind the ballast wagons were thrown down, and one unfortunate man fell with a leg and arm on the rail, one or two of the wheels passed over, injuring both limbs so severely, that though removed at once to the Poona-mallee hospital and every care, it may be presumed, there taken of him, he died on the 30th ultimo.

7. From the evidence that has been given, it appears to me that the primary cause of this lamentable occurrence, is to be found in gross neglect of duty on the part of the Station Master, the proximate cause, the neglect and ignorance of certain of the natives concerned.

8. Mr. Hogg, the Station Master, must have been aware that the Engineer's people, under the authority and direction of Inspector Charles, were engaged in ballasting in the vicinity of his station. He placed the third wagon at the disposal of a stone contractor, and permitted him to pass out of the siding and up the main line, in the direction in which the ballast wagons were working, without any authority or excuse whatever; and he seems to have taken no trouble to warn the people of the risk of collision, nor to have adopted any measures to prevent such an occurrence.

9. The circumstances that the contractor had agreed to load stones in his own carts from the cutting to the siding, and there according to custom to load the Railway wagons, that he persuaded the Station Master to permit an arrangement highly advantageous to him, the contractor, and that this was done on several occasions, and even at night without the knowledge of the Traffic Manager, or any other officer of the Railway, are highly to the discredit of the Station Master.

10. This stone wagon, it will be seen, was employed on the main line under charge of an ignorant native sub-contractor, without any servant of the Railway Company being with it.

11. The Inspector Charles appears to have neglected his duty, in not taking care that his Conicopoly was furnished with a copy of the regulations, and not reporting at once the irregularity of sending out the wagon for stone, though it appears he warned the parties concerned of the danger of collision.

12. The Conicopoly appears to have displayed either ignorance of, or inattention to the rules, as well as gross carelessness or stupidity. Section 18 of the rules provides clause "16 that 'when any truck or lorry is upon the main line it must be preceded and followed at intervals ' of half a mile by a man bearing a red signal being a red flag by day' &c.

13. This Conicopoly seems to have contented himself with holding a red flag in his hand, while standing or walking near his wagons; and nothing can be conceived better calculated to illustrate the necessity of strict attention to rules, and great care in the provision of intelligent and active supervision, when natives are thus employed, than the striking fact of these two parties, the one pushing a wagon heavily laden with stone down an incline—the other working empty wagons up in the opposite direction, being each wholly unaware of the proximity of the other, until within a few yards of actual collision.

14. It will be seen that this Conicopoly had no copy of the rules, and that instructions were habitually conveyed to him verbally by the Inspector. Such a practice being at variance with rule 26, section 2 which prohibits all verbal messages, except in cases when writing materials are not procurable, and requires that all communications are, if practicable, to be made in writing.

15. In violation of the same rule, verbal communications only passed between the Inspector and Station Master on the subject of the ballast wagons going on to the main line; while it appears the Conicopoly took them every day out, without any communication at all with that individual.

16. It appears to me that Mr. Hogg the Station Master, and Ayasawmy the Conicopoly, have shown themselves to be utterly unfit for the situations in which they have been placed, that sufficient care was not taken to instruct the latter in his duty, and that much evil and risk is likely to arise, from the practice of permitting the subordinates in the several departments to enter upon proceedings and arrangements, having an important bearing on the safety of the line—such as employing ballast wagons on particular portions of the line, passing these in and out of station sidings by verbal communications among themselves, without written authority from the heads of their respective departments.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 9th February 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 100.

Extract from the Minutes of Consultation, dated 27th February 1857.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 9th February 1857.)

The Consulting Engineer will communicate the substance of his observations on the late accident at Avady to the Railway Agent and Manager, and request him to state his views and what proceedings he proposes to take in this case.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

MADRAS RAILWAY.

No. 694.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

1. With reference to your letter No. 740, dated the 18th of August, and your other letters therein noted, I have the honor to acquaint you that the steps which were taken consequent upon the accident at Avady, were, as set forth in letter from the Officer in charge of the permanent way, dated 23rd March, copy of which has just been received in this office from the Chief Engineer's office, and as shown in two Circulars from the Traffic Manager, No. 119, and 126 issued to Station Masters and others, drawing their particular attention to the rules and regulations in reference to wagons being permitted to work on the Line, which I am informed are now strictly complied with.

2. There has been some delay in furnishing this information which is explained by the Chief Engineer in his letter, No. 173, dated the 26th of August.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 11th September 1857.

Submitted (with observations) for the orders of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 26TH AUGUST 1857.

No. 173.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

I have the honor to acknowledge receipt of your's No. 750, of 22nd instant, enclosing letter from Consulting Engineer, No. 740, of 18th instant, relating to an accident which occurred at Avady.

2. I now forward Mr. McMaster's report as required, and in explanation of the delay which has occurred in so doing, I find that it was understood that as you had directly communicated with the Engineer in charge of permanent way, it was supposed he had directly communicated with you.

3. In reference to your reminder on the same subject it seems there was still some misunderstanding, after a correspondence with the Traffic Manager relating to the difficulties in carrying out the rules referred to by Mr. McMaster, a letter was written during the absence of the late Acting Chief Engineer from the Presidency, but was not forwarded under the impression that the whole question was disposed of.

I have, &c.,

(Signed) ALEX. BEATTIE,
for Chief Engineer.

MADRAS RAILWAY, MADRAS DIVISION,
RESIDENT ENGINEER'S OFFICE,
ARCOT, MARCH 23RD 1857.

To ALEX BEATTIE, Esq.,
Acting Chief Engineer.

MY DEAR SIR,

I beg to enclose for your information copy of a letter I have received from the Agent and Manager's office, forwarding to me copies of the evidence taken before the Consulting Engineer, in reference to the late fatal accident at Avady Station, together with the observations of Government thereon, (copies of both of which are herewith forwarded) and asking me what steps I have taken in the matter.

In reply I beg to inform you, that I fined Inspector Charles the sum of 50 Rupees, and discharged the Conicopilly who was in charge of the ballast Wagons.

I wish to draw your attention particularly to the 13th para. of Colonel Pears' letter to the Agent, in which he says that the practice of instructions being habitually conveyed to the Conicopilly by the Inspector verbally, is at variance with rule 26 section 2, which prohibits all verbal messages. Now if this is to be carried to the extent which these observations of Government lead us to suppose they will be, we will never be safe, for it is a rule which cannot possibly be obeyed in the ordinary intercourse between Inspectors (or myself) and the workmen. To a person totally unacquainted with the practical carrying out of the work, it may seem easy enough and only involving a little additional labor, but I am sure you will agree with me that some limit must be put to its application. It appears to me on reading the rule referred to, that it is not intended to be applied in this way at all. Charles was clearly to blame for not giving the Station Master written notice. That is a different matter. I trust you will give the matter your consideration. It is necessary for our protection that it should be clearly defined; as interpreted by Colonel Pears and the Government it is broken a thousand times a day, and I distinctly say that I am utterly incapable of having it obeyed or obeying it myself in this sense.

I saw in the Public prints the other day some suggestions for the alteration of a few of the rules made by the Traffic Manager and Locomotive Superintendent for the information of Government. Here is an important rule that was never noticed. It concerns all departments alike, and if ever another accident occurs, it will certainly be brought up, and some unfortunate condemned for not performing a moral impossibility.

Faithfully Yours,

(Signed) BRYCE McMMASTER,

Resident Engineer.

(True Copy.)

(Signed) ALEX. BEATTIE,

For Chief Engineer.

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MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
31ST JANUARY 1857.

CIRCULAR No. 119.

The attention of Station Masters and all other servants of the Company is particularly called to the 15th and 16th Rules, Section 18 under "Regulations for Inspectors, Foremen, Maistries, and Laborers engaged in repairing the Permanent way and works," as follows.

Rule 15. "No Truck or Lorry is to be placed on the Line without the permission of the Inspector of the District, and notice must be given to the Station Masters at each of the nearest stations.

Rule 16. "When any Truck or Lorry is upon the main line, it must be preceded and followed at intervals of half a mile by a man bearing a red signal, being a red flag by day and a red lamp by night, or in a Tunnel.

It is particularly requested that Station Masters will see that no Truck or Lorry is taken from the sidings at the stations without the written request of the Inspector of the District, in compliance with Rule 26, Section 2, which enjoins that "Reports or other communications are, if practicable, to be made in writing."

Station Masters are required to send all such written requests for Trucks and Lorrys to be taken upon the line to the Traffic Manager daily.

(Signed) H. A. FLETCHER,
Traffic Manager.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
2ND FEBRUARY 1857.

CIRCULAR No. 126.

SIR,

I have to draw your attention to an accident attended with fatal results to a cooly employed upon this Railway and to point out for your information and guidance the leading circumstances connected therewith. On Wednesday the 28th ultimo, a wagon was taken out of the siding at the Avady station by a contractor for the purpose of being loaded with stone. Two ballast Wagons were afterwards taken on the main line in the same direction from the same station for the purpose of being loaded with ballast for the permanent way department. The wagon loaded with stone was returning to the station when the empty wagons proceeding for the ballast were allowed to come into collision with it, the latter rebounded to some extent, and 3 or 4 coolies were thrown down, and the wheels of one of the Trucks so injured one of them that he has since died.

The first wagon was unaccompanied by a servant of the Company, or a red flag, or danger signal.

The Station Master at Avady had on previous occasions allowed wagons to proceed on to the main line unaccompanied by a red flag or danger signal, in direct violation of the Rules and Regulations.

The gross neglect on the part of the Station Master in allowing wagons to be taken from his station without his knowledge, and without the permission (in the case of the wagon for stone on the 28th ultimo and on previous occasions) of the Inspector of the District, as ordered in Rule 15, Section 18, and unaccompanied by a servant of the Company with a red flag, in direct violation of the rules and regulations, has caused him to be dismissed from the service.

I have to request that you will exercise the utmost care and vigilance with reference to wagons being permitted to proceed on the main line, and to take great care that they are always in the charge of a person in the service of the Company duly accredited or named by the Inspector of the district, and who understands fully all the Rules and Regulations in reference to the nature and duties appertaining to signals

I have also to request that you will impress upon the servants of the Company employed at your station, and generally upon all the servants of the Company as far as possible, that no wagon must leave the station without your knowledge.

I also call your attention to the Rules and Regulations of the Company, and to take especial care that every servant of the Company within your knowledge shall be well instructed in the same.

(Signed) H. A. FLETCHER,
Traffic Manager.

(True copies.)

T. A. JENKINS,
Agent and Manager.

No. 487. FINANCIAL (RAILWAY) DEPARTMENT.

Extract from the Minutes of Consultation, under date the 10th October 1857.

Read observations by the Consulting Engineer for Railways on a letter from the Railway Agent.

Forwarding copies of letters and circulars to prevent accidents upon the line with reference to the Avady } (Here enter 11th September 1857, No. 317.)
accident.

As regards the proceedings taken by the Railway authorities for the punishment of their servants and the issue of circular instructions to the several Station Masters and others in consequence of the fatal accident which occurred on the Railway at Avady in January last, the Government have no remarks to offer, further than that it is too late now to consider whether the late Station Master at Avady should not have been prosecuted under the provisions of Act No. XVIII of 1854. The accident was no doubt the result of neglect of duty on the part of the Railway servants, as well as of ignorance and carelessness on the part of the coolies employed in moving the ballast Wagons on the main line; but the former have been punished for acting in violation of the Rules and omitting to adopt the requisite precautions on the occasion.

2. In his letter of the 23rd March last, para: 3, Mr. McMaster, the Resident Engineer, alluding to a passage in the Consulting Engineer's letter to the Railway Agent, regarding verbal messages being in contravention of Rule XXII Section II, makes the following remarks, "It appears to me on reading the Rule referred to that it is not intended to be applied in this way at all. Charles was clearly to blame for not giving the Station Master written notice. That is a different matter." Colonel Pears points out that Mr. McMaster has misquoted his letter, in which he adopted the words of the Rule, including the following, "except in cases where writing materials are not procurable."

3. The Government would only observe that, as pointed out by Colonel Pears, the remarks of Mr. McMaster are obviously inconsistent, and that they do not show a clear apprehension on his part of the Rule in question, as interpreted by the Consulting Engineer and the Government.

(True Extracts.)

(Signed) E. MALTBY,
Acting Chief Secretary.

Communicated to the Agent and Manager in letter No. 885, dated 15th October 1857.

MADRAS RAILWAY,
MADRAS, 13TH MARCH 1857.

No. 232.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

SIR,

Consulting Engineer for Railways.

I have the honor to annex a copy of a letter from the Acting Chief Engineer, reporting that a fatal accident occurred on the 11th instant at the Bridge over the neck of the station at

Royapooram. The facts of the case are stated in the letter; I may add that the man was immediately taken to the Monegar Choultry, and died almost immediately. A Coroner's Inquest has been held on the body.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the information of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 17th March 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 12TH MARCH 1857.

No. 221.

DEAR SIR,

I regret that I have to report a fatal accident which occurred yesterday at the Bridge over the neck of the station at Royapooram.

All the ribs of one of the centres had been taken down but one, and in taking down this last one, one of the derrick guys broke and the derrick tumbled over; the deceased, it appears, had plenty of time to get out of the way, but being fluttered, instead of going to one side as the other people did he ran out in the direction the derrick was tumbling, and had almost got beyond its reach when the point came down with great force and crushed him under it.

Yours faithfully,

(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

(True copy.)

T. A. JENKINS,
Agent and Manager.

No. 90.

On a letter from the Agent and Manager of the Madras Railway Company, No. 232, dated 13th March 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwards with his letter copy of one from his Chief Engineer, reporting a fatal accident to one of the men employed in taking down the centrings of the Bridge over the neck of the station at Royapooram. The man was killed by the fall of a derrick, which fall was occasioned by one of the guy ropes giving way.

2. It appears from a paragraph in the "Athenæum" of the 12th instant, that the verdict returned by the jury, at the Coroner's inquest held on the body of the deceased, was "accidental death from the fracture of the skull by the falling of a beam."

3. Accidents of this nature cannot always be foreseen or prevented, but I would suggest that the Agent be requested to make the circumstance of this occurrence known by an official circular throughout the several departments, as a warning to the several Engineers and others, to be very careful in the selection and arrangement of the materials on such occasions.

Madras, 17th March 1857.

T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 154.

Extract from the Minutes of Consultation, dated 26th March 1867.

Read the following observations of the Consulting Engineer in a letter from the Agent and Manager of the Railway Company.

(Here enter 17th March 1857 No. 90.)

The Government desire that the Railway Agent be requested to issue a circular to the effect proposed by the Consulting Engineer in the concluding para : of his observation.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

Communicated to the Agent and Manager in letter No. 313, dated 27th March 1857.

MADRAS RAILWAY,
MADRAS, 18TH MARCH 1857.

No. 244.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to acquaint you, for the information of the Government, that the Acting Chief Engineer has reported to me that an accident occurred on the 11th instant, in Section I District XI.

2. Two coolies when extracting a broken needle from a mine charged for blasting rock were severely injured by the explosion of the Gunpowder. One of them in particular about the head and face. The Engineer in charge of the District expresses his hope that with proper care and attention, they will recover from the injuries.

3. The Chief Engineer further states that he has made strict enquiry into the matter, and that he does not consider that any blame is to be attached either to the Inspector in charge of the Section, or the Maistry Superintending the rock cutting.

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

MADRAS, 21ST MARCH 1857.

No. 284.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR

In acknowledging the receipt of your letter, No. 244 of the 18th instant, reporting that an accident had occurred on Section I, District XI, attended with very serious consequences to two coolies engaged in extracting a broken needle from a mine charged for blasting a rock, I am directed to request that Government may be favored with further particulars, and that you will be good enough to ascertain and report the nature of the tools used by them with especial reference to the needle itself, the cause of the fracture of the needle, and the mode in which the men set to work to extract it.

2. It is very desirable that particulars connected with accidents of this nature should be recorded for the information and instruction of all engaged in similar works, no less than for the satisfaction of Government.

I have, &c.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 21st March 1857.

MADRAS RAILWAY,
MADRAS, 8TH APRIL 1857.

No. 314.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 284, dated 21st March, in which you request to be furnished with further particulars in regard to an accident which occurred in blasting in Section I District XI, I have the honor to annex a copy of a letter from the Resident Engineer of that District affording the same.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

MADRAS RAILWAY, ENGINEER'S OFFICE,
ERRODE, MARCH 31ST 1857.

To ALEX. BEATTIE, Esq.,

Acting Chief Engineer.

MY DEAR SIR,

1. In reference to the enclosed letters from the Agent, and Consulting Engineer, Colonel Pears, requesting further particulars regarding the accident which occurred in blasting rock, in this District on the 11th instant.

2. I have to report that the needle used on the occasion, was a copper one, and was broken it appears to me from some flaw in the copper and the coolies twisting it when making forcible endeavours to extract it from the charge after tamping.

3. From enquiries I have made, I learn that the coolies made an attempt to extract the portion of needle left in the hole by using a jumper spoon rod, and water, in the ordinary way of boring for blasting.

4. I am glad to say that the coolies who were injured are recovering.

Your's very truly,

(Signed) ALEX. BRYCE, *

Acting Resident Engineer.

(True copy)

ALEX. BEATTIE,

Acting Chief Engineer.

(True copy)

T. A. JENKINS,

Agent and Manager.

MADRAS RAILWAY.

No. 483.

To LIEUTENANT COLONEL T. T. PEARS, c. B.,

Consulting Engineer for Railways.

SIR,

1. I have the honor to report for the information of the Government that two accidents, in each case attended with fatal results, have occurred during last week on Districts 4 and 5 respectively.

2. On district 4 it is stated a number of coolies were employed in one of the side ditches at the 93rd mile in digging chunam, when a quantity of earth which had become undermined, suddenly gave way and fell upon a woman and boy, killing them both on the spot.

3. On district 5, in a rock cutting at the 19th mile, a number of mines had been blasted, when one hung fire. After some time had been allowed to elapse, the Maistry proceeded to examine it, when, as he was doing so, it exploded, and killed him on the spot. The mines, I may add, were prepared in the ordinary way, and not with Patent Fuze, which has not yet arrived. Country fuse has now been made similar to that used at Dowlashweram, and will be brought as speedily as possible into use.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

MADRAS, 15TH JUNE 1857.

No. 567.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor, under the orders of Government, to acknowledge the receipt of your letter, No. 483, of the 15th instant, reporting two fatal accidents in connection with the works under construction. The one on District 4 by the fall of a quantity of earth in a chunam-pit, the other by the explosion of a blast which had hung fire; and I have to request you will favor Government with further and more detailed particulars especially in regard to the supposed cause of the latter accident, investigated no doubt by the District Engineer; you are requested also to state what steps were taken with a view to inquests being held on the bodies of the person killed, and what the result of such inquests.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

No. 591.

MADRAS RAILWAY.

To LIEUTENANT COLONEL T. T. PEARS, c. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 567, dated the 16th of June. I have the honor to inform you that the Chief Engineer has intimated to me that the Engineers on Districts 4 and 5 are unable to furnish further details, and are of opinion that the accidents adverted to are purely fortuitous.

2. On District 4 information was immediately given by the Inspector to the Tasildar at Vidanangoopum, who held an inquest upon the body and also communicated immediately with the Magistrate, Mr. Sullivan.

3. The Inspector of District 5 on the occurrence of the accident hastened to the cutting, and it is reported found the man dead. He sent first to the Minoor Monegar, but he had gone to Pullicondah, the Vinamungalum Monegar was then applied to, and he in turn sent to Amboor for the Police Ameen, who made enquires on the spot and authorized the interment of the body. Three days afterwards a Conicopillay and Maistry, the only witnesses of the death, had to appear before the Police Ameen to make depositions.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 24th July 1857.

Submitted with observations for the orders of Government.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th July 1857.

No. 272.

On letters (Nos. 483 and 591) from the Agent and Manager of the Madras Railway Company, dated 15th June and 24th July 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

Two accidents attended with fatal results are reported in the first of these letters. One being the fall of a quantity of earth at Chunam pits, in District IV, by which a woman and a boy were killed. The other, the explosion of a blast that had hung fire by which a Maistry was killed, in District V.

2. In a second letter, the Agent reports that the District Engineers consider the "accidents are purely fortuitous," and are unable to furnish further details.

3. In the first case, the deaths of the woman and boy appear to have arisen from a common practice, of getting falls of earth by undermining to a certain extent.

4. This may have been the case in the present instance, or the excavation having the same effect might have been made with the view merely of obtaining the limestone. This might have been explained by the Engineer. In either case the practice is a dangerous one, especially where native workmen are alone concerned; and I would suggest that the Agent be desired to circulate orders on this point, prohibiting the practice, except under the immediate supervision of an intelligent European.

5. The second accident arose, as far as can be judged from the Report, out of the carelessness of the Maistry himself in returning to a "miss-fire" too soon. It appears, however, that a Maistry and Conicopillay were witnesses of his death, and the District Engineer might have furnished further details perhaps, had he examined these men closely.

6. In accidents of this nature, it appears absolutely necessary that some well informed person in the Engineer Department should assist in the enquiries held by the Police authorities; and should be ready to point out and thus make known, as widely as possible, the principal causes of such accidents, and the precautions to be taken against them.

7. There have been many accidents on the line, arising apparently from carelessness or mis-management in blasting. The Agent should call the attention of the Engineers to the subject, and to the necessity of being very careful in this matter, doing all they can to prevent accidents by personal instructions on the subject, and by the selection of the most intelligent and experienced men as Superintendents of blasting parties.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th July 1857.

MADRAS RAILWAY.

No. 534.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,
I have the honor to acquaint you that, it has been reported to me that an accident occurred yesterday attended with fatal result to a cooly employed with the Ballast Train, at the Vellore station. It appears that the Train was conveying to that station a load of ballast, when the cooly was seen to lean over the side of a ballast Waggon; it seems that he lost his balance and fell on the line, and that the wheels of the train passed over his leg and nearly severed it from his body. The accident occurred about one mile from the Vellore station, the man was conveyed immediately to the station, and without delay sent to the Hospital at Vellore, but the unfortunate individual died an hour after his admittance. It is stated that no blame is attachable to any one in this case except to himself.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 3rd July 1857.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th July 1857.

No. 620.

MADRAS, 5TH JULY 1857.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,
Referring to your letter No. 534, of the 3rd instant, I have the honor, by order, to request you will be good enough to state for the information of Government, if any inquest was held on the body of the cooly alluded to therein, and if so, what was the verdict.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

No. 592.

MADRAS RAILWAY.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 620, dated the 4th instant, I have the honor to annex a copy of a letter which I have received from the Chief Engineer relative to the accident which occurred to a cooly at Vellore on the 2nd instant. It appears he was taken to the Hospital at Vellore where he died, and his body was removed by his friends before an inquest could be held upon him.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 24th July 1857.

Submitted (with observations) for the orders of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th July 1857.

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No. 143.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 21st JULY 1857.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

1. I have the honor to furnish the following details, relative to the fatal accident which occurred to the ballasting cooly near Vellore.

2. On the 2nd instant, between the hours of 10 and 11, the ballast train was passing the 80th mile, when the guard's cap blew off, he called to a cooly sitting on one of the wagons to look out for the cap, who when in the act of looking over the side of the wagon, over balanced and fell between the wheels, which passed over his legs, he was immediately removed to the hospital at Vellore, where he died. His body was taken away by his relatives after his death without any inquest having been held, which Mr. Sullivan accounts for by his not having received a report from us of the accident until the body was removed, the removal must have been very speedily made, as the Inspector in the section reported the accident to Mr. Sullivan, immediately after its occurrence.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

No. 273.

On letters (Nos. 534 and 592) from the Agent and Manager of the Madras Railway Company, dated 3rd and 24th July 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

In the former of these letters, the Agent reports the death of a cooly, as having resulted from his leaning over the side of a ballast wagon and lost his balance, when the train passed over his leg. It is added, that no blame is attachable to any one in the case except to himself.

2. Further information having been called for, as to the result of the inquest, if any, held on the body, a letter from the Chief Engineer is now, forwarded, by which it appears that the accident arose out of the circumstance of the Guard's cap having fallen off, when the cooly, sitting in one of the wagons, was called to, to look for it and in doing which the man fell off.

3. The circumstances do not appear to have been very carefully enquired into in the first instance. It seems to me that the Railway authorities owe it to themselves, to the Government, and to the friends of the sufferers, to watch carefully the results of all accidents of this nature; and if they should be fatal, to take care that inquests are held without delay, and that all possible evidence is forthcoming, and every assistance rendered to enable the Jury to arrive at a just conclusion.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th July 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 390.

Extract from the Minutes of Consultation under date the 8th August 1857.

Read observations the Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

Reporting the occurrence of two accidents attended with fatal results on Districts IV and V. } (Here enter 27th July 1857, No. 272.)

Read do. from do.

Reporting the occurrence of an accident attended with fatal results to a cooly employed with the ballast Train at the Vellore station. } (Here enter 27th July 1857, No. 273.)

With these two communications the Consulting Engineer forwards the reports received by him from the Agent on certain accidents, all attended with fatal results, which have recently occurred in Districts IV and V, and at the Vellore station.

2. That in District IV occurred from a quantity of earth, which had been undermined, suddenly giving way. The victims were a female and a young boy, who were digging chunam on the spot. That in District V occurred in blasting. The fuze missed fire; one of the party, after some little time, ventured to approach the powder bags, when an explosion supervened. He met his death immediately.

3. On the bodies of these three sufferers inquests were held by the Police in the regular way. Colonel Pears suggests that the Agent should be called upon to impress upon his subordinates the necessity of carrying on both excavation and blasting with great care, and under proper supervision. He will accordingly issue instructions to that effect. The Government, however, have to remark that there is nothing before them to show, that all proper precautions were not used in the instances under review.

4. The fourth accident originated in the following way. The ballast train was *en route* to Vellore, when, at about a mile from the station, the guard's cap happened to be blown off his head. The man (whose name is not given) thoughtlessly called out to the deceased, a cooly who was seated in one of the wagons, to "look out" for it. The unfortunate man rose to look over the side of the carriage, when he over-balanced himself, and falling out, had his leg nearly severed from his body by the wheels. He was conveyed at once to the Vellore Hospital, where he died. How long he survived is not stated, and there was no inquest, as the body was at once removed by his friends. It is stated by the Chief Engineer that the Inspector at the station immediately reported the accident to the Joint Magistrate, but it is said to have been alleged by that officer that he did not receive the tidings until after the corpse had been removed from the Hospital.

5. These accounts are easily reconcileable, as the deceased may have died soon after his admission. The Government, however, are of opinion that the Joint Magistrate should at once proceed to hold an enquiry into the circumstances of the man's death, which have not yet been officially investigated. He cannot now have the body before him, but that is not material, as it has been identified.

6. In adverting to the propriety of holding inquests in such cases as early as possible, the Consulting Engineer has spoken of "the Jury." This is a misapprehension; the procedure in the *Mofussil* differs from the English one. Indeed the Regulations prescribe no rules for the investigation of cases of sudden death except where the deceased is supposed to have been murdered. But the usage is, to hold enquiry in both instances in the same way, and this is extended to all serious accidents, whether terminating fatally or not.

7. Under these rules inquests are held by (a) heads of villages, (b) certain subordinate Talook officers, variously denominated, and (c) *Tahsildars* themselves. Though these, or any of these, are competent to conduct the investigation, yet it is the wish of Government, as Colonel Pears will learn from the copy of their orders* now enclosed, that the European officer of the District should take part in it, not of course to the neglect of more important duties, but in cases where the accident has occurred in his vicinity and where he can spare the time to attend. The spirit of those orders

Sections XIII and XXVI of Regulation XI of 1816 and Section III Regulation IV 1821.

* Public Works Department Public. Extract Minutes Consultation, dated 23rd April 1856, circulated by the Poudjadaré Udalur, 22nd May 1856.

should be observed in accidents on Railway works as well as in those occurring in works carried on by the District Engineers Public Works Department.

(True Extract.)

(Signed) E. MALTBY,
Acting Chief Secretary.

PUBLIC WORKS DEPARTMENT.
Public.

No. 552.

Extract from the Minutes of Consultation under date the 23rd April 1856.

Read again letter from the Chief Engineer Department of Public Works, dated 19th January and recorded in Consultation 18th March 1856, No. 155.

Read also the following papers.

Extract from the Minutes of Consultation in the Judicial Department; dated 20th March 1856, No. 294.

Read the following letter from T. D. LUSHINGTON, Esq., Magistrate of Masulipatam; to T. PYCROFT, Esq., Chief Secretary to Government, Fort St. George: dated Masulipatam, 23rd February 1856.

SIR,

1. In reference to the instructions of Government, conveyed in Extract Minutes of Consultation, No. 916, of 5th December 1855, and No. 77 of 23rd January 1856, I have now the honor to forward two letters,* addressed to me by the Joint Magistrate, together with a list of all reported accidents of a serious character, which have happened at Bezwadah among the workmen, employed on the annicut works, since the commencement.

* Enclosures 1 and 2, dated 1st and 8th Feb. 1856.

The list shows the character of the accident in every case and the result. In the margin, I enter the number in each year. It was with much regret that I found that the number was so large as 24 deaths, and 7 cases in which recovery was attended with loss of limb.

Year.	Deaths.	Recovery with loss of limb.	Complete recovery without loss of limb.	Total.
1852	1	1	0	2
1853	2	2	0	4
1854	10	2	0	12
1855	11	2	4	17
	24	7	4	35

3. Mr. Fraser's letter shows that no inquests have ever been held since February 1853, before which inquests had been held in the only two fatal cases, which had then occurred; and that the Tahsildar reported that he ceased to take notice of any fatal accidents on the annicut works, in consequence of a verbal order from the late Mr. Tweedie issued to him, in personal communication with the Civil Engineer, directing him to abstain from holding inquests, or noticing fatal accidents in future. The date, 6th April 1854, which the Tahsildar assigned as that on which he received this order, has since been admitted by him to be altogether erroneous; for at that time Mr. Holloway was the Head Assistant at Bezwadah. He states that the conversation occurred, and the order was issued on his bringing to Mr. Tweedie's notice that the corpse of a person, killed in the quarries, had been removed, immediately, without any report being made to him.

4. I have no further information on this subject, and much regret that such a course was pursued. The views, which I held before I received this information, are shown in my letter* to the Joint Magistrate, of which I beg to enclose a copy†. I am aware that Mr. Tweedie felt his position to be a very difficult one, and in the early days of his connection with the annicut works, he certainly repre-

* Dated 27th Dec. 1855.

† Enclosure 4.

sent to me that there appeared to be a very general disposition on the part of many officers of the Engineer department, to resent any interference of his, in different matters which he conceived to be within his jurisdiction, as altogether uncalled for. Unquestionably the quarry-work was very much dreaded at that time in all parts of the district, a fact, which former correspondence of mine with the Government, placed before them. Such being the case, Mr. Tweedie may have imagined that inquests in those lamentable cases, in which death had occurred, would only make the fact more public, lead to exaggeration, and thus increase the panic, which it was his duty to discourage.

5. The time for forced labor is happily gone by, and I will not allude further to it than to say, that, at the time when under the order of Government, it was necessary to keep up at the annicut a supply of forced coolies to the extent of several thousands, who were only obtained with the utmost pressure; and when there was a general delusion on the part of the Engineer department that the opposition of the Native Revenue authorities was the sole cause of the difficulty, the Revenue and Magisterial officer located at Bezwadah must have been one possessed of great energy, decision, and firmness, combined with tact and conciliatory demeanour, who could have commanded the degree of influence, which I have ever held he ought to have possessed, to admit of his carrying out with justice to all concerned, so far as that was possible under such a system, the duty imposed upon them.

6. Mr. Tweedie left Bezwadah in January 1854, and it will be perceived that the majority of the reported accidents occurred after his departure.

7. Mr. Fraser's second letter written when I had transmitted to him Extract Minutes of Consultation, No. 77, shows that no inquest was held in the fatal case which occurred on the 8th December; but strict orders have been issued to ensure inquests in every case of fatal accident, and enquiry in every case of severe injury, more particularly as to the mode in which they may occur, i. e. carelessness on the part of the sufferers themselves, or on that of other parties.

Letter from T. D. LUSHINGTON, Esq., Magistrate of Masulipatam; to J. FRASER, Esq., Joint Magistrate of Masulipatam, dated 27th December 1856, No. 245.

SIR,

As there is no information in the office of the Magistrate on the subject, to which the accompanying Extract Minutes of Consultation, dated 5th December 1855, has reference, I have the honor to request that you will at the earliest period, compatible with securing accurate information, submit a report on the subject.

Unquestionably inquests ought to have been held in cases of fatal accidents on the works connected with the annicut. The present Head of Police at Bezwadah, has been there since the commencement of the work, and ought to be able to supply much information, even if the records of the office of the late Head Assistant Magistrates, the late Mr. Tweedie, and Mr. Holloway, do not contain it.

Whether the information procurable from the sources pointed out, proved defective or not, it would appear desirable that you should also obtain information both from the Civil Engineer and from the records of the Assistant Surgeon's office, in order that the lists may be correctly made out.

Letter from J. FRASER, Esq., Joint Magistrate; to T. D. LUSHINGTON, Esq., Magistrate of Masulipatam: dated Nundigamah, 1st February 1856, No. 13.

SIR,

* 28th January 1856, No. 22.

1. I have the honor to acknowledge the receipt of your letter* and its original accompaniment, which is herewith returned.

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2. In regard to your letter No. 245 of the 27th December last, I have the honor to state that I merely awaited Dr. Miller's return to Bezwadah to write to him officially, asking for a nominal roll of all such accidents, whether fatal or only attended with loss or fracture of limb, as were entered in his hospital records. On the same date, I also wrote to Captain Orr on the same subject. The Tahsildar of Bezwadah reported on the 24th ultimo that, on the 6th April 1854, Mr. Tweedie, the then Head Assistant Collector, had, by a verbal order, forbidden him from taking any official cognizance, whether of accidents at the quarries or on other annicut works. What Mr. Tweedie's motive was for issuing this order does not appear. Before being so restrained, the Tahsildar had reported and held inquests in two cases of accidental death, which will appear in the General Report, to be forwarded when I receive Captain Orr and Dr. Miller's replies.

3. I have now issued strict orders to the Tahsildar that he is to hold inquests in every case of fatal accident, and an enquiry in every case of severe injury, and more particularly as to the mode in which they may occur, i. e. carelessness on the part of the sufferers themselves or on that of other parties.

Letter from J. FRASER, Esq., Joint Magistrate; To T. D. LUSHINGTON, Esq., Magistrate of Masulipatam, dated Nundigamah, 8th February 1856.

SIR,

1. In reply to your letter of the 27th December 1855, No. 245, accompanied by copy of an Extract from the Proceedings of the Madras Government, dated 5th December 1855, No. 916, I have the honor to state that no official report has ever been made to me on the subject of accidents at the Kistnah annicut works.

2. The Head of Police of Bezwadah in reply to a call for information on the subject reported on the 24th ultimo, that the late Head Assistant Magistrate, Mr. Tweedie, on the 6th April 1854, verbally forbade him to take any official cognizance of these accidents. Up to that date, the Head of Police had reported and held inquests in two fatal cases, marked in the accompanying roll.

3. I beg to state that from the time of taking charge of the Sub Collectorate till now I have been not quite two months resident at Bezoarah reaching the station in February 1855, I proceeded on circuit early in March and was absent till the end of May. After being then about a fortnight at Bezwadah, I proceeded, as you are aware, on leave to Madras, and returned direct to Masulipatam to take charge of the Collectorate from you, and returned to Bezoarah on the 24th December. I mention these facts because, otherwise, the number of fatal and severe accidents in 1855, could not, had I been at the Head-quarter station of my charge, have failed to attract my serious attention. I never heard a rumour even of the greater number of them.

4. Strict orders have now been issued to the Bezoarah Head of Police, to hold inquests in all cases of fatal accidents, and enquiry into the cause of them, as well as in those, which cause merely loss of or severe injury to limb. I have also requested the Civil Engineer to send notice to the Police Office, the moment any accident occurs on the works, in order that the necessary measures may be adopted.

5. I forward a nominal roll of all accidents that have happened since the commencement of the annicut works, as compiled from information received from the Civil Engineer, and Assistant Surgeon in charge, copies of whose letters are herewith forwarded.

6. There is no correspondence between the Magistrate's and Civil Engineer's Departments, on the record of office on the subject of these accidents.

List of all accidents whether fatal or otherwise, which have happened at Bezoarah in the Masulipatam District on the Kistnah annicut works, since its commencement.

Dates.	Names.	Nature of accidents.	Results.
16th Augt. 1852...	Dursenum Soobadoo.	Killed in the Bezoarah quarry by the slip of a piece of rock...	Died immediately.
6th Oct. "...	Goompany Chittumbrum.	Lost the use of his right leg in the Bezorah quarry by a piece of rock slipping and striking him.	Loss of the use of right leg.
13th Feb. 1853...	Kursaree Pitchayie.	Killed in the Bezorah quarry by the falling on him of a piece of rock...	Died immediately.
25th March "...	Condaty Venkadoo.	Lost the use of his left foot in the Bezorah quarry by a stone slipping from the face of the rock and falling on him...	Loss of the use of the left foot.
1st April. "...	Cheedy Chelliah.	Killed at Bezorah by the explosion of some loose powder...	Died immediately.
17th Augt. "...	Abdool Nubby.	Blow on the head from a block of wood...	Recovery with loss of speech.
1st Feb. 1854...	Tommara Lutchmegaudoo.	Accidentally drowned in the Kistnah river...	Died.
27th Jan. "...	Borah Thummiah.	Right leg crushed by stone rolling from the quarry...	Amputation below the knee and recovery.
3rd Feb. 1854...	S. Nursegaudoo.	Compound fracture of left forearm and contusion of abdomen by blasting.	Died 10th February 1854.
14th " "...	Mahomed Sheriff.	Fracture of skull and laceration of brain by blasting.	Died 16th do. do.
15th " "...	B. Thunnarungum.	Laceration of right hand by the fall of a stone...	Amputation of right thumb and recovery.
16th March 1854...	Shaik Farried.	Falling from the top of a precipitous part of the Bezoarah quarry...	Died.
1st April "...	D. Venkapah.	Extensive lacerated wounds of left leg by the fall of a stone...	Died 27th May 1854.
6th " "...	R. Gooravadoo.	Fracture of left thigh and several wounds on head and face by the fall of a stone...	do. 14th April 1854.
" " "...	Venkatasawmy.	Fracture of skull left arm and forearm by blasting...	Died the same day.
13th " "...	A. Chetty Lutchmegaudoo.	Lacerated wound on the forehead by the fall of a stone from the quarry.	Recovery with impaired intellect, afterwards drowned in the river in an epileptic fit.
3rd May "...	T. Gopaulpola-doo.	Large bruise above and below the knee by the fall of a stone...	Mortification ensued, and he died 12th May 1854.
17th " "...	M. Soobbadoo.	Laceration of foot and ankle by the fall of a stone...	Resisted amputation, and died 2nd June 1854.
10th Jan. 1855...	Doomaul Woosgaudoo.	Simple fracture of right forearm by a fall on the stones, whilst unloading the wagons...	Recovery 24th March 1855.
2d Feb. "...	Cauky Raumy.	Fracture of skull and laceration of brain by a jumper in the 8th quarry	

List of all accidents whether fatal or otherwise, &c.

Dates.	Names.	Nature of accidents.	Result.
2nd February 1855.	Seerapoo Lutchmy.	snapping and striking her on the head... Killed at Bezoarah by a piece of a large jumper breaking and falling on her head...	Died soon after the accident.
3rd " "...	Gollapooddy Appyah.	Right forearm cut off and right leg crushed by blasting...	Died immediately.
6th " "...	Dingy Ellemmah.	Simple fracture of right leg by a stone striking her...	Died an hour after accident.
20th " "...	Umbaty Nursoo.	Simple fracture of left thigh and right forearm with several bruises and cuts on the head and face by the falling of a large stone in the quarry...	Recovery 23rd May 1855.
" " "...	Gunnah Ramiah.	Right arm crushed with several cuts on head and left leg by the fall of the stone in the abovementioned case.	Died 23rd February 1855.
20th " "...	Gonay Muckadoo.	Spine and ribs crushed with several wounds on the head and face by the falling of the stone above mentioned.	Died 2 hours after the accident.
7th March "...	Manedy Nookaloo.	Compound fracture of left leg by the collision of 2 loaded waggon...	Died soon after the accident.
18th " "...	Lumady Somadoo.	Compound fracture of lower jaw and left forearm by the falling of a stone from a loaded bandy...	Amputation of limb above the knee, died 1st April 1855.
13th " "...	Thewersa Vematareddy.	Great and 2nd toe of the left foot jammed under the waggon wheel...	Recovery 13th August 1855.
22nd " "...	Gundoola Baupannah.	Compound fracture of left leg by the falling of a stone while loading the boat...	Amputation of the toes and recovery, 18th June 1855.
17th " "...	Judy Yelliah.	Compound fracture of right leg by the fall of a stone that he was carrying.	Amputation of limb, died 23d May 1855.
17th March 1855.	Shaik Ebrahim.	Extensive lacerated wound on the outer side of left foot by the falling of a stone from the wagon...	Amputation of limb and recovery, 23rd October 1855.
6th April "...	Maurwadah Appoodoo.	Extensive lacerated wound on the inner side of the left ankle joint, by the rolling of a stone over it on the annicut...	Recovery 18th June 1855.
7th May "...	Nelap Paupah.	Fracture of ribs by the passing of a loaded bandy over her...	Died 24th June 1855.
8th Dec. "...	Dausaree Mahaluthme.	Fracture of skull by the crossing of a loaded wagon...	Died on the spot.

Number of accidents.	Of which deaths.	Recovery with loss of some limb.	Recovery without loss of limb.	Total.
35	24	7	4	35

The above letter from the Magistrate of Masulipatam, in reply to the calls made upon him in Extract Minutes of Consultation 5th December and 23d January last, discloses the melan-

choly fact that 35 serious accidents have occurred among the workmen employed on the annicut works at Bezoarah from the commencement of operations in 1852 to the close of the past year.

2. The number has rapidly increased year by year, being for 1852 two, for 1853 four, for 1854 twelve, and in 1855 seventeen.

3. Of the whole 35 cases, 24 resulted in death ; 7 in recovery with loss of limb ; in four only did the sufferers escape without loss of limb ; in three out of these four, bones were fractured, and one case was a very severe one.

4. In no instance except the two first, of accidents terminating fatally was an inquest held. The only explanation which can be given for the omission is that contained in paras 3 to 6 of Mr. Lushington's letter.

5. The causes thus assigned are utterly insufficient, but as the Officer, by whose orders the usual practice of holding inquests is said to have been discontinued, is dead, the Government will not remark upon it further. The Magistrate states that strict orders have now been issued to ensure inquests in every case of fatal accident and enquiry in every case of severe injury, more particularly as to the mode in which they may occur, i. e. carelessness on the part of the sufferers themselves, or on that of other parties.

6. The Right Honorable the Governor in Council directs that these orders be most scrupulously carried out not only at Bezoarah but in every locality where public works are going on. It will also be the duty of the Magistrate, Joint or Assistant Magistrate, within whose division the place is situated, carefully to review the reports made to him and to bring pointedly to the notice of the Engineer Officer in charge of the works any instances in which the injury was occasioned by want of due precautions, that such arrangements may be adopted as may prevent its recurring.

(Signed) T. PYCROFT,
Chief Secretary.

Letter from H. NEWILL, Esq., Acting Magistrate of Guntoor, to J. D. BOURDILLON, Esq., Secretary to Government, dated 24th March 1856, No. 13.

SIR,

I have the honor to acknowledge the receipt of Extracts Minutes of Consultation dated 5th December and 18th Instant, calling for a list of all accidents at the Kistnah annicut works officially reported, and a report as to what notice was taken of such occurrences, and in particular whether inquests were held in cases of fatal accidents, with any further information as to the general causes of such disasters.

2. In reply I beg to submit such information as I have been able to collect on the subject.

3. It does not appear from the records of the office that any accidents were officially reported till 1854, when a recent disaster at the annicut works seems to have led the Session Judge at this station to call upon the then Acting Magistrate to state whether similar casualties had been included in the previous returns of accidental deaths. This led to a communication with the Civil Engineer,* who in his reply † stated that the only accident resulting in death

* Acting Magistrate to Civil in the past year of 1853 was the case of a cooly who was severely injured Engineer 16th May 1854. on 6th January 1853, but after recovery died of Cholera in the Bezoarah Hospital on 7th May following, or 4 months afterwards.

4. Nothing is on record regarding any accidents prior to 1853 and the Assistants Messrs. Thornhill and Cator who were then located at the works have subsequently left the country.

5. The accompanying list describes the fatal accidents that were reported in 1854 and 1855. It will be seen from the remark entered in the list that in the whole of the 7 first cases the persons were removed after the accidents to the Bezoarah Hospital where they died. The

duty of holding inquests in these cases does not appear heretofore to have fallen upon the authorities in this district.

6. The 4 next cases in the list which occurred on 10th January 1855, 3 of which were fatal, were duly reported at the time by the Darogah but no inquests were held ; the reason assigned for this omission being that the bodies were immediately removed and buried by the Engineer Department without any opportunity having been afforded for this procedure. This omission was duly noticed by the Head Assistant Mr. Gordon, and it was directed that all such cases should in future be strictly investigated in due form, to which the assent of the Civil Engineer was signified in a further report from the Darogah.

7. In the two last cases the persons met their death by being crushed to pieces under a large mass of stone, which could not be removed for some time afterwards, when attempts to discover traces of the bodies for the purpose of holding an inquest on them appear to have been unsuccessful. It is probable that even after the lapse of 3 weeks for the removal of the rock some traces might have been forthcoming, but they would be of such a nature as to afford much facility for their removal by the coolies without the notice of the authorities.

8. In endeavouring to account for the absence of notice of any accidents prior to 1854 on the supposition that such did occur, and also for some laxity and delay in the report of some of the cases in the present list, it may be remarked that it is not improbable that apprehension existed as to formal investigations in cases of accidents held on the spot in the presence of large bodies of coerced laborers having the tendency to create alarm and cause them to abscond in large numbers, but how far this may or may not have been allowed to weigh with the several European Officers on the spot, I do not feel myself in a position to decide, having only recently joined the District. It appears however that the present Head Assistant Mr. Gordon used his endeavours to secure full investigation in these unhappy cases, and with respect to the opinion called for as to the general causes of these accidents I may give the experience of that Gentleman on the spot that he does not remember a single instance in which the accidents were alleged by the coolies to have happened from the negligence or indifference of the Engineer authorities ; but that on the contrary every precaution was observed to prevent such occurrences and a European overseer constantly placed at the quarry, and that when they did happen it was entirely to be attributed to the apathy and carelessness of the victims.

List of accidents at the Kistnah annicut works reported in the District of Guntoor.

Talook.*	Place of residence.	Date of accidents.	Names of the parties.	Remarks.
...	Vizagapatam.	2d April 1854...	Poochah Tatiah.....	Killed by the fall of a piece of rock, died in the Bezoarah hospital.
Guntoor.....	Vinjanum-paudoo.	3d April 1854...	Mooteneny Pooliah.	Severely injured by the fall of a large stone subsequently died in hospital.
Do.	Laulpoorum.	20th April 1854	Tunka reddy.....	do. do. do.
Tenally.....	Coochepoody.	14th April 1854.	Mutlapoody Chinna Cotadoo.	Scull fractured by a fall and subsequently died in hospital.
Do.	Kolakaloor.....	29th April 1854.	Nursetty Paunakaloo.	Severely injured by the fall of a large stone and subsequently died in the hospital.
	Vamoor.....	May 1854.	Cota Veerana.....	
Repully.....	Penoomoody..	Do.	Maka Suttevah.....	Killed by the fall of a piece of rock.
	ry.			
Mungalagher-ry.	Mungalagher-Pedaparennny..	10th Jan. 1855.	Totah Pichayah.....	Severely injured by the fall of a rock.
	Badepoonum	Do.	Guddum Veerayah..	
	Do.	Do.	Mautunghy Moota-do.....	Crushed under a mass of rock, which fell upon them.
	Do.	Do.	Bezzum Mootadoo...	
Guntoor.	Paracherlah..	8th Feb. 1855.	Naby Saib.....	
	Guntoor.....	Do.	Saik Selaur.....	

The papers above recorded exhibit an aggregate of not fewer than sixty distinct cases of severe bodily injury, up to the end of 1855, to coolies and others employed on the Kistnah works, of which number forty-three were fatal. The lists purport apparently to extend to the end of 1855; but unfortunately it cannot be positively said that they contain the whole number of such accidents, as it is clear that no accurate information was available as respects the earlier years.

2. The Right Honorable the Governor in Council cannot acquit the Civil authorities of neglect in the omission to hold inquests in these cases; and he notices with displeasure the indications appearing in the papers of the opposition to enquiry manifested by the Officers of the Engineer Department. He resolves to acquaint the Civil Engineer and the Officers subordinate to him, through the Chief Engineer, that they are required to furnish immediate information to the proper Civil authorities on the occasion of every serious accident; and in case of death, whether on the spot, or in the hospital, are not to allow the body to be removed till an inquest has been held. Any instances of disregard of this order will incur the severe displeasure of Government.

3. Adverting to the closing para. of Mr. Newill's letter above recorded, the Governor in Council observes that it is not at all to be supposed that ignorant coolies would be able to judge whether all proper precautions against accident are taken by the Engineer Officers; but the Government have a right to expect and do expect that those Officers will adopt all the precautions which the larger experience of other countries has developed and shewn to be necessary, for the prevention of accidents; and also that they will compel their labourers, truly described by Mr. Gordon to be, like all ignorant people, apathetic and careless, to take the means proper for sheltering themselves from the consequences of possible accidents. The Governor in Council cannot but fear that hitherto such care has not been taken. One main object in directing the holding of inquests, is to promote that care; and it is the particular wish of the Government that these inquiries should not be merely formal, and should not be left entirely to the Native Officials; but that they should closely investigate the real causes, both proximate and more remote, leading to an accident, and that the European Officer of the locality should take part in them.

4. With the foregoing remarks the Governor in Council resolves to transmit to the Chief Engineer copies of the Minutes of Consultation in the Judicial Department, and of the letters from the Magistrates of Masulipatam and Guntoor, as well as of this present order. Colonel Faber will furnish copies of all these papers to the Civil Engineer of the Kistnah Division for his information and future guidance; and he will also communicate the orders of Government respecting inquests, and the aid and information to be given to the Civil authority by the Engineer Department in cases of accident, to all Officers of the department by a circular order. A copy of the present order will also be transmitted to the Magistrates of Masulipatam and Guntoor for their information and guidance respectively; and to the Court of Foujdaree Adawlut, that the views of Government respecting the duties both of the Magistracy and of the Engineer Department in relation to inquests, may be communicated to the Officers of the Judicial and Magistrate Department.

(A true Extract.)

(Signed) E. MALTBY,

Acting Chief Secretary to Government.

No. 758.

MADRAS, 24TH AUGUST 1857.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway.

SIR,

No. 483 dated 15th June.
" 501 " 24th July.
" 534 " 3rd do.
" 592 " 24th do.

I have the honor, by order, of Government to acknowledge the receipt of your several letters noted in the margin with reference to accidents which had occurred on two several occasions on the line of Railway, both having led to loss of life.

2. The one at District 4 occurred from a quantity of earth which had been undermined suddenly giving way, causing the death of a woman and a boy; the other on District 5 occurred it seems in blasting. The sufferers in this case having returned to a charge that had missed fire, and been killed in the explosion.

3. Although there is no proof in either of these cases of want of all proper precaution having been used, I am desired to impress on you the necessity of requiring of the Railway officials in your Engineer Department, the utmost care in the conduct of such works in every case.

4. Unless the work is carried on under very careful and well qualified overseers, the laborers should be warned in all cases of cuttings or other excavation against the practice of undermining, with a view to getting falls and breaking up the mass with facility and expedition; a good plan doubtless, but requiring a degree of care and watchfulness, that the ordinary laborers of the country seldom exhibit.

5. I am also to express a hope that you will use every effort in the blasting department to secure efficient Superintendents in all cases, and to cause especial care to be bestowed in the preparation of the fuze.

6. The Government have already recommended that your application for patent fuze should be complied with.

7. I am directed to forward for your information copy of an order in the Public Works Department No. 552, dated 23rd April 1856, and to request that the special orders therein contained, regarding inquests, may be observed in cases of accidents on your Works.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 608.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to acquaint you for the information of Government, that the Chief Engineer has reported to me that another serious accident has occurred to a man in District 5 on the 17th Instant while engaged in blasting, but which as yet has not proved fatal. The person hurt, "it is stated," was engaged in lighting a match—which was laid down, to blow off three blast holes, and it is supposed that the wind must have blown a spark to the trains of powder, as the whole was blown up almost instantaneously, when the man was severely burnt by the powder, and to some extent damaged with the flying stones.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 30th July 1857.

Submitted for the information of Government.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 31st July 1857.

MADRAS, 31ST JULY 1857.

No. 687.

TO MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway Company.

SIR,

Referring to your letter No. 608, of the 30th instant, I have the honor, by order, to request you will report for the information of Government, the ultimate effect of the injury sustained by the cooly alluded to, as soon as ascertained.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 741.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter, No. 687 dated the 31st July, I have the honor to acquaint you that it has been reported to me, that the cooly who was so seriously burnt in July last at the Puthacoopum cutting, is so far recovered, that in all probability he will be fit for work in another week.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 19th September 1857.

Submitted for the information of Government with reference to the Agent's letter No. 608, dated 30th July, submitted without observations on the 31st idem.
Madras, 11th September 1857.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 539.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to acquaint you that it has been reported to me by the Chief Engineer that a man employed in blasting in District VII was killed by the unexpected explosion of a mine which he was tamping, on the 28th of May. It is said that the individual in question was well acquainted with his work, but it is presumed he had become careless, and it is supposed that he had commenced tamping before the powder was sufficiently covered, and that the powder ignited while the man was so engaged.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 4th July 1857.

Submitted for the information of Government.

Madras, 21st July 1857.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 745.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

1. I have the honor to acquaint you that an accident, attended with fatal results, occurred at the rock-cutting at 17 miles 40 chains in District 8, on the 11th instant.
Letter from Mr. Purdon to Chief Engineer 13th Sept. annexed.

2. It appears that a person (Native) when engaged in loading and firing mines, through some carelessness on his part, allowed the match to fall upon the powder in the needle-hole. The mine exploded instantly, and inflicted upon him such serious injury that death ensued in a few hours. The accident was immediately reported to the nearest Native official, and to the European Magistrate.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 21st September 1857.

Submitted for the information of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 23rd September 1857.

MADRAS RAILWAY,
ASSISTANT ENGINEER'S OFFICE,
MULLAPOORUM, 13TH SEPTEMBER 1857.

MY DEAR SIR,

I have to report to you an accident which occurred in one of the rock-cuttings at 17 miles 40 chains on Friday morning the 11th instant, about 10 o'clock, which I regret to say terminated fatally. The circumstances are as follow.

One of the persons (a Native) who had charge under Mr. Jones (Inspector of Rock work) of the loading and firing of the charges, was engaged at such work, when through some carelessness on his part (as well as I could learn from himself) he allowed the match which was to ignite the powder, to fall on the powder in the needle-hole when the charge immediately exploded, inflicting such injuries as to cause his death in a few hours. I was on the ground a few minutes after the accident, but from the serious nature of the wound could render him no assistance. Apothecary Lowe was also present about one hour and a half after the man was hurt. The flesh was stripped from the bone of the right knee to the groin, the testicles shattered to pieces, besides various other cuts, on the head and body. After his death I reported the case to the nearest authority the Moonsiff of the Village) who came and inquired into the facts, he has referred the case to the Carkoon without whose sanction the body cannot be buried. It is one of those many accidents which occur from the use of inferior materials. I need not tell you that if we had had Patent Fuze, such could ever have happened.

Yours &c.,

(Signed) C. E. PURDON,
Assistant Engineer District 8.

(True Copy.)

(Signed) ROBERT PATON,
For Chief Engineer.

(True copy.)

T. A. JENKINS,
Agent and Manager.

MADRAS RAILWAY.

No. 797.

To CAPTAIN C. C. JOHNSTON,

Offg. Consulting Engineer for Railways.

SIR,

I have the honor to report that the rail at the Ballast siding at Umbatore gave way as the ballast train was passing over it yesterday, whereby several of the ballast wagons got off the rails obstructing the main line. This caused a detention to the 6.30. A. M. west Passenger Train of one hour, but the Engine of the ballast Train not having gone off the line, the Engine Driver ran into Madras and took out a Train of Carriages, into which the passenger were removed and brought into Madras.

2. I have not as yet received any report from the Engineer Department as to the cause of the accident, and therefore only mention the fact that an accident has occurred.

3. The wagons were got on the Line, and the permanent way repaired in sufficient time to enable the following train to proceed without detention.

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

Madras, 20th January 1857.

No. 813.

MADRAS RAILWAY.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

With reference to your letter No. 922 dated the 26th Instant, I have the honor to annex a copy of a Report from the Officer in charge of the Maintenance of Way, just received through the Chief Engineer, respecting the accident that occurred to the Ballast Train on the 19th Instant at Umbatore.

22nd October 1857.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 28th October 1857.

Submitted (with observations) for the orders of Government.

C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

Madras, 29th October 1857.

MADRAS RAILWAY,

RESIDENT ENGINEER'S OFFICE,
MADRAS, OCTOBER 22ND 1857.

To J. M. HEPPEL, Esq.,
Chief Engineer.

DEAR SIR,

I beg to report that on Monday last the 19th Instant, when the Train ballasting at Umbatore was running out of the ballast siding 8 Wagons got off the Line, owing to the breaking of the Trenails on the outside rail of the curve. I examined the place on Monday evening on my return from Arcot by the Goods Train, and found that all had then been made secure.

I regret to observe that the iron spikes ordered for the sidings before the departure of Mr. Bruce, have not yet been supplied, with the exception of 166 which have been used in the

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sidings at Perambore and a few which remained over, and were used at Tinnanore, and I have this instant been told that 45 more are ready. These last shall be sent to Umbatore to secure that siding. I have repeatedly urged the necessity of these spikes being supplied, and learn from Mr. Latham that the reason of the delay is, that as fast as the spikes are made, they are used in the Terminal Station yard, where on account of the number of sharp curves, Engines are consequently getting off. Hence I beg you to observe, with reference to the orders of Government communicated to me on the 3rd February last, that the reason for the siding curves not having been fixed with spikes is, that I could not get the spikes from the shops.

With reference to the similar accident to the one under consideration, which happened to the ballast Train in the same siding, and reported to you in my letter of the 13th instant, I beg to observe that I am now of opinion that accident was caused by the weakness of the Trenails and not by the sharpness of the curve, the radius of which is about 800 feet, and easy enough for any Train to pass over in safety at a moderate pace.

I should have reported this accident on Tuesday had I not been so unwell as to be obliged to leave Office almost as soon as I reached it on that day. The whole of yesterday too, I was unable to leave the house, and regret that in consequence I could not be present at the investigation made on the spot. I hope that under these circumstances the omission will be excused.

Faithfully Yours,

(Signed) BRYCE McMASTER,

Resident Engineer.

(True Copy.)

(Signed) ROBERT PATON,

For Chief Engineer.

(True Copy.)

(Signed) T. A. JENKINS,

Agent and Manager.

No. 367.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 797 and 813 dated 20th and 23rd October 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

In the first of the foregoing letters, the Agent and Manager reported that on the 19th instant the rail at the ballast siding at Umbatore gave way as the ballast train was passing over it.

2. The main line having been obstructed by the waggons which were thrown off the rail, the driver very properly ran his Engine back to Madras and brought a train of empty carriages, into which the Passengers by the down train were transferred; a delay of an hour having been occasioned by the accident.

3. No report of the accident having been received in this office from the Engineer Department up to the 26th instant, the Agent on that day was requested to expedite its transmission.

4. The required report has now been received with the Agent's letter, No. 813, and from the Resident Engineer's statement it appears, that, from the breaking of the trenails on the outside rail of the ballast siding curve at Umbatore, 8 wagons got off the line. The place was examined the same evening by the Resident Engineer, at which time all had been secured.

5. Accompanied by the Agent, I proceeded to Umbatore on the 21st instant, and from eye witnesses to the accident, as well as from the man who was driving the Engine at the time, obtained full particulars of what had happened.

6. The Engine it appears was proceeding at a very slow rate with a train of 15 ballast wagons, of which the 5 first on the main line, and the 2 last on the siding, the Engine being in front, remained on the rails, the intermediate 8 having been thrown off, the cause of the accident being, as stated by the Resident Engineer, the breaking of the wooden trenails.

7. In Extract Minutes of Consultation, No. 49, dated 26th January 1857, Government on a report from Colonel Pears directed, that "Iron spikes should be substituted as quickly as possible for wooden spikes at all the sidings, and the substitution be reported to Government."

8. Notwithstanding this, it will be seen from the Resident Engineer's Report, that of the iron spikes ordered for the sidings before Mr. Bruce's departure from the country, only 166 had been supplied up to the 22nd instant, on which date 45 more were said to be ready.

9. The reason advanced for the delay, is that as fast as the spikes were made they were used in the Terminal station yard, a reason which cannot be admitted as valid, considering the facilities at the command of the Engineer department in their extensive workshops, for the manufacture of such simple articles.

10. The Resident Engineer alludes to an accident, similar to the one now under consideration, as having happened at the same siding about a week previously, but of which no report was made by the Agent.

11. The accidents, by which fortunately no persons were injured, were occasioned in both instances then, solely by the breaking of the wooden trenails; and it is greatly to be regretted that so much delay should have occurred in preparing the iron spikes, ordered 9 months ago to be substituted for them.

12. To this circumstance, as also to his not reporting the previous accident, the Agent's particular attention might be drawn, and it appears necessary that he should be directed to exercise in future, more careful supervision, in seeing when special orders of Government are received that due effect is given to them.

Madras, 29th October 1857.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

FINANCIAL RAILWAY DEPARTMENT.
No. 534.

Extract from the Minutes of Consultation under date the 10th November 1857.
Read Observations by the Officiating Consulting Engineer on letters from the Agent and Manager of the Madras Railway Company.

Reporting an accident which happened to the Ballast Train at Umbatore on the 19th October. (Here enter 29th October 1857 No. 367.)

The Government desire that a communication to the effect suggested in the last para. of the foregoing Observations be made to the Agent of the Railway Company.

(True Extract.)

T. PYCROFT,
Chief Secretary.

MADRAS RAILWAY.

To CAPTAIN C. C. JOHNSTON,
Officiating Consulting Engineer for Railways.

No. 819.

SIR,
I have the honor to annex for your information an extract from a letter, from the Resident Engineer reporting, that an accident had happened at the Vellore Station works by which the arm of a cooly was broken and two other men more or less bruised.

Madras, 30th October 1857.

Submitted for the information of Government.

Madras, 2nd November 1857.
C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Extract of a letter from JAMES COLLINS, ESQ., dated Vellore 23rd October 1857.

"I regret to report that an accident happened at the Vellore Station works this morning about 11 o'clock, by which one cooly man had his arm broken; and one or two others more or less bruised.

From the account given in by Mr. Moran the Superintendent of the works, it appears that the coir rope fastening the stays of the principals, which he is erecting for the goods shed roof suddenly slackened and six of the principals fell to the ground thereby causing the accident.

I immediately sent Dr. Barclay the Garrison Surgeon to the spot, and now have the pleasure of annexing his report, from which it appears that the accident is not so serious as I at first anticipated.

The violent storm of rain last night which blew from the south west had doubtless much to do with this accident as the principals fell towards the west. There is always an increased risk in executing buildings in this climate during the prevalence of the monsoon, and it is doubtful to me whether we ought not to suspend all operations during the season."

Report of Dr. C. BARCLAY, dated 23rd October 1857.

"I went out to Agraharam immediately on receipt of your note, but I am glad to tell you there is nothing serious there. One man has got his arm broken, and two or three others are more or less bruised. All that was required had been done by the Apothecary long before my arrival. I fancy they have sent you a very exaggerated account of the accident.

(True Extract.)

(Signed) ROBERT PATON,
For Chief Engineer.

(True Copy.)

T. A. JENKINS,
Agent and Manager.

MADRAS RAILWAY.

No. 942.

To CAPTAIN C. C. JOHNSTON,
Officiating Consulting Engineer for Railways.

SIR,

I have the honor to report that an accident occurred in a rock cutting on the 2nd Section of District 11 on the 26th November. Three coolies were engaged jumping the tamping from a hole which had been charged but missed fire the previous evening, when the gun-powder exploded. One poor man had both hands shattered, and was sent to Salem to have them amputated; two other men were injured about the head and eyes, but to what extent is not yet known,—they are, however, doing well.

2. It does not appear that any blame is attachable to the Inspector or Maistry in charge of the works, for every precaution, it is said, had been taken, Patent Fuze was used, and water poured in the hole when tamping.

3. On reference to the Consulting Physician I am informed that proper steps were taken in regard to affording medical aid to the persons injured.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 16th December 1857.

Submitted for the information of Government.

C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 17th December 1857.

OBSTRUCTION ON THE LINE OF RAIL, &c.

MADRAS, 6TH JANUARY 1857.

No. 19.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letter, No. 907, of the 12th ultimo, Government have been pleased to resolve that reference be made to the Collector of North Arcot, and that he be requested to state what steps he took in consequence of the representation made to you under date the 15th November, by the Resident Engineer Mr. McMaster, and further to call upon his Assistant, Mr. Pochin, to explain the expression said to have been used by him, and referred to in Mr. McMaster's letter to the Acting Chief Engineer, dated the 9th December.

2. At the same time your attention is again directed, in connexion with this subject, to the orders* of Government of the 19th June and 5th July last, and particularly to the great importance of intelligence of any attempt to injure or obstruct the line, being at once given by the Railway authorities, on the spot, both to the Native Police, and the nearest European Magistrate.

3. Government request you will, with the least possible delay, furnish a detailed report on the arrangements now made by you, and the number of men employed for watching the line, and for the prevention and detection of such attempts as those now under report.

4. You are also requested to give your opinion, as to the expediency of erecting, in the immediate neighbourhood of villages, a stout fence, either high paling or brickwall, for a certain length, varying with the distance of the village from the line.

5. Great facility is offered to the perpetrators of these acts by the immediate neighbourhood of huts, and it seems probable, that if in the neighbourhood of Moshoor and other villages, similarly situated, 2 or 300 yards of high fence were erected, it might tend in some degree to discourage such proceedings. Your opinion on this subject is requested.

6. The Government consider, with reference to a certain passage in Mr. McMaster's letter* to the Collector of North Arcot, that it is objectionable to allow men, not in the employment of the Railway Company, to cut grass on the slopes of the line.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

No. 72.

MADRAS, 20TH JANUARY 1857.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

In continuation of my letter No. 19, of the 6th instant, I have the honor to intimate that Government have directed the Magistrate of North Arcot to summon to his Cutcherry the heads of the Villages in the vicinity of the place where the offence of placing stones upon the rails, was committed, and to warn them, in person, that unless they can prevent such attempts, or detect the parties by whom they are made, it will be necessary to remove them from their offices, and to substitute men of more energy and more alive to their duty.

I have, &c.,

(Signed) T. T. PEARS,

*Consulting Engineer for Railways.*MADRAS RAILWAY,
MADRAS, 26TH JANUARY 1857.

No. 65.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 19, dated the 6th Instant, I have the honor to annex a copy of a letter from the Acting Chief Engineer, No. 21 dated 24th instant, in which he expresses his opinion in respect to certain suggestions conveyed in your letter, with a view to prevent trespass on the line of Railway.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

Madras, 18th March 1857.

(Signed) T. T. PEARS,

*Consulting Engineer for Railways.*MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 24TH JANUARY 1857.

No. 21.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

1. I have the honor to acknowledge the receipt of yours No. 22 of the 8th instant, annexing letter No. 19, from the Consulting Engineer.

2. The number of men at present employed in the Maintenance of Way department is 8 to 1½ miles in length, it is the duty of the foreman of each gang to proceed along the length of his division before the passages of each train.

3. With reference to para 4 of the Consulting Engineer's letter in which he suggests that in the immediate neighbourhood of a village a stout fence either a high paling or brick wall be erected; I do not think this would be of any use whatever, and simply be throwing away a considerable sum of money, the height of a paling would not effect any difficulty in people crossing unless it were close boarded, and a brick wall would not be much more difficult to cross than the present fence.

4. My experience in England is that wilful damage to the way such as in the case in reference is not likely to occur within view of a village, but if it occur at all, would most likely be at some place remote from any habitation, out of the view of any one and on investigation I find the case referred to, happened a long way from a village, and that the Resident Engineer from his experience here is of opinion that the raising of the fencing or building of brickwalls is unnecessary.

5. The above remarks will also apply to para. 5, of the Consulting Engineer.

6. In para. 6 of the Consulting Engineer's letter that Government consider it objectionable to allow men not in the employment of the Railway Company to cut grass on the slopes of the line, the people allowed to cut the grass are respectable ryots well known to the Inspectors, and are people in whom we have every confidence, in their not only refraining from doing any damage to the line, but were to be of assistance to us in preventing others having no right from trespassing; the saving to the Company by this arrangement is by no means great, but the maintenance will soon fall to be paid out of the Revenue, when every little sum will help to keep the working

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expenditure in proper proportion to the revenue, of course I will continue the present arrangement unless I receive a distinct order to the contrary.

I have, &c.,

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 115.

TO MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.
SIR,

From Acting Chief Engineer
No. 21, dated 24th January
1857.

I have the honor, under the orders of Government, to acknowledge your letter No. 65, of the 26th instant, with enclosure, having reference to my letter No. 19, of the 6th instant.

2. In that letter I observed as follows, "great facility is offered to the perpetrators of these acts by the immediate neighbourhood of huts, and it seems probable that if in the neighbourhood of Moshoor and other villages, similarly situated, 2 or 300 yards of high fence were erected, it might tend in some degree to discourage such proceedings."

3. Your Chief Engineer thinks this would be of no use whatever, and adds that his experience in England is "that wilful damage to the way is not likely to occur in the view of a village."

4. You are doubtless aware, that in cases wherein the character and conduct of the inhabitants are concerned, experience in England is no safe guide here. It is well known that there life and property are rendered secure, from the feelings of the people being enlisted on the side of law and order. Such an occurrence as that we have frequently (and in one remarkable case lately) witnessed in England, of the inhabitants apprehending a culprit without the aid of the Police, has probably been never known here. The neighbourhood of a village, the most dangerous place in England, would be the safest, in many cases, here, for people to commit crimes of this nature.

5. In fact it seems sufficiently obvious, that if man or boy mischievously inclined wishes to place an obstacle on the rail, he will do it with greater safety near a collection of houses, than he could when he had several miles to get to a place of concealment and shelter.

6. Mr. Beattie not having been in this neighbourhood at the time is perhaps not aware, and the fact seems to have escaped your memory, that at one time the villages of Manoor and Moshoor were notorious for attempts of this nature, made in their immediate vicinity; and that one of the worst attempts made by an inverted chair was close to a village, the name of which has escaped me, a few miles west of Kuredcoopum; the above three villages being, I believe, nearer the line than any others throughout its length.

7. You are requested to forward an estimate of the cost of one hundred yards of two descriptions of fences, viz. a brick wall 5 feet high, with broken glass, and a high wooden paling similar to that placed immediately west of the Royapooram stone bridge now under construction.

8. With reference to the practice of allowing men not in the service of the Company to cut grass within the fences, Mr. Beattie writes that they are people known to the Inspector, "people in whom we have every confidence, and they not only refrain from doing any damage to the line, but were to be of assistance to us in preventing others having no right from trespassing," and yet it is of these very people that Mr. McMaster writes, "from enquiries that have been made by my people they are led to suspect, that the stones were put on the rail by the son of one of these six men," who were "not far from the spot."

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9. It is quite clear that these men not being servants of the Company, cannot be made responsible for occurrences of this kind in their immediate neighbourhood, and have the opportunities, if so disposed, of doing mischief, or of throwing difficulties in the way of discovering the true offender; and you are requested, therefore, to give orders for discontinuing the practice of thus admitting men inside the fence, until the Government shall have better reason for believing it can be done with safety and propriety.

I have, &c.,

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 29th January 1857.

(A true Copy.)

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 4TH MARCH 1857.

No. 196.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 115, dated the 29th of January, I have the honor to annex copies of letters from the Acting Chief Engineer No. 41 dated the 6th of February, and from the Traffic Manager No. 17 dated the 2nd of March, and beg to state that, taking into consideration the numerous places upon which obstructions have recently been placed on the line, as set forth in my letter No. 178 dated 26th February 1857, I concur in the opinion expressed by the Acting Chief Engineer and the Traffic Manager, that no benefit whatever would be derived by the construction of two or three hundred yards of wall or strong fence near to each village, but if any thing the reverse, as a wall would afford shelter or hiding place to perpetrators of such acts.

2. The expense of constructing a fence as proposed by you is estimated at Rupees 400 per 100 yards or Rupees 1,600 per village.

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

Submitted (with observations) for the orders of Government.

Madras, 18th March 1857.

T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 6TH FEBRUARY 1857.

No. 41.

TO MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

I have the honor to acknowledge the receipt of yours, No. 100 of the 3rd instant, enclosing letter from the Consulting Engineer, No. 115 of the 29th ultimo.

2. I shall forward, as soon as I can, detailed Estimates of the two descriptions of fencing as required.

3. Knowing, as both you and the Consulting Engineer must do, that there are many works sanctioned and being executed of which the Estimates have not yet been prepared; and from the correspondence I have lately received urging their preparation, I did not expect that I would be called on for Estimates of works the chance of which being executed, to say the least, is in my opinion problematical; no doubt the Consulting Engineer, holding the views he does, might wish to know the cost before ordering the construction; but surely in five minutes he could satisfy himself, as I have done, with a rough estimate sufficient for his purpose, instead of throwing extra labor on my office in having estimates in proper form submitted, and thus delay other more important matters.

4. So far as I can ascertain from the correspondence before me, the necessity of these fences has been left to me to dispose of, and that neither you nor the Traffic Manager have given an opinion on the subject; in a matter of this sort it is not, I think, the Engineer who should first move in it; no doubt the safety of the permanent way is in this Department, but this is of little importance as compared with the safety of Train and Traffic, and it is quite possible that the Traffic Manager may think it of much more importance than I do.

5. It may be, as the Consulting Engineer has stated, that one of the worst of the attempts occurred close to a village; even if such were the case, most, if not all the others, have occurred a considerable way off.

6. Mr. McMaster has been in the habit of reporting that attempts have been made on a certain mile near a village, but on questioning him some time ago I found he did not mean that the attempt was in the close vicinity of the village, but simply gave the name of the nearest village as a guidance.

7. I may inform you that, should it be considered necessary to have this fence put, I would recommend the brick wall as being more of a permanent nature; the other would require continual renewing and repair; the cost of 100 yards will be roughly about Rupees 400.

8. Although the Consulting Engineer has asked for an Estimate of 100 yards of fence, I do not presume this is the quantity he would think necessary at each village if his views are correct; I presume the fence would be required to extend say a hundred yards on each side of the limits of the village, and presuming a village to be 200 yards long, then the length would be 400 yards, and about Rupees 1,600.

9. In the short time I have been in this country, I have had somewhat extensive dealings with natives, and I cannot from my experience bring myself to believe that such malicious attempts to upset the Railway Trains as we are now dealing with, are more likely to occur in the face of the village people, than at an unseen spot where, although there may be no huts or villages but equal means of concealment in jungle-fencing, or standing grain-crop, and it might be a question for consideration whether a high fence, as proposed by Col. Pears, when it conceals the rails from the adjoining inhabitants might not at some time lead to such attempts; it may happen that a person under cover of fences or otherwise could be able to proceed from his hut round the end of the wall, put on a stone or other obstruction, return in a couple of minutes, and be seen by no one.

10. In one light I can see that such a fence as proposed might be of use, and it would prevent children in close proximity of the village from straggling on to the line; but as this would be very dangerous to the children, I think their own families would very likely prevent their doing so.

11. I look on this matter as much more important than it would at first appear to be, as the erecting of an expensive wall here might become a precedent for a like extra expenditure at every village and every place from Madras to Beypore, when any such attempts might in future be made, and in consequence I have thought it necessary to go again more fully into the question than my time will well allow.

12. It may be that I lay more stress on the economy of construction of the line and less on the safety than I ought to do; I would therefore recommend that the opinion of the Traffic Manager be taken; he from his position would, I think, naturally be inclined to the opposite view.

I have, &c.,

(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
2ND MARCH 1857.

No. 17.

TO MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway.

SIR,

Consulting Engineer's letter,
No. 115 29th January 1857.
Acting Chief Engineer's do.
No. 41, 6th February 1857.

I have the honor to acknowledge the receipt of your letter No. 27, of the 10th ultimo, enclosing correspondence as per margin submitting certain proposals in regard to preventing persons from placing obstructions on the line.

2. With reference to para. 2 of the letter from the Consulting Engineer No. 115, I beg to observe that I am of opinion that if 2 or 300 yards of high fence were erected in the neighbourhood of villages, that it would not tend to discourage such proceedings; but I think there would be more to be apprehended from the cover such fence would afford to the mischievous or evil-disposed for the perpetration of such acts. I quite concur in the views on this point put forth by the Acting Chief Engineer in para. 9 of his letter No. 41.

3. With reference to para. 3 of the Consulting Engineer's letter, I beg to observe that my experience of Irish Railways suggests the same remark as the experience of the Acting Chief Engineer in England has suggested to him, viz., "that wilful damage to the way is not likely to occur in the view of a village."

4. With reference to para. 4, it is generally supposed that in Ireland the feelings of the people are not enlisted on the side of law and order, and yet I have always found that we have had the fewest obstructions placed upon the line in the neighbourhood of villages.

5. With reference to para. 5, it appears obvious to me that, when a mischievously disposed boy wishes to place an obstruction on the line, a wall of 2 or 300 yards in extent would be the very means of inducement by sheltering him from observation.

6. I think the best means of protection consists in having the line well watched, and in having every case investigated immediately, as suggested to you in my letter No. 13, of the 25th ultimo.

I have, &c.,

(Signed) H. A. FLETCHER,
Traffic Manager.

(True Copies.)

T. A. JENKINS,
Agent and Manager.

No. 94.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 65 and 196, dated 26th January and 4th March 1857 respectively.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent in reference to an order of Government, No. 479, of the 30th December 1856, forwards copies of letters from the Acting Chief Engineer and Traffic Manager, on the subject of a suggestion made by me that to prevent people placing stones, or otherwise doing mischief to the line, fence walls or railings should be placed wherever villages were found in close proximity to the line.

2. Both these Gentlemen consider that such works would be of no use—would indeed rather facilitate such proceedings. The Chief Engineer, after complaining of the additional work thrown upon him by a demand for an estimate for a hundred yards of fence wall, states that he would prefer a wall to a railing, but condemns the former entirely, because the culprit might hide behind it, a disadvantage which the open wooden railing would not have.

3. I do not think the objections of these Gentlemen have much weight; but it is important to observe, that the Traffic Manager gives his opinion, concurred in, it is presumed, by the Agent, that the best means of protection consists in having the line well watched. This is exactly what the Government have several times insisted upon; and if the Agent had adopted and acted upon this opinion at an earlier period, it is probable that much correspondence would have been saved, and some of these occurrences prevented.

4. It must be added, that in most cases the mischief has been attempted near villages, at one time two villages—Manoor and Moshoor—were remarkable for these attempts.

5. The Acting Chief Engineer fears that constructing a fence in one place may become an inconvenient precedent, and there can be no doubt, I think, but that if the Railway authorities cannot, by their own vigilance, prevent these attempts at mischief and secure the safety of the public, Government will call upon them, at any cost, to fence the line in such a manner as shall render access to it difficult and hazardous, if not impossible.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 18th March 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 157.

Extract from the Minutes of Consultation, dated 27th March 1857.

Read the following observations of the Consulting Engineer on letters from the Agent and Manager of the Railway Company.

(Here enter 18th March 1857, No. 94.)

The Government will not under the circumstances press for the present for the construction of walls or railings on the side of the Railway near villages where the line has been obstructed—but they require the line to be well watched by the Railway officials throughout, and especially at those places where the attempts have been frequent; should such attempts continue, it will however be the duty of Government to insist upon the adoption of effectual means of prevention no matter at what cost.

2. It is remarked that in a late letter the Head Assistant to the Collector of North Arcot reported that the fencing on parts of the lines was insufficient to prevent cattle straying on it. This should be immediately rectified.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

MADRAS, 28TH MARCH 1857.

No. 323.

TO MAJOR T. A. JENKINS,

SIR,

Agent and Manager of the Madras Railway Company.

Having laid before Government your letters Nos. 65 and 196, dated 26th January, and 4th March 1857, respectively, I am directed to inform you, that the Government will not, under the circumstances, press for the construction of walls or railings on the side of the Railway near villages where the line has been obstructed, but they require the line to be well watched by the Railway Officials throughout, and especially at those places where the attempts have been frequent. Should such attempts continue, it will, however, be the duty of Government to insist upon the adoption of effectual means of prevention, no matter at what cost.

2. I am also directed to request your early attention to the remark made by the Head Assistant Collector regarding the fences on your line, which was communicated to you in a letter from this Office, No. 269, dated the 18th instant.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 112.

Extract from the Minutes of Consultation dated 5th March 1857.

Read the following letter.

No. 12.

TO T. PYCROFT, Esq.,
Chief Secretary to Government Fort St. George.

SIR,

I have the honor to submit for the information of Government, copies of a

Letter from the Head Assistant Magistrate dated 13th Feby. 1857 No. 16 enclosing copy of a letter from B. McMaster Esq., Railway Engineer dated 10th idem.
Letter to Head Assistant Magistrate dated 17th February 1857.

correspondence relative to another recent case of placing stones on the railroad.

2. I have directed Mr. Pochin, my Head Assistant, to endeavour by a local investigation to discover the offenders, but I would beg to submit whether it does not argue neglect on the part of the watchers employed by the railroad officials, that such undetected attempts should be so frequent, more vigilance on their part would secure at least the apprehension of one offender to be dealt with as a warning to others.

3. I would beg to call the attention of Government to Mr. Pochin's remarks on the inadequacy of the railroad fence.

I have, &c.,

(Signed) C. WHITTINGHAM,
Magistrate.

North Arcot, Magte's Office on Circuit,
Trivettoor, 17th February 1857.

No. 16.

TO CHARLES WHITTINGHAM, Esq.,
Magistrate of North Arcot, Teroovattoor.

SIR,

The enclosed is a letter that I have received from Mr. McMaster the Engineer (No. 82, dated February 10th, 1857) and with reference to its contents I would wish to know what you think I should do on the subject.

I consider that it is merely the duty of the Magistrate to take notice of a specific charge when made against any particular party or parties, and that it is not their duty to go and watch the whole of the line of the Railway to see that such cases as those complained against do not take place, when a case of stones being placed on the rails exists, on any of the lines of Railroad in England, a complaint is not made to the Magistrate of the county in which it may have occurred, but the officials of the line are more on the alert, and on a person being detected, a complaint is then made. This I consider is the plan that should be adopted by the Railway authorities in this country. As to the straying of the cattle on the line, also referred to in the enclosed letter, I would merely remark, that if the fences on either side of the line were such

as they ought to be, no cattle could stray. The present fence is nothing but very slight bamboos attached to upright posts, and quite inadequate for what they are really intended. If proper post and rails were allowed complaints of this character would seldom if ever exist.

If you would kindly offer me any remarks or opinion on the matter I should feel obliged.

I have, &c.,

(Signed) C. N. POCHIN,

Head Assist. Magistrate.

North Arcot, Head Asst. Magte's Office, }
Ranipett, 13th February 1857.

No. 82.

To C. N. POCHIN, Esq.,
Head Assistant Collector, Arcot.

SIR,

I have the honor to inform you that another stone has been placed upon the rail on the 49th mile, on the 6th instant. This place is in the vicinity of the villages of Avadum, Assimatoor, and Pertnay, the latter being nearest to the line. The stone was knocked off the rails by the life guard of the engine of the 3.30 P. M. passenger train west. I regret to say that I can give you no further information at all calculated to lead to the detection of the offenders.

My Inspector Mr. Forshaw, gives a very bad account of the trouble caused by the villagers in the neighbourhood referred to above; he has constantly caught cattle trespassing on the line, which have been sent to the Thasildar; stones have very frequently been put on the rails at this place, and on one occasion just before the opening of the line an inverted chair was put on the rail, fortunately in this case the driver saw it in time to stop.

These repeated attempts have made it a most dangerous neighbourhood, and to this I beg to call your attention.

Madras Railway, Madras Division, }
Resident Engineer's Office, }
Madras, 10th February 1857.

I have, &c.,

(Signed) B. McMASTER.

(True copy.)

(Signed) C. N. POCHIN,

Head Assistant Magistrate.

(True copies.)

(Signed) C. WHITTINGHAM,

Magistrate.

No. 65.

To C. N. POCHIN, Esq.,
Head Assistant Magistrate of North Arcot.

SIR,

I have the honor to acknowledge the receipt of your letter of the 13th instant, enclosing a letter you have received from Mr. McMaster the Railway Engineer, bringing to your notice that another stone had on the 6th instant been placed upon the rail at the 49th mile.

2. Although, as you have observed, it is not the duty of the Magistrate to watch the whole line of rail, yet it is clearly his duty, when so grave an offence as putting stones on the rail has been committed, and been brought to his notice, to use his utmost exertions to discover the offenders; and as I am of opinion that these exertions are more likely to be crowned with success if an investigation is held on the spot, I have the honor to request that you will be so good as to proceed to the villages in question as early as possible, and hold your Office in their neighbourhood, during the enquiry into the matter.

3. At the desire of Government, I have recently summoned and personally warned the Heads of villages lying along the rail, that unless they can prevent such attempts or detect the parties by whom they are made, they will be removed from their offices, and their places filled by more efficient men. I have now directed the suspension of the Heads of the villages of Avadum, Assimatoor, and Pertnay, and it will depend upon the degree of assistance they afford you in your investigation, whether the suspension shall be followed up by dismissal.

North Arcot, Magistrate's }
Circuit Office, }
Trivetoor, 17th February 1857.

I have, &c.,

(Signed) C. WHITTINGHAM,

Magistrate.

(True copy.)

(Signed) C. WHITTINGHAM,

Magistrate.

ORDER—The Government regret to learn that another instance has occurred of a stone being placed on the Railway, viz., on the 6th ultimo at the 49th mile from Madras.

2. They cannot by any means admit the view which appears to be held by the Head Assistant Mr. Pochin, that his duty is confined to trying, as Magistrate, any parties who may be brought before him charged with such offences. It should be pointed out to that Gentleman that it is clearly his duty if not as Magistrate, yet as being in charge of the Police, to take every means in his power to prevent such outrages or to detect their perpetrators, when they do occur. The Government approve of the Magistrate having ordered his Head Assistant to proceed to the spot and make personal inquiry. It would seem from the account of the Resident Engineer that stones have been very frequently put upon the rails at this place. It will be proper therefore to station a Tannah or picquet of Peons under an intelligent Duffadar in one of the neighbouring villages to repress such attempts. If that fail, it may be necessary to cause the Head Assistant Magistrate himself to hold his Cutcherry there for some considerable time.

These remarks and correspondence will be communicated to the Consulting Engineer for intimation to the Railway Authorities, who should be informed that the Government look to them also to use due precaution for guarding the line—more especially, in localities where, as shewn by their own Resident Engineer, such acts have been of frequent occurrence. Mr. Pochin's remarks on the insufficiency of the fencing on this part of the line should likewise be brought to their notice. It is observed that the Consulting Engineer suggested the construction of a fence-wall along the line of rails in the vicinity of Native villages where obstructions had been attempted, but it does not appear what attention his views have met with from the Railway Authorities.

(True Extract and copies.)

T. PYCROFT,

Chief Secretary.

MADRAS, 18TH MARCH 1857.

No. 269.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

The Government regret to learn from a correspondence between the Head Assistant Collector of North Arcot, and Mr. McMaster, the Resident Engineer of the Railway, which has been laid before them by the Collector of that District, that another instance has occurred of a stone having been placed on the Railway, viz., on the 6th ultimo, at the 49th mile from Madras.

2. Government have caused it to be pointed out to the Assistant Magistrate that, as being in charge of the Police, it is clearly his duty to take every means in his power to prevent such outrages, or to detect their perpetrators when they do occur.

3. As it would seem from Mr. McMaster's letter, that stones have been very frequently put upon the rails at the same place, Government have ordered that a Tannah or picquet of peons, under an intelligent Duffadar, be stationed in one of the neighbouring villages to repress such attempts.

4. I am at the same time instructed to inform you that the Government look to the Railway Authorities to use due precaution for guarding the line—more especially in localities where, as shown by their own Resident Engineer, such acts have been of frequent occurrence. I am also directed, with reference to Mr. McMaster's remarks, and the trespassing of cattle, to draw your attention to Mr. Pochin's statement, regarding the insufficiency of the fencing.

5. Copy of the correspondence referred to above, is forwarded for your information.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

No. 265. MADRAS, 17TH MARCH 1857.

To MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway Company.

SIR,
I have the honor, by order, to request your attention to para. 3, of my letter No. 19, dated 6th January 1857, and that you will be good enough to furnish with as little further delay as possible the detailed report therein called for, on the arrangements now made by you, and the number of men employed for watching the line, &c.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

No. 338. MADRAS, 17TH APRIL 1857.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,
With reference to para. 3 of your letter, No. 19, dated the 6th of January, and your letter No. 265, dated the 17th of March, I have the honor to inform you that a watch is established along the Line by a man having the examination of each mile of the Line. On the arrival of a Train, should all be right within his range and the road clear, he shows a white flag.

(Signed) T. A. JENKINS,
Agent and Manager.

Submitted for the information of Government, with reference to Extract Minutes of Consultation, No. 479, dated 30th December 1856, para. 4.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.
Madras, 18th April 1857.

REPORT ON SLEEPERS RENEWED ON THE PORTION OF LINE OPENED TO TRAFFIC IN JULY 1856.

MADRAS, 5TH JANUARY 1857.

No. 9.

To MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

SIR,
I have the honor, under the orders of Government, to request you will forward at your earliest convenience a report showing the number and as far as it can be ascertained with certainty, the description of sleepers that have been removed from that portion of the line now open to Traffic, between the 1st of July and 31st of December last. It is requested that the report may be full and complete that the causes of removal may be mentioned, whether decay, destruction from insects, or fracture as well as description of ballast on those portions of the line, where the number of sleepers lost by decay, may have been remarkable.

I have, &c.,
T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 27TH MARCH 1857.

No. 269.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,
With reference to Extract from Minutes of Consultation, No. 333, dated the 7th of October 1856, and your letters No. 9 and 160, dated the 5th of January and 10th of February, I have the honor to annex a copy of a letter* from the Acting Chief Engineer with enclosures from the Resident Engineer in charge of the Permanent way together with a statement showing the number of Sleepers which have been taken out and replaced upon that portion of the line opened for Traffic, between the 1st of July and the 31st of December 1856, as therein called for, by which you will doubtless observe that few of the sleepers of sanctioned woods are found decayed.

I have &c.,
T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government:
T. T. PEARS,
Consulting Engineer for Railways.

Madras, 4th April 1857.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 21ST MARCH 1857.

No. 57.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,
In reply to your letter No. 20, dated January the 6th, I have the honor to forward to you for the information of Government, a statement showing the number and description of sleepers

removed from that portion of the line opened for public traffic, considerable delay was incurred in arriving at an accurate list of the class of sleepers removed owing to the brands being obliterated and no two ordinary carpenters agreeing as to the name of the same wood. It appears that the greater number of decayed sleepers removed were unsanctioned woods and of the sanctioned woods only a small portion were decayed of those examined, the cause of their being such a number unsanctioned sleepers was owing at first to the ignorance of the only persons the Engineers could procure to name the woods, and the likelihood of their being tampered with by the contractor. It was not possible to have all the sleepers examined at the time the report was called for as the greater number of them were removed off the line.

I have, &c.,

(Signed) ALEXANDER BEATTIE.

Acting Chief Engineer.

MADRAS RAILWAY, MADRAS DIVISION,
RESIDENT ENGINEER'S OFFICE,
ARCOT, MARCH 19TH 1857.

To ALEXANDER BEATTIE, Esq.,

Acting Chief Engineer.

SIR,

I have the honor to forward a statement of the Sleepers taken out of the road on this division, for the half year ending 13th December 1856.

2. You will observe that out of 1507 Sleepers the number actually removed I have been able to get the names of only 487. I have already mentioned to you the very great difficulty that I have in getting anything like an accurate account of the descriptions of Sleepers removed, owing to the fact that no two of the ordinary village carpenters will give me the same name for a sleeper, and I have not therefore been able to have the Sleepers examined as they were taken out of the road. It was not until the end of the year that I was able to avail myself of the services of a carpenter who seemed to know more about the woods than the generality, and of course by that time the greater number of the removed sleepers, were not to be found; but I hope the number given in this statement will answer the purpose for which it is required.

3. Of the 487 Sleepers examined as many as 458 are reported as being of unauthorized woods. This is of course owing to the ignorance of the only persons the Engineer's could procure to name the woods, or possibly to their being bought over by the contractors. To my personal knowledge the sleeper contractors tried every expedient to pass bad woods upon us, and I have myself when in charge of District 3 been more than once deceived by Sleepers which were brought to me carefully sawn, of the exact dimensions and of great weight, and apparent hardness. The carpenter I employed for the purpose gave them names which were authorized and I passed them. These I afterwards found were of thaine wood and had for a long time been steeped in the water to make them heavy and solid looking; after a short exposure in the road they dried and began almost immediately to decay, and in removing any that are found now they are for the most part dug out with a mamoty being so soft.

4. From the number of these woods in the 1st and 2nd Districts, I have no doubt that the Engineers of these Districts were taken in in the same way, that I know myself to have been.

5. Of the authorized woods removed, there are only 29 out of 487, and of these 29 only, 2 were rotten, the remainder being split.

6. With only these to guide us, it is impossible to say what effect the different kinds of ballast have on the sleepers, but from the greater cleanness of the decomposed granite, it does not hold water like the laterite, and I believe that the sleepers will in consequence be found to last longer in the granite than in the laterite ballast.

I have &c.,

(Signed) BRYCE McMASTER,

Resident Engineer.

(True copy.)

(Signed) ALEX. BEATTIE.

Acting Chief Engineer.

MADRAS RAILWAY, MADRAS DIVISION.

Number and Description of Sleepers, taken out and replaced from 1st July to 31st December 1856.

Name of Wood.	Number.		Total No. examined.	Total No. taken out.	Remarks.
	Rotten.	Split.			
District No. 1.					
Thanie	182	...	278	450	Ballast all laterite.
Otheyen.....	71	...			
Goompany.....	14	...			
Kurkuttah.....	...	7			
Cadookey.....	...	3			
Dud Eloopay.....	...	1			
	267	11			
District No. 2.					
Thanie.....	51	1	161	917	Ballast the first half is laterite and the rest whinstone and decomposed granite.
Otheyen.....	94	...			
Goompany.....	1	1			
Kurkuttah.....	1	5			
Dud Eloopay.....	...	6			
Saul.....	...	1			
	147	14			
District No. 3.					
Thanie.....	15	2	48	140	Ballast is all granite.
Otheyen.....	25	...			
Goompany.....	1	...			
Cadookey.....	...	1			
Dud Eloopay.....	...	3			
Saul.....	1	...			
	42	6			
			487	1,507	

Abstract of Sleepers examined

Thanie	251
Otheyen	190
Goompany	17
Kurkuttah	13
Cadookey	4
Dud Eloopay	10
Saul	2
	478

(Signed) B. McMASTER,

Resident Engineer.

Resident Engineer's Office,
Arcot, March 19th 1857.

(True copy.)

(Signed) ALEXANDER BEATTIE,

Acting Chief Engineer.

(True copies.)

T. A. JENKINS,

Agent and Manager.

No. 127.

On a letter from the Agent and Manager of the Madras Railway Company, No. 269, dated 27th March 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

With this letter the Agent forwards a report from Mr. McMaster, the Resident Engineer, in charge of the open portion of the line between Madras and Arcot, on the sleepers removed as unsound, during the 6 months ending 31st December 1856.

2. The total number taken out was 1507 giving an average of about 23 to a mile.

3. Mr. McMaster's report is straight forward and satisfactory. He states fairly the difficulty under which the Engineers labour, in passing judgment upon the woods offered for acceptance by contractors.

4. The attention of the Agent has frequently been drawn to this subject, and a correspondence in 1854 shows, that the Chief Engineer, Mr. Bruce, then resolved to mark every sleeper with a specific number on the heart of the wood, so as to be able to recognize the name. I doubt if this was done however, except by Mr. Sullivan, who thus branded every sleeper furnished by him.

5. I believe the Resident Engineer on District No. 4 has lately adopted this precaution with all sleepers supplied by contract.

6. I would recommend that the Agents attention be again called to this important point: and that it be suggested to him, that much assistance and instruction would be conveyed to the several Engineers employed on his line, if reports such as this, of Mr. McMaster's, were printed and circulated among them.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 4th April 1857.

FINANCIAL (RAILWAY) DEPARTMENT.
No. 196.

Extract from the Minutes of Consultation, under date the 16th April 1857.

Read the following letter from the Consulting Engineer for Railways.

Observations on Agent's letter, No. 269, dated 27th March 1857, forwarding a Report from Mr. McMaster, the Resident Engineer, on Sleepers removed as unsound during the 6 months ending 31st December 1856. (Here enter 4th April 1857, No. 127.)

The Government desire that the attention of the Railway Agent be again called to the subject of marking all sleepers, supplied by Contract, so as to be able to recognize the names of the wood, and that it be suggested to him, that it would be useful to the Engineers employed on the line, if Mr. McMaster's and other similar reports were printed and circulated among them.

(True Extract.)

(Signed) T. PYCROFT,

Chief Secretary.

MADRAS, 21ST APRIL 1857.

No. 407.

TO MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letter, No. 269, dated the 27th March, I have the honor, by order of Government, to call your attention again to the subject of marking all Sleepers so as to be able to recognize the names of the wood which, it is observed, Mr. McMaster was unable in many cases to do, for the want of some such mark.

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2. In a correspondence which took place in 1854, Mr. Bruce your Chief Engineer then resolved to mark every Sleeper with a specific number on the heart of the wood, so as to be able to recognize the name, this however appears not to have been strictly carried out.

3. I am further directed to suggest to you that it would be useful to the Engineers employed on the line, if Mr. McMaster's, and other similar reports were printed and circulated among them.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

SLEEPERS.

MADRAS RAILWAY,
MADRAS, 3RD JANUARY 1857.

No. 7.

TO LIEUTENANT COLONEL T. T. PEARS, C B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 457, dated the 20th September, I have the honor to annex a statement of Forest trees procurable in the vicinity of Palghaut, recommended by the Acting Chief Engineer as suitable for use as Sleepers upon this Railway.

2. I submitted the list to Dr. Cleghorn who has been so obliging as to favor me with his opinion, which I annex, and request that you will have the goodness to move the Government to sanction these timbers being added to the list of authorized woods for sleepers.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

List of woods found in the Palghaut and Coimbatore jungles (not specified in the specification) recommended as suitable for Railway chairs.

Auglie Marum.
Chdar Kullee Marum.
Curroopuddy Marum.
Currengally Marum.
Kurrather Marum.
Nat Vadom Cutty Marum.
Vadencoarine Marum.
Currentumby Marum.

(Signed) D. PARKER,

Resident Engineer.

Madras Railway,
Chief Engineer's Office,
24th November 1856.

(Signed) ALEXANDER BEATTIE,

Acting Chief Engineer.

MADRAS, 30TH DECEMBER 1856.

No. 3.

TO MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

195, 24th December 1856. I have the honor to acknowledge the receipt of your letter No. and date as per margin, and in accordance with your request I have the pleasure to annex a Memo-

randum of the Botanical names of five of the Eight woods in question, with some remarks upon their qualities and uses so far as known to me.

I have, &c.,

(Signed) H. CLEGHORN, M. D.,

Note upon Forest trees, procurable from the Forest in the vicinity of Palghaut.

Auglie Marum.	A large Tree used in Travancore for making canoes, &c., the Trunk being hollowed out. Confined to the western coast. This wood has always been much esteemed and there is reason to believe that it would be suitable for Railway Sleepers.
Artocarpus hirsuta.	A large Tree, tolerably abundant, Timber durable and strong. Yet light and easy worked.
Chdar kulle Marum.	This is already I believe authorized to be used for Railway Sleepers.
Sosquida felerifuge.	A rather large size tree and abundant, wood very hard, heavy and durable (a one inch bar sustains a weight of 500 lbs.) used for Posts and rice pestles, but the wood is not generally to be obtained in the market of any size. The Natives regard it as a very durable wood for posts in house buildings.
* Curroopuddy Marum.	A beautiful tree which attains a large size in Malabar where the wood is much esteemed.
Currengally Marum.	A large Tree wood brownish yellow, rather close grained employed for culvert making, takes a good polish in turning.
Acacia Sundra.	
* Kurrathee Marum.	
Nat Vadam Cottay Marum.	
Termuillia cattapa.	
Vadencoarine Marum.	
Bignonia Xylocarpa.	
* Currentumby Marum.	

In the absence of specimens I cannot give names to the remaining three marked with an asterisk, but I consider the five above noticed may be added to the list of woods authorized to be used as Railway Sleepers.

I have &c.,

(Signed) H. CLEGHORN.

(True copies.)

T. A. JENKINS,

Agent and Manager.

MADRAS, 5TH JANUARY 1858.

No. 10.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

I have the honor, by order of Government, to acknowledge the receipt of your letter No. 7, of the 3rd instant, and to convey to you their sanction to the admission of the following five into the list of woods authorized to be used as Sleepers, viz.

Auglie Marum.
Chdar Kulle Marum.
Currengally do.
Nat vadam cottay do.
Vadencoarine do.

You are requested to submit further report upon the remaining three woods mentioned in your letter of the 3rd instant, of which it seems specimens have not been sent, and also to forward to this office samples of each of these 8 discription of woods.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 12TH MARCH 1857.

No. 231.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to annex a copy of a letter which I have received from the Acting Chief Engineer No. 188, dated the 6th instant in which he brings to my notice the fact that but few sleepers are being delivered on Districts along the line, except in the Collectorate of Malabar, and suggesting measures being taken to ensure a sufficient supply of sleepers.

2. I have the honor to state that in looking over the list of contracts which have been entered into with the sanction of the Government, it will be seen that although agreements have been made for large supplies, yet few sleepers have been received.

3. The Acting Chief Engineer attributes the want of energy on the part of contractors, to the fact that under the present system of payments the inducements are not sufficiently great, and from the want of capital to carry out their contracts. I may add that in some cases parties whose tenders had been accepted have refused to sign agreements, stating that they were willing to sell sleepers for payment on delivery, but that they would not bind themselves by entering into formal contracts.

4. I very much regret to have to state that our endeavours to ensure a full supply of sleepers have not met with that success which I had hoped for, and I now feel convinced that it will be for the interests of the Company that the rules in respect to the provision and payment of sleepers be relaxed.

5. I beg to recommend that Government may be pleased to authorize my calling for tenders for sleepers, by advertisement in the public papers and by notices in Districts; that the sleepers on being delivered and certified by the Engineer to be in every respect in accordance with the contract, shall at once be paid for.

6. I would also beg to recommend that the Chief Engineer be authorized to purchase sleepers that may be offered for sale to Engineers in Districts, a certain maximum price being determined upon for each District.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 6TH MARCH 1857.

No. 188.

DEAR SIR,

1. Yours No. 164, of 3rd instant, intimating that certain sleeper statements on District 7, had not been received by you, I have to inform you, that these sleeper statements referred to, were sent you along with other letters on the 26th ultimo, and ought to have been in your office 4 or 5 days previous to the date of your letter.

2. Yours No. 832, dated 29th October last I return in answer, copy of a letter from Mr. Parker dated 16th instant, I would particularly call your attention to the last para. of this letter.

3. Yours No. 17, of 30th January 1857, after carefully going over the statement of sleepers contracted for and delivered, you lately sent me at my request, I think the 4 Tenders referred to ought to be accepted, notwithstanding our having already three times the number of sleepers already contracted for that we require on District 17.

4. I was well aware before assuming charge of this office, that sleepers for various Districts were coming in very slowly, but knowing that we could receive English sleepers I did not conceive that our sleeper contracts in this country were of so very much importance as I have since seen them to be.

5. On January 12th 1857, I applied to you for the price of the English sleepers delivered

at Madras, and in reply I on the 13th January received in answer that they cost Rupees 4-2 which was very much greater than I had anticipated.

6. Immediately on receiving intimation of the price above referred to, I could see that we ought to take every means in our power to procure sleepers in this country rather than look to home, so on the 19th January and 20th February I applied for a statement of the contracts you had entered into, which I received on the 21st February 1857.

7. From this statement it would appear at first sight that the Tenders received on account of all the Districts with the exception of Nos. 8, 10, 11, 12, and 13, were pretty satisfactory but after deducting the contracts already expired and those not likely to be fulfilled, you will see that it is not so.

8. I send you an abstract statement showing the tenders wanted, and the sleepers still wanted, so that you may make up a statement showing the amount of sleepers we are likely to receive during the next 18 months or two years.

9. I have no means before me of ascertaining the likelihood of sleepers being delivered in time on District 4.

10. As far as I have information there may not be much trouble in getting a sufficiency of sleepers on Districts 14, 15, 16, and 17, but I would particularly call your attention to the wants of District 5 to 13, inclusive, so that in the event of your contractors not being able to supply the whole in time, you may indent on England.

11. It is almost presumption in my again calling your attention to the mode in practice with reference to sleeper contracts, but the matter is of such vital importance that I think it necessary to do so, English sleepers delivered on Districts 6, 7, 8, 9, 10 and 11 would cost somewhere about Rs. 5 to 6, whereas the price of country sleepers is as near as may be half this sum.

12. At present the mode of paying for sleepers is for the Assistant Engineer of the District to examine and pass the sleepers, and to send to this office a statement of those passed, this statement is checked in this office and forwarded to, and afterwards I believe checked by you, and again checked and sanctioned by Government, then the sanction is communicated to you who if there is an Agent of the contractors in Madras pays him then for the sleepers, when the contractors' agent applies for an Accountant General's Bill which he on receipt forwards to the contractors in the jungles.

13. All these checks, counter checks, and time in remittance cause a delay of about two months beyond the time that the Assistant Engineer could have paid the contractor if he had been authorized to do so, and in consequence as it has been represented to me by contractors this time wasted, obliging them to bring a much greater amount of capital forward than otherwise would be required.

14. Now I would again ask you what is the use of these checks and counter checks? I can see none whatever. If the District Engineer passes the sleepers as being correct in number and size all the checks by me, by you, or the Government are useless, if it should so happen that the sleepers stated to have been received are in excess of the proper number, or that the size and quantity are deficient our checks are equally useless.

15. The checks upon any fraudulent transactions can only be of use by being exercised on the spot.

16. Both my time and that of my subordinates are more than fully occupied, and under ordinary circumstances I should be rather inclined to object rather than offer to take more duties on our shoulders, but as I feel that everything that we possibly can do ought to be done to lessen the supply required from England.

17. I would therefore again recommend that measures be taken to enable the Engineers to pay for contract sleepers immediately as they are delivered in the same way as they pay for other timber or Railway works, and that a maximum price be fixed for each District and Engineers be empowered to purchase all good and sufficient sleepers which may be offered from others, as well as contractors, at a cost not exceeding the fixed price, but less if they can.

Yours faithfully,
(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

MADRAS RAILWAY.

Statement of Sleepers required, and remaining to be supplied, &c., for the District 5 to 17.

Districts.	Total required.	Total tendered.	Total delivered.	Tenders wanted.	Total sleepers wanted.
5	50,000	35,000	1,500	15,000	48,500
6	50,000	60,000	500	.....	49,500
7	50,000	60,000	955	.....	49,045
8	50,000	12,000	.....	38,000	50,000
9	50,000	33,000	.....	17,000	50,000
10	50,000	.....	.....	50,000	50,000
11	50,000	.....	.....	50,000	50,000 *
12	50,000	.....	.....	50,000	50,000
13	50,000	4,000	.....	46,000	50,000
14	50,000	19,000	5,696	30,780	44,304
15	50,000	15,000	.....	35,000	50,000
16	50,000	30,030	11,249	20,000	38,751
17	50,000	1,58,000	14,152	.....	35,848
	6,50,000	4,26,220	34,052	3,51,780	6,15,948

(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

Madras Railway Company,
Chief Engineer's Office,
Madras, 6th March 1857.

(True copies)
T. A. JENKINS,
Agent and Manager.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE,

No. 259.

To MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

SIR,

I have the honor, by order, to acknowledge the receipt of your letter No. 231, of the 12th instant, representing the difficulty you experience in obtaining a supply of sleepers, and requesting authority to call for tenders; and I am directed to inform you, that Government approve of your doing so.

2. Before passing orders on the other point noticed in your letter, Government would wish to be informed when you last advertised for tenders, in what languages and districts the advertisements were published, and what tenders were received in consequence.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 16th March 1857.

(A true copy.)
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 24TH MARCH 1857.

No. 258.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

1. With reference to your letter, No. 259, dated the 16th of March, I have the honor to state for the information of the Government, that I made our requirements for sleepers known by advertisements in the public prints and through Engineers in districts and at Beypore, as communicated to you in my letter No. 520, dated the 4th August 1856.

2. The advertising, I regret to state, led to no results, as for several months no tenders were received, but subsequently, by other means, parties were induced to come forward and tender. The Statement which I beg to annex will show the tenders which have received the sanction of the Government since that date, and the number of sleepers which have been delivered by each party up to the present time.

3. I beg to reiterate my request that the Government may be pleased to allow the Chief Engineer to make arrangements for the payment of sleepers on approval, the Engineer transmitting the usual Statement for submission for the sanction of the Government as heretofore, and that in advertising, this arrangement be stated as a condition, otherwise I fear we shall not be more successful now than on the previous occasion of our calling for tenders.

I have, &c.,

T. A. JENKINS, Agent and Manager.

Statement of Tenders for sleepers received and sanctioned since advertising in October 1855.

Date of sanction.	Name of party tendering.	Number of sleepers	Where deliverable.	Number delivered.
1856.				
March. 4th	M. G. Parthasarathy.....	30,000	District.	None.
" 20th	Veeral Naicken.....	3,000	6	1,950
May... 14th	Iyaloo Naidoo and Marooty Row.....	220	13	220
June... 5th	Rama Chetty.....	20,000	Vydeanada-coopum.	None.
" 25th	Gopaula Kistnaina Naidoo.....	30,000	7	2,635
" "	Edujee Cursetjee.....	45,000		4,916
" "	J. H. D'Arango.....	36,000		1,500
July... 18th	Burjorjee Framjee.....	6,000	17	1,708
" 19th	C. Chatooney.....	6,000		5,071
" 28th	V. Veerasawmy Moodelly.....	10,000		None.
Augt... 4th	Nagatha Poker.....	15,000	17	None.
" "	G. Soobram Sastry and P. Ram Row.....	15,000	15	None.
Sept... 2nd	P. Royaloo Chetty.....	30,000	8	None.
Octr... 7th	Palanyappa Chetty.....	3,000	13	None.
" 10th	Messrs Andrew and Co.....	15,000	17	2,051
" 20th	Vencatarungapah Naick and Bangariah Naick.....	5,000	5	None.
" 22nd	Shemgoo Nayer and Gopaula Nayer.....	10,000	14	None.
" "	Cullaady Bappoo.....	5,000	14	1,130
Novr... 11th	Custoor Chund Roop Chund.....	10,000	17	1,354
" 13th	Veerasawmy Naidoo.....	6,000	8	1,594
" "	T. Soobiah.....	6,000	8	None.
" 14th	Abdul Guffur.....	20,000	6	None.
" "	Iyaloo Naidoo and Cokyana Modelly.....	10,000	13	None.
Decr... 22nd	Singee Nunnee Chetty.....	30,000	9	None.
" 23rd	Messrs. Andrew and Co.....	10,000	17	None.
1857.				
Feby... 27th	Jamanumputty Shunmanah Boidoo and others.....	5,000	7	None.
March. 5th	Neringeulal Lalah and Depukroy Lalah.....	20,000	6	None.
" "	Karoonagna Menon.....	20,000	17	None.
" "	Ryree Coorooop.....	6,000	17	None.
" 6th	Annamally Moodelly.....	10,000	10	None.

MADRAS, 24th MARCH 1857.

T. A. JENKINS, Agent and Manager.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 396.

TO MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor, by order, to acknowledge the receipt of your letters Nos. 231 and 258, of the 12th and 24th March 1857, and to make the following observations upon the subject thereof viz. the arrangements proposed by you for expediting the supply of sleepers.

2. With this view, you proposed 1st; that contractors should be paid on the sleepers being passed without reference to yourself and to this office, and 2nd, that the Chief Engineer be authorized to purchase sleepers offered for sale to Engineers in Districts, a certain maximum price being determined upon for each District.

3. Your reason in favor of the first of these subjections is, that under the present system of payments the inducements are not sufficiently great, that the contractors demur at the time they have to wait for their money. Your Chief Engineer states that two months sometimes elapse between the delivery of the sleepers and the payment for them.

4. Upon this point I am to observe that since the practice of which you complain has obtained for 4 years, it is difficult to understand why now parties continue to tender at all, if the mode of payment is considered by them so objectionable. Your letter shows that tenders were received during 12 months 1856-57 to the extent of 4,00,000 sleepers. Moreover, you are requested to observe, that delay of two months in payment appears so wholly unjustifiable, that Government can never accept it for withdrawing the exercise of their control over the expenditure in this important department.

5. The delay at present due to the exercise of this control rarely exceeds 48 hours, while the post from end to end on your line is now about 5 days; and even this will be shortened as your line advances.

6. Moreover, it appears to the Government, that the attempts to establish the system of supply by tenders has never been fully or properly carried out. That it is most desirable to introduce this system is admitted by all. For the lines undertaken, or about to be undertaken by your Company, the cost of sleepers will not fall short of 30 lacs of Rupees. It is worth some expenditure of care, attention, and money to establish a sound healthy system of supply in such a department as this. It has been repeatedly pointed out to you that the best mode of doing this, is by introducing in all its integrity the system of contract upon sealed tenders.

7. It is understood that the practice has not been rigidly followed by you, but that tenders have been constantly received after the day fixed for opening the same according to your own advertisement.

8. The object of the advertisement, if that object be to stimulate an active competition, is thus wholly defeated; a door is at once opened for the system of intrigue and collusion, too congenial to the present tastes and habits of the people of this country.

9. It may be considered certain that very few natives will tender to the day fixed, so long as they can indulge the hope of hearing what others have offered on that day, and of making their own tenders afterwards.

10. The result of the attempt to introduce the contract system, at first, it is believed, carried out strictly, was as follows:—

From 1853 to the 14th of June 1854 tenders were accepted for 1,80,000 sleepers; on that date sanction was given for the purchase of sleepers by Engineers.

11. Up to the end of 1855 tenders were accepted to the extent of 1,72,360.

12. The permission to purchase sleepers direct, was cancelled, at your request, in August 1857, but on agreements made by the Engineers, sleepers were occasionally received thus until February 1857.

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MADRAS RAILWAY,
MADRAS, 2ND APRIL 1857.

No. 290.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to annex a copy of a letter from the Acting Chief Engineer No. 264, dated the 31st of March forwarding copy of a letter from Mr. Ross, the Engineer of District 13, and beg to recommend that the Engineer be authorized in communication with the Superintendent of the Aunamullay forest, to adopt measures for the cutting of such trees as will suit as sleepers, and that Mr. Ross be authorized to make such expenditure as may be necessary for the purpose, keeping a separate account of the same for entry in the sleeper account.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 31ST MARCH 1857.

No. 264.

TO MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway.

DEAR SIR,

I forward copy of a letter from Mr. Ross, having reference to the supply of Sleepers for his District, the mode Mr. Ross proposes to procure sleepers is not one that I would recommend, unless we found that we could not get sufficient sleepers delivered by contract.

2. I should feel obliged if you will let me know whether you think there will be a chance of your not procuring a sufficiency of Sleepers for Districts 11, 12 and 13, and if you expect to have any difficulty, whether your approve of Mr. Ross' mode; on going more fully into the matter we can see that there will be no difficulty in arranging with Captain Hamilton.

Yours faithfully,

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

MADRAS RAILWAY, ENGINEER'S OFFICE,
COIMBATORE, 25TH MARCH 1857.

TO ALEX. BEATTIE, Esq.,

MY DEAR SIR,

I have written to Mr. Parker saying that I experience great difficulty in ordering persons to come forward with tenders for sleepers for this District, and under these circumstances, would beg to propose that I be allowed to make arrangements with Captain Hamilton, Superintendent Aunamally forests, for cutting such trees as are not required by him, but such as would be useful to the Railway Company for Sleepers. Captain Hamilton's Overseer in conjunction with one of the Railway Company's servants would mark such trees as would be useful to us and as Captain Hamilton could allow us to take. Very few of the woods except teak are required by Captain Hamilton, but there are in the Aunamally forests almost all of the woods mentioned in the sleeper specification. If I am allowed to cut timber for sleepers, or other purposes, in the Auna-

13. During 1856, tenders were accepted for 3,58,220 sleepers, and in the first 3 months of the present year, they have been accepted to the extent of 1,33,000.

14. From the 14th of June 1854 to the 11th August 1855, the Engineers purchased only 10,332, and these purchases were confined entirely to the 3 first Districts upon which Mr. McMaster has lately reported, that a great many sleepers of unauthorized woods were received which have quickly failed and been removed.

15. The disposition to tender, which at one time appeared to be on the increase, received a palpable check during the time the Engineers made their own purchases, and, considering the various duties of the Engineers themselves, and the temptation which the system of direct purchase offers to their subordinates, it appears to Government that the two systems cannot exist together; and that no new or sufficient reason has been adduced for a departure from the resolution communicated to you on the 3rd October 1856.

16. You are requested to consider, whether the system of advertizing, of receiving and deciding upon sealed tenders at a fixed day and hour, could not be more frequently adopted, and more strictly acted upon; as far as can be gathered from your letter No. 258, dated 24th March 1857, no advertisements have been issued for sleepers since October 1855.

17. It is not at all necessary that you should accept tenders at Madras only, provided only that the principle is in all cases adhered to, of receiving tenders sealed and determining upon them at a fixed time; advertisements might be issued in each District and opened by your Engineers, or such other Agent as you might appoint.

18. It is only necessary to remark further, with reference to your suggestion that the Chief Engineer should have authority to purchase sleepers offered for sale to the District Engineers.

1st. That as your Chief Engineer is generally at Madras, there would be the same delay, within a few days, in getting his sanction for the payment; as in passing it through the Government Office, and 2ndly that the purchase of sleepers thus offered to Engineers was thus alluded to in your letter. * "I am led to believe that the practice of sleepers being purchased from others than from regular contractors does not work well," and you requested that the authority for doing so might be cancelled.

19. The Government approved of your suggestion and the authority was cancelled accordingly, and it does not appear that any new fact has been adduced in favour of a system thus condemned, upon a review of its results, during a period of more than a year.

20. The Government request therefore, that an earnest endeavour may be made to establish on a permanent basis the system of supply by contract. It will be obvious to you that the mere suggestion that the system should be abandoned is calculated to interfere with the attainment of this most desirable end, nor is it likely ever to be effected but by a strict adherence to the terms of your advertisement, and by a more frequent and liberal expenditure upon the publication thereof.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 17th April 1857.

(True Copy)

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

* Printed Report for 1855, Page 234, No. 384 of 10th August 1855.

mally, I would make arrangements to have a large gang of axe men under a Sub-Inspector and one Conicopillay ready to begin felling timber as soon as the jungle is free from fever.

Your's very truly,

(Signed) A. D. ROSS.

(True Copy.)

(Signed) ALEX. BEATTIE,

Acting Chief Engineer.

(True Copies.)

T. A. JENKINS,

Agent and Manager.

MADRAS, 3RD APRIL 1857.

No. 342.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

I have the honor by order, to acknowledge the receipt of your letter, No. 290, of the 2nd instant, recommending that the Engineer on district 13, be authorized, in communication with the Superintendent of the Aunamally forests, to adopt measures for the cutting of such trees as will suit as Sleepers; making such expenditure as may be necessary for the purpose, and keeping a separate account of the same for entry in the Sleeper account; and I am directed to convey to you the sanction of Government to these arrangements.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

From Major T. A. JENKINS, Agent and Manager; to Lieutenant Colonel T. T. PEARS, c. B., Consulting Engineer for Railways, dated 27th May 1857, No. 450.

SIR,

I have the honor to acquaint you that proceedings at Law have been commenced by Sleeper Contractor Yedulroy Lalah against this Company on account of Sleepers said to have been delivered in District No. 2, in the year 1855. The circumstances of the case appear to be as follows: the Contractor tendered for supply certain Sleepers, receipts for which were given to him by Conicopillay in Tamil in some cases, by Inspectors in English in others, when the Contractor made application to the Engineer Mr. Wilson, for the usual Statement for Sleepers, the Engineer would only admit the claim to the extent of 1156, Statement for which I now beg to send you for sanction. The Contractor declined to receive the same in settlement of his account, stating that he had delivered Sleepers to a much larger extent, and that those Sleepers had been used. In regard to this latter matter it appears probable from the investigation which I have caused to be made in the matter that a large number of rejected Sleepers were used on the Line, but this part of the claim is still pending settlement by our Solicitors.

1. Statement dated 20th May 1856.	232 Sleepers, 1st Class,	Rs. A. P.
1 do. do. 924	at Rupees 3-4-0 each	754 0 0
	do. do. at do.	3,003 0 0
	Total 1,156	Rupees 3,757 0 0

(Signed) T. A. JENKINS,

Agent and Manager.

Submitted and recommended for the sanction of Government.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

MADRAS, 3RD JUNE 1857.

Statement showing the number and description of Sleepers received on account of the Railway Company.

Description of Sleepers.		Number.	Total.	Where delivered.	Remarks.
Class.	Wood.				
1st	Cadookoy.....	85	224	47th Mile.	Receipt granted in Yedulroy Lallah's name.
1st	Eloopay.....	100			
1st	Myladee.....	15			
1st	Paulay.....	24			
1st	Eloopay.....	130	700	Arconum.	Receipt granted by Inspector James in name of Yedulroy Lallah and Sing Lutchman Chetty, dated 28th June 1855.
1st	Maroothy.....	50			
1st	Cadookoy.....	120			
1st	Velvangay.....	260			
1st	Paulay.....	60			
1st	Toombee.....	80			
Total.....			924		at Rs. 3-4-0 each Rs. 3,003 0 0
Previously supplied...			12,152		
Total.....			13,083		

(Signed) BRYCE McMASTER,

Resident Engineer.

(„) ROBERT PATON,

For Acting Chief Engineer.

Madras Railway,
Resident Engineer's Office,
Arcot, 20th May 1857.

(True Copy.)

(Signed) T. A. JENKINS,

Agent and Manager.

Statement showing the number and description of Sleepers received on account of the Railway Company.

Description of Sleepers.		Number.	Total.	Where delivered.	Remarks.
Class.	Wood.				
1st	Chella Woonjay.....	22	232	24th Mile.	Receipt given in Yedulroy Lallah's name.
1st	Combadarie.....	16			
1st	Eloopay.....	108			
1st	Cadookoy.....	86			
Total.....			232		at Rupees 3-4-0 each Rupees 754-0-0
Previously supplied...			11,927		
Total.....			12,159		

(Signed) BRYCE McMASTER,

Resident Engineer.

(„) ROBERT PATON,

For Acting Chief Engineer.

Madras Railway,
Resident Engineer's Office,
Arcot, 20th May 1857.

(True Copy.)

(Signed) T. A. JENKINS,

Agent and Manager.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 295.

Extract from the Minutes of Consultation, under date the 6th June 1857.

Read the following observations by the Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company, dated 3rd June 1857, No. 203.

The Agent applies for sanction to the payment of Rupees 3,757 to a Contractor for sleepers delivered in 1855 on District 2. It seems that the Contractor, in question, delivered a certain number of Sleepers in fulfilment of a Contract, and obtained receipts from subordinate servants of the Company; but that the District Engineer consented to pass only 1,156 out of the whole. This, at the time, the Contractor refused. The usual Statements of the quality of the Sleepers, &c. were not sent in; and nevertheless it seems the Sleepers were used.

2. The Agent wishes to pay for this number, and alludes to others, among those rejected by Mr. Wilson, which have been improperly used on the Line also, and the Contractor's claim for which is still pending.

3. Every effort has been made to establish a regular system in the supply of this important and expensive material. The Statement and Certificate of the Engineer was the authority for the Agent to pay, and bring the Sleepers as Articles of Store on his return. Until this was done the Sleepers should not have been touched by the Engineer.

4. It seems the man holds receipts from certain servants of the Company; and, I presume therefore, the Government will sanction the payment proposed.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Government sanction the payment of Rupees (3,757) three thousand seven hundred and fifty-seven for these 1,156 Sleepers which have been used for the Railway, but disapprove the want of a proper system shown on the occasion by the Railway Officers.

(True Extract and Copy.)

E. MALTBY,

Acting Chief Secretary.

Communicated to the Agent and Manager in letter, No. 536, dated 12th June 1857.

No. 632.

MADRAS RAILWAY.-

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,
1. With reference to my letter No. 450 dated the 27th May last, I have the honor to acquaint you that the Solicitors of this Company have compromised with Yedulroy Lalah for the sum of Rupees (4,500) four thousand five hundred in payment in full of his claim against this Company for sleepers delivered in District II in 1855.

2. In your letter No. 536, dated the 12th of June, you conveyed to me the authority of the Government for the payment of Rupees 3,757 for 1,156 sleepers. I have the honor to request that the Government may be pleased to sanction the further payment of the sum of Rupees (743) seven hundred and forty three on account of about 747 sleepers which it appears on strict enquiry and investigation were rejected but in the hurry of constructing the line were used by the Engineering Department.

3. Under the peculiar circumstances of the case, I have not been able to forward a state-

ment for the 747 sleepers; I must therefore request that it may be dispensed with in this case and the amount sanctioned.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 6th August 1857.

Submitted (with observations) for the sanction of Government.

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 12th August 1857.

No. 389.

On a letter from the Agent and Manager of the Madras Railway Company, No. 63 dated 6th August 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The circumstances referred to in this letter were noticed in my Report, No. 20, of the 3rd June, and Government sanctioned in an Extract from Minutes of Consultation, No. 295, dated 6th idem, the payment of Rupees 3,757 to the Contractor.

2. It appears that the Railway Company's Solicitor has recommended that he may be paid Rupees 4,500 in full of all demands; and the Agent now requests authority for the payment of the balance.

3. Under the circumstances of the case, I would recommend that sanction be given to the payment of that amount, Rupees (743) seven hundred and forty three for sleepers delivered and used on District 2.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 12th August 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 410.

Extract from the Minutes of Consultation, dated 18th August 1857.

Read observations by the Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

Stating that the Solicitors of the Railway Company have compromised with Yedul Roy Lallah, for the sum of Rupees 4,500 in payment in full of his claims against the Railway Company for Sleepers delivered in District 2, and requests the sanction of Government for the disbursement of the same.

(Here enter 12th August 1857, No. 289.)

The Government authorise the payment to the Contractor Yedul Roy Lallah of the balance Rupees (743) seven hundred and forty-three on account of Sleepers delivered and used in District No. II.

(True Extract.)

(Signed) E. MALTBY,

Acting Chief Secretary.

Communicated to the Agent and Manager in letter No. 763, dated 24th August 1857.

No. 652.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

I have the honor, by order, to request you will forward, for the information of Government, a list of the tenders received for the supply of sleepers with reference to your late advertisement.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

From Major T. A. JENKINS, Agent and Manager; to Lieutenant Colonel T. T. PEARS, c. B., Consulting Engineer for Railways, dated 20th July 1857, No. 576.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 652, dated the 15th July, and annex a list of the tenders received by me for the supply of Sleepers, with reference to the late advertisement in the public papers. You will observe that two of the four tenders have been sanctioned, the terms as set forth in the advertisement not having been complied with.

(Signed) T. A. JENKINS,

Agent and Manager.

Name of the parties.	Number of Sleepers.	Where deliverable.	Price per Sleeper.	Remarks.
Ramasawmy Chetty and Ragooloo Iyer of Salem.....	30,000	District 9	2 12 0	Sanctioned.
Narrainasawmy Chetty of Salem.....	15,000	"	3 0 0	No deposit received.
Soobiah Chetty of Maddoor.....	15,000	"	2 6 0	No deposit received.
Andy Vencatachella Chetty of Salem.....	20,000	" 10	2 10 0	Sanctioned.

(Signed) T. A. JENKINS,

Agent and Manager.

From Major T. A. JENKINS, Agent and Manager; to Lieutenant Colonel T. T. PEARS, c. B., Consulting Engineer for Railways, dated 26th July 1857, No. 594.

SIR,

With reference to your letter, No. 671, dated the 23rd of July, I have the honor to acquaint you that only four tenders were received by me for the supply of Sleepers in accordance with the terms of my advertisement; the other tenders submitted for sanction were obtained by Engineers and forwarded to this office by the Chief Engineer.

2. In respect to the tender dated 4th of July, I beg to state that the first tender submitted by Andy Vencatachella Chetty was dated in June for the supply of a very large amount of Sleepers, more than it was considered desirable should be contracted for by that party; the number was therefore reduced by the party tendering, and on a revised tender being prepared, it was dated the 4th of July.

(Signed) T. A. JENKINS,

Agent and Manager.

From Major T. A. JENKINS, Agent and Manager; to Lieutenant Colonel T. T. PEARS, c. B., Consulting Engineer for Railways, dated 27th July 1857, No. 596.

SIR,

I have the honor to forward a Tender from Pennadem Venkutrama Chetty and Moothoo Mannaroosawmy Chetty for the supply in District No. 11 of 45,000 Sleepers at Rupees 3 each, and request that you will have the goodness to obtain the sanction of Government for the acceptance of the same.

(Signed) T. A. JENKINS,

Agent and Manager.

Observation by the Consulting Engineer on letter from the Agent and Manager of the Madras Railway Company, dated 29th July 1857, No. 278.

The Agent submits and recommends for sanction a tender, from certain parties inhabitants of Salem, of 45,000 Sleepers, at Rupees 3 each to be delivered in District XI, which District begins at about 35 miles west of Salem.

2. The tender has been made under the following circumstances.

3. The Agent was urged again in reply to a proposition that the Engineers should purchase

Sleepers, to persevere in calling for tenders by public advertisement. He was requested to consider "whether the system of advertising, of receiving and deciding upon sealed tenders at a fixed day and hour could not be more frequently adopted and more

"strictly acted upon." It appeared that no advertisement had been issued since October 1855.

4. Acting upon this, apparently, the Agent advertised in certain public prints in May last, stating what number of Sleepers were required, and that the tenders were to be opened and examined on the 1st July.

5. Since the publication of this advertisement 10 tenders have been received at this office and have been sanctioned, the date of two of these being, however, prior to that of the advertisement: of the remaining eight, two only, it is stated by the Agent, were received in connection with the advertisement, and one of those is found dated the 4th July, though the Tenders were to be opened on the 1st. The circumstance is rendered still more remarkable by the explanation given of it, in para: 2 of the Agent's letter, No. 594, dated the 24th July.

6. Among the tenders accepted and passed in this office, under the supposition that it was one received in due form and opened on the 1st of July, was one for 5,000 Sleepers at Rupees 3, deliverable on District XI. It has since been ascertained that this had nothing to do with the advertisement, and is what may be called a private tender.

7. Others come forward now having had opportunity of seeing the result of the advertisement, and offer 45,000 Sleepers, 22,500 of the 1st class, and the same number of the 3rd, at 3 Rupees each. The price is high, but not more than I should have recommended for sanction, had the offer been made by sealed tender; for, I believe, that a rigid adherence to that system, and liberal acceptance of the most favorable tender, would tend to stimulate increased and extended competition.

8. Should the Government, however, not consider it desirable to insist on the Agent's carrying out strictly and perseveringly the sealed tender system, I must recommend this tender for sanction, as far as the 1st class Sleeper is concerned; but I consider the course hitherto followed, in connection with the purchase of sleepers, to have been not judicious, and not calculated to effect either a cheap or a speedy supply. A late correspondence on this subject is appended for the information of Government.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

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ORDER THEREON, No. 456; dated 19th September.1857.

As the Government would not wish to be placed in the position of delaying works on the line, they resolve to authorise the acceptance of the tender* submitted by the Railway Agent for the supply in District No. XI of 45,000 Sleepers at three Rupees each; but advertg to the circumstances under which the tender was made, as brought to notice in the foregoing observations, they desire that it may be pointed out to the Agent that the Government cannot approve of any system being followed except that of sealed tenders, when supplies of materials have to be obtained by contract.

(Signed) E. MALTBY,
Acting Chief Secretary.

Communicated to Agent and Manager in letter No. 831, dated 21st September 1857.

No. 767.

MADRAS, 25TH AUGUST 1857.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

It having been observed that in several Tenders, recently submitted by you, the price fixed for all three classes of Sleepers is alike, I have the honor, by order, to draw your attention to this circumstance specially, and to request you will be good enough to state the grounds upon which you have considered the acceptance of Tenders under this condition advantageous to your Company.

2. The acceptance of Tenders at an average price for all three classes of Sleepers, while you have not the power to enforce the contractor to fulfil his contract, is likely to be attended with some disadvantages: by the contractor taking a deeper interest in the supply of the class which is most remunerative to him, and neglecting, or not delivering at all, the class which is not so, there being no encouragement held out to him to deliver the same.

3. It is, therefore, suggested to you to consider, whether it would not be advisable to discourage this uniform price, and that in order that individuals contracting may be encouraged to fulfil their contracts for all three classes, the price for each class of Sleeper be fixed in relation to its respective qualities.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

No. 696.

MADRAS RAILWAY.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

With reference to your letter No. 767, dated the 25th of August, I have the honor to request that you will have the goodness to return the Tenders for sleepers not yet passed, the acceptance of which you consider objectionable in consequence of a fixed price being named for all the three classes of Sleepers, with a view to revised tenders being called for.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Madras, 2nd September 1857.

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MADRAS RAILWAY.

No. 668.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to forward herewith two Tenders as specified hereunder for the supply of sleepers in Districts Nos. 9 and 10, and request that you will have the goodness to obtain the sanction of Government for the acceptance of the same.

These Tenders though submitted some months back have only just been completed in accordance with requirements.

District 9.

From M. Vasoodava Chetty.

10,000 Sleepers 1st class	} Rupees 2-10-0 each.
10,000 „ 2nd „	
10,000 „ 3rd „	
30,000	

District 10.

From M. Vencatachella Putty Chetty.

10,000 Sleepers 1st class	} Rupees 2-12-0 each.
10,000 „ 2nd „	
10,000 „ 3rd „	
30,000	

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

Madras, 19th August 1857.

MADRAS, 24TH AUGUST 1857.

No. 760.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

Adverting to your letter No. 668 of the 19th instant, I have the honor, by order, to notice that the tender for 30,000 Sleepers from Vencatachellaputhy Chetty at Rs. 2-12-0 per sleeper is the same for all three classes, that the tender is dated 20th May, and submitted by you on the 19th August, while you submitted and received sanction in July last for a tender for the supply of 20,000 sleepers at Rupees 2-10 per sleeper on the same District No. 10.

This latter tender was dated "4th July" and is further more favorable than the former, of an anterior date.

The parties tendering are from the same place—Salem, and their names nearly alike.

Government would wish to be informed of your reasons for accepting the present tender at the increased price of Rupees 2-12-0 per Sleeper, and at the same price for all three classes.

I have &c.,

T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 682.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to acknowledge the receipt of your letter, No. 760, dated the 24th instant, and in reply to state that I am not aware that Vencatachellaputty Chetty is the same person as Audy Vencatachella Chetty; you call for explanation in respect to the tender. The facts of the case I believe, are these: sleepers to a large amount are required by this Company, one tender for 20,000 sleepers at Rupees 2-10 each is accepted, more sleepers are required. A further supply of 30,000 is tendered at Rupees 2-12 each for all three classes; and is recommended by the Chief Engineer for acceptance, in due course it is forwarded for the sanction of the Government. I beg to state that it is not apparent to me that any other steps could have been taken in this matter.

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

No. 306.

On letters from the Agent and Manager, Nos. 668 and 682, dated 19th and 26th August 1857 respectively.

OBSERVATIONS BY THE CONSULTING ENGINEER.

With his letter No. 668, the Agent submits two Tenders for 30,000 sleepers each deliverable on Districts 9 and 10. He was requested to state his reasons for accepting the Tender for District 10, which is dated "20th May," at Rupees 2-12-0, for all three classes of sleepers, viz. 1st, 2nd, and 3rd. His reply is appended.

2. The only objection to the acceptance of these Tenders is, that they are not made by the "Sealed Tender" system, and therefore must be considered as private offers.

3. On the same District (10,) however, a Tender for 20,000 Sleepers was sanctioned in the usual course by this office in July last, at Rupees 2-10-0, per sleeper for all 3 classes, on the supposition that it was received in reference to an advertisement* of the Agent and Manager inviting Tenders, which were to be opened on the 1st July.

* Dated 20th May 1857.

4. I beg to request the orders of Government on this subject.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 27th August 1857.

No. 432.

FINANCIAL (RAILWAY) DEPARTMENT.

Extract from the Minutes of Consultation, under date the 3rd September 1857.

Read observations by the Consulting Engineer for Railways, on a letter from the Agent and Manager of the Madras Railway Company.

Forwarding two tenders from M. Vasoodava Chetty, and M. Vencatachellaputty Chetty, for the supply of 30,000 sleepers each on Districts 9 and 10 at Rupees 2-10-0 and 2-12-0 each and requesting sanction for the acceptance of the same. (Here enter 28th August 1857, No. 306.)

The Government authorize the acceptance of the two Tenders referred to for the supply of 30,000 sleepers, each deliverable on Districts Nos. IX and X, at the rates specified in the Railway

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Agent's letter of the 19th ultimo, No. 668, but observe that they wish such offers to be received by free competition secured by sealed tenders.

(True Extract.)

(Signed) E. MALTBY,

Acting Chief Secretary.

Communicated to the Agent and Manager in letters No. 810, dated 9th September 1857.

MADRAS RAILWAY.

No. 710.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to forward a Tender from Teveraud Davey for the supply in District No. 16 of 35,000 sleepers of the 1st class at Rupees 2-14-0 each, and request that you will have the goodness to obtain the sanction of Government for the acceptance of the same.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Madras, 5th September 1857.

MADRAS RAILWAY,
MADRAS, 8TH SEPTEMBER 1857.

No. 809.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

In acknowledging the receipt of your letter No. 710, of the 5th instant, I have the honor, by order, to observe, that the tender for the supply of 35,000 Sleepers in District XVI, at the rate of Rupees 2-14 per Sleeper appears, with reference to the rates at which Sleepers are being supplied in the two neighbouring Districts* (15 and 17) to be very high. The facilities which exist in those Districts for the transport of Sleepers, exist also in District 16, and there is no apparent reason for accepting a Tender at so high a rate.

2. It is possible that these facts may have escaped your attention when handing up the Tender for the sanction of Government, I am, therefore, to request you will consider whether it would, or would not, be advisable to reject this Tender, and continue to invite Tenders under the sealed Tender system, according to which system it is evident the tender in question has not been made.

I have &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

SLEEPERS FROM MOULMEIN.

ORDNANCE DEPARTMENT.

No. 3,232.

To THE CONSULTING ENGINEER FOR RAILWAYS.

SIR,

I beg to enclose copy of a letter from the Deputy Commissary of Ordnance Moulmein sending 44 sleepers for examination, and which I beg to hand over to you for that purpose.

2. The Principal Commissary of Ordnance will transfer them on your request.

Inspector General's Office,
Fort St. George,
22nd August 1857.

I have, &c.,

G. BALFOUR, LIEUTENANT COLONEL,
Inspector General of Ordnance and Magazines.

No. 280.

To LIEUTENANT COLONEL G. BALFOUR,

*Artillery Stipendiary Member of the Military Board,
Madras.*

SIR,

I have the honor to inform you of my having despatched, to the address of the Principal Commissary of Ordnance on the 6th instant per Native Brig "Mhuddut Merolah," 44 Railway sleepers, concerning which, I have already written to you in a private form.

2. I shall be obliged by your requesting the Railway authorities to repay to me the amount expended as per bill enclosed.

3. The very high rate of Tonnage charged, even by this Native craft, and the great difficulty with which the shipment could be arranged even at that rate are evidently the consequences of the smallness of the scale on which the experiment has been made: so that, should the Railway Authorities choose to accept Mr. Buchanan's terms, they might arrange in Madras with the owner of a ship for safe, yet cheap transport of the timber which they might order.

I have, &c.,

(Signed) E. W. DANCE, LIEUTENANT,
Depty. Commissary of Ordnance, T. P.

Artesian,
Moulmein, 20th April 1857.

(True Copy)

G. BALFOUR, LIEUTENANT COLONEL,
Inspector General of Ordnance and Magazines.

No. 181.

MADRAS, 19TH SEPTEMBER 1857.

To COLONEL G. BALFOUR, C. B.,

Inspector General of Ordnance and Magazines.

SIR,

As the 44 Sleepers adverted to in your letter No. 3232 of the 22nd ultimo appear on examination to be of a description of wood unknown in this part of the country and as there is no information obtainable from Lieutenant Dance's letter,* forwarded by you, either on this subject, or the terms on which such Sleepers may in future be supplied, I have the honor to request that you will give me all the information in your power on these points, and also acquaint me by whose order the Sleepers in question have been furnished in the present instance.

* Copy.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

No. 4510.

To THE CONSULTING ENGINEER FOR RAILWAYS.

SIR,

With reference to your letter No. 181, dated 19th September 1857, requesting information regarding the 44 Railway Sleepers forwarded by Lieutenant Dance from Moulmein, I have the honor to state that the sleepers are made of various woods growing in the Burmese Territories and, on referring to the report on Burmese woods furnished by Lieutenant Dance, I observe four descriptions of Timber recommended for Railway sleepers from which those under reference have probably been selected.

2. The names of these woods are given in the margin—they vary in girth from 4 to 5 cubits and in length from 25 to 40 feet, and are found in great abundance in the provinces of Amherst, Tavoy, Mergui and Tenasserim. They are all considered, and have proved to be thoroughly good and valuable woods, strength, hardness and durability being their distinguishing properties on which account they are recommended for handles of hammers, chisels, and other tools, and for machinery where great strength is required. The wood No. 1 petrifies when long exposed to the action of water:—No. II is the "Lignum vitæ" of Pegu and serves in place of Iron as anchors for Native boats. No. III is considered imperishable as neither heat nor moisture will warp or rot it. No. IV is the "Iron wood" of the country as it resists nails which cannot be driven into it.

3. From these exclusive properties belonging to the woods, it will be acknowledged that they are remarkably suited for Railway sleepers.

4. Lieutenant Dance who has devoted much of his time and attention to the various Timber products of Burmah and to the investigation of their qualities, and uses, has forwarded the Railway sleepers for the purpose of experiment, with a view of rendering available the local resources of the country, and such an attempt to serve the public interests deserves our best support.

5. The charges attending the transmission of these sleepers are represented in the accompanying bill and if, on examination of them, you are of opinion that they will serve for Railway purposes, perhaps you will recommend the bill to be passed by Government on the Railway account; but should you decide otherwise I request an early communication of your views, in order that Lieutenant Dance may be re-imbursed without delay.

I have, &c.,

G. BALFOUR, LIEUTENANT COLONEL,
Inspector General of Ordnance and Magazines.

Inspector General's Office,
Fort Saint George,
2nd October 1857.

MADRAS, 5TH OCTOBER 1857.

No. 857.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

In forwarding for your perusal the accompanying original correspondence,* to be obligingly returned, regarding some sleepers sent over from Moulmein by Lieut. Dance of the Madras Artillery, I have the honor to suggest to you the advisability of taking the same, and testing them on your line of Railway.

2. The report on them given by the Inspector General of Ordnance and Magazines, is you will observe most favourable, and should the timber on trial, prove to be of the superior quality,

* Letter from the Inspector General of Ordnance, No. 3232, dated 22nd August with 1 Enclosure.
Do. do, No. 4510, dated 2nd October 1857 with do.

represented, it might be advantageous to arrange for procuring a considerable quantity of it, provided the charge is moderate; a point which will of course be ascertained from Lieut. Dance.

3. In the event of your accepting the 44 sleepers in question, I have to request that the amount expended in their transport to Madras be paid to the Inspector General of Ordnance and Magazines.

I have, &c.,

(Signed) C. C. JOHNSON, Captain.

Offg. Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 780.

To CAPTAIN C. C. JOHNSON,

Officiating Consulting Engineer for Railways.

SIR,

* 3 Original Enclosures herewith returned.

I have the honor to acknowledge the receipt of your letter* No. 857, dated the 5th instant and enclose a cheque for the amount of expenditure incurred by the Commissary of Ordnance at Moulmein on account of the Timber sent over by him for Sleepers, Rupees 122. I beg to state on the logs being examined, the different woods could not be distinguished, as no numbers could be found upon them, by which they are adverted to in the letter from the Inspector General of Ordnance. Some other means will therefore have to be adopted for distinguishing them, and I shall feel much obliged if any assistance can be afforded in the matter.

2. I also beg that Lieutenant Dance may be requested to furnish a probable estimate of the cost of delivery at Madras of logs measuring 10" x 12' x 6'—say for 10,000 logs.

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

Madras, 16th October 1857.

MADRAS, 20TH OCTOBER 1857.

No. 215.

To THE INSPECTOR GENERAL OF ORDNANCE AND MAGAZINES.

SIR,

With reference to your letter No. 4510, of 2nd instant, I have the honor to forward for your information a copy of one* from the Agent and Manager of the Railway Company, and to request you will be so good as to furnish me with any information you may possess that will enable the Railway Authorities to distinguish the different qualities of the woods, of which the sleepers received from Moulmein have been prepared.

2. I shall also feel obliged by your obtaining from the Commissary of Ordnance at Moulmein, the estimate referred to in para: 2 of the Agent's letter; but with regard to the dimensions of the logs required there is obviously some clerical error. They are stated to be.

Inches.	feet.	feet.
10	+ 12	+ 6

whereas they should be.

feet.	inches.	inches.
10	x 12	+ 6

and the estimate should be framed accordingly.

3. I have not been informed whether the Sleepers have been transferred by the Principal Commissary of Ordnance to the Agent and Manager or not, but if they have not, I request you will obligingly issue the necessary instructions for their being so.

* No. 1857, dated 12th October 1857.

4. Adverting to para: 4 of your letter under reply, I enclose a cheque* on the Madras Bank in your favor for Rs. 122 together with a receipt for the amount, which latter you will be pleased to sign and return to this office.

(Signed) C. C. JOHNSON,

Officiating Consulting Engineer for Railways.

ACCOUNT DEPARTMENT.

No. 5,357.

To THE OFFICIATING CONSULTING ENGINEER FOR RAILWAYS.

SIR,

I have the honor to acknowledge your letter No. 215 of 20th instant, with a cheque on the Madras Bank for Rupees (122) one hundred and twenty-two, in payment of expences incurred by the Deputy Commissary of Ordnance Moulmein for the transmission of specimens of Timber deemed suitable for Railway purposes.

2. The printed voucher for such payment is herewith forwarded receipted.

3. I have written to inform Lieutenant Dance of your wishes and shall duly communicate further.

4. The Principal Commissary of Ordnance was, on the 7th instant, desired to make over the specimens of timber to the Agent in whose possession I believe they now are.

Inspector General's Office,
Fort St. George,
23rd October 1857.

I have, &c.,

G. BALFOUR, LIEUT. COL.,

Inspector General of Ordnance and Magazines.

MADRAS, 24TH OCTOBER 1857.

No. 218.

To THE INSPECTOR GENERAL OF ORDNANCE AND MAGAZINES,

Fort Saint George.

SIR,

Adverting to your letter No. 5357 of yesterday's date, I have the honor to inform you that the printed voucher alluded to in para: 2 has not been received with the letter.

2. I beg also to inform you, that I have not been favored with the information sought in the first para: of my letter No. 215, dated the 20th instant, to which yours adverted to in the preceeding para: is a reply.

I have, &c.,

(Signed) C. C. JOHNSON, CAPTAIN,

Officiating Consulting Engineer for Railways.

ACCOUNT DEPARTMENT.

No. 5,543.

To THE OFFICIATING CONSULTING ENGINEER FOR RAILWAYS.

SIR,

With reference to your letter No. 218, of 24th instant, I have the honor to intimate that I have written to Lieutenant Dance for the information you require, as it is not in my power to afford it at present in more detail than already given.

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2. All available information has been placed at your disposal per my letter No. 4,510 of 2nd instant.

Inspector General's Office,
Fort Saint George,
28th October 1857.

I have &c.,
G. BALFOUR, LIEUTENANT COLONEL,
Inspector General of Ordnance and Magazines.

MADRAS, 29TH OCTOBER 1857.

No. 933.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

With reference to your letter No. 710, of the 16th instant, I have the honor to inform you that the Inspector General of Ordnance and Magazines has applied to the Commissary of Ordnance at Moulmein for the particulars requested in paras. 1 and 2 of your letter, and which on receipt shall be duly communicated to you.

2. The printed receipt for the sum of Rs. 122, being the amount expended in the transmission of the sleepers from Moulmein, is returned signed by the Inspector General of Ordnance and Magazines.

I have, &c.,

(Signed) C. C. JOHNSTON,
Offg. Consulting Engineer for Railways.

ORDNANCE DEPARTMENT.

No. 7443.

To THE CONSULTING ENGINEER,

Madras Railway.

SIR,

With reference to my letter No. 5,543, dated 28th October 1857. I have the honor to enclose Extracts from a report from Captain Dance respecting wood for Railway sleepers.

Inspector General's Office,
Fort St. George, 17th December 1857.

I have, &c.,
E. T. FASKEN, CAPTAIN,
For Inspector Genl. of Ord. and Magazines.

Extracts from a Report from Captain Dance respecting wood for Railway Sleepers.

With reference to the question of supplying railway sleepers from Burmah, I have found that, though some of the woods recommended in my report are abundant in the Forests they are yet so little known as to be procurable but with difficulty, but that of "Annan" "Pyengkhadoe" and "Peddowk", three kinds as good as any for the purpose, merchants in Moulmein are ready to undertake contracts and to give adequate security for their fulfilment. One in particular Mr. G. Buchanan the managing head of a firm at Mopoon an active, steady man of business and perfectly solvent, is the man whom, from ten years knowledge of him, I should be inclined to select, as contractor for the Railway; Mr. Buchanan did undertake, he tells me years since, to supply the Calcutta Railway with sleepers, but as on experiment he cut down and reduced a number of logs of "Annan" "Pyengkhadoe" "Pedowk" and "Peemah" for despatch to Calcutta. At this juncture the Forest department here interfered, and by an injunction he was forbidden to cut such wood again; so that the embryo project was of course dropped. Now

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letter from the Military Board or from the Railway Authorities to the Commissioner here requesting leave for their contractor's people to cut other wood than teak, but not teak itself, would be surely complied with; for Government neither uses nor plants, nor takes any account of any but teak wood in the nurseries.

Mr. Buchanan was therefore assured by me, that such interference as that by which his former project was stopped should not be repeated in a second case; and on this assurance only, he is quite willing to contract for any number of sleepers. Mr. Buchanan says that the exact amount for which he would tender he cannot decidedly fix until he shall have had time to communicate with the Forests; but meanwhile estimates the rate at from Rupees 2½ to Rupees 3 including duty, boat hire, shipping and all except the actual freight to Madras, when I receive his final estimate I will communicate it to you; but I think Rupees 2½ about what it will be.

For economical arrangements as to freight from Burmah, the Railway Authorities should, I fancy, settle at Madras where the ship owners generally are, and where mercantile competition is great; by doing which, and forming definite contracts, under sufficient penalties well secured with Mr. Buchanan, the business of obtaining such timber as is required would be rendered easy and simple enough.

(True Extract.)

E. T. FASKEN CAPTAIN,
for Inspector General of Ordnance and Magazines.

MADRAS, 18TH DECEMBER 1857.

No. 1103.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

In advertence to my letter No. 933, of the 29th October last, I have the honor to forward for your information a copy of the Extracts from a Report from Captain Dance, respecting wood for Railway sleepers, received this day from the Inspector General of Ordnance and Magazines.

I have &c.,

(Signed) C. C. JOHNSTON, CAPTAIN,
Offg. Consulting Engineer for Railways.

WEIGHT OF ROLLING STOCK.

RAILWAY DEPARTMENT.

No. 19.

To THE AGENT AND MANAGER OF THE MADRAS RAILWAY COMPANY.

SIR,

With reference to your letter, No. 17, of the 5th instant, and to the Report from your Traffic Manager which accompanied it, may I request to be favored with replies to the following enquiries, at your earliest convenience.

1st. What are the several descriptions of Passengers and Goods vehicles, which it is proposed to use on your Railway.

2dly. What is to be the extent of accommodation in each description of Carriage.

3dly. What will be the weight, as near as you can at present estimate it, of each description of carriage empty.

4thly. At what speed do the excursion trains, mentioned in the 6th para. of Mr. Fletcher's Report commonly travel.

5thly. By what means do you propose, in levying the charge upon "Goods," to ascertain the nature of the commodities in question.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 12th January 1856.

(A true Copy.)

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY COMPANY,
AGENT AND MANAGER'S OFFICE.

No. 64.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer.

SIR,

With reference to your letter No. 19, dated the 12th instant, I have the honor in reply to your questions, to state, that there are sixteen descriptions of Passenger and goods vehicles which it is proposed to use upon this Railway, as shown in the annexed copy of a letter from the Locomotive Superintendent; the accommodation which each Passenger carriage affords and the estimated weight of empty carriages is also given therein.

2. The speed at which the excursion Trains mentioned in the 6th paragraph of Mr. Fletcher's Report travel, is stated by the Traffic Manager (a copy of whose letter is annexed) to be about 25 miles the hour.

3. In respect to the means proposed for laying the charge upon goods to ascertain the nature of the commodities, I beg to state that the consignor has, in accordance with paras: 13 and 14 of the Act relating to Railways, No. XVIII of 1854, to furnish a written statement showing the quantity and description of the goods sent, in default of which the goods are charged at 1st class rates.

I have, &c.,
(Signed) T. A. JENKINS,
Agent and Manager.

Madras, 28th January 1856.

MADRAS RAILWAY, LOCOMOTIVE DEPARTMENT.
25TH JANUARY 1856.

No. 4.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

In reply to your letter No. 5 of 19th instant, I have the honor to inform you.

1st That there are 16 descriptions of Passengers and Goods vehicles, viz. 6 Passengers and 10 goods.

1st class carriages.

2nd class carriages.

3rd class carriages.

Carriage trucks.

Horse box.

Guards break van.

Goods vehicles.

Covered goods wagons.

Open sided goods wagons.

Open goods wagons.

Platform wagons.

Hopper coal wagons.

Coke wagons.

Cattle wagons.

Sheep wagons.

Timber trucks.

Goods break wagons.

2nd. The 1st class carriages hold 24 Passengers.

The Saloon, 1st class 22 Passengers.

The composite Coupe's 8 first class and 20 second class Passengers.

The composite Saloons 11 first class and 20 second class Passengers.

The 2nd class English carriage holds 35 Passengers.

The 3rd class English carriage holds 40 Passengers.

The 2nd class carriages built here hold 40 Passengers.

The 3rd class carriages built here hold 56 Passengers.

3rd. I estimate the weights of the carriages empty to be about as follows.

1st class 8 Tons.

2nd ,, 7 10 ,,

3rd ,, 6 10 ,,

Guards Van 7 0 ,,

I have, &c.,

(Signed) W. B. WRIGHT,
Locomotive Superintendent.

MADRAS RAILWAY,

TRAFFIC DEPARTMENT, 12TH JANUARY 1856.

No. 39.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

Referring to the letter of the Consulting Engineer No. 19, dated 12th instant, I beg to inform you, in reply to para: 4 that the speed of excursion Trains in England and Ireland alluded to in 6th para: of my Report, is the usual speed at which ordinary first and second Class Trains are run, viz. about 25 miles per hour including stoppages.

In reply to para: 5, it is usual to charge the highest rate for all undeclared goods, which has the effect of insuring the required declaration, but in this country sections 13 and 14 of the Act relating to Railways, No. 18, 12th August 1854, render it compulsory upon owner or person having the care of any Goods, to deliver to any servant of the Company, an exact account in writing signed by him of the number or quantity and description of such goods under a fine not exceeding Rupees fifty, &c.

I have, &c.,

(Signed) H. A. FLETCHER,
Traffic Manager.

(True Copies.)

(Signed) T. A. JENKINS,
Agent and Manager.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 171.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letter, No. 64, of the 28th January last, and its enclosures, I have
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the honor, under the orders of Government, to request you will obtain a report from the Superintending Engineer in your Locomotive and Carriage Department, as to the probability of any reduction in the weight of your carrying stock being found practicable.

2. You are aware, that my attention has been for a long time directed to the great amount of dead, or non-paying, weight that is generally to be found in the constitution of Railway trains.

3. From the statement made in Mr. Wright's letter to your address, No. 4, of the 25th January last, this evil would appear to be on the increase.

4. I find by reference to the Guage Commissioner's Report (Parliamentary) that 10 years ago, the weight of carriages on the London and Birmingham line, was as follows :

	Tons.	Cwt.
1st Class.....	4	3
Composite 1st and 2nd.....	4	0
2d Class.....	4	2
3d do.....	3	18
Luggage & parcel vans.....	3	10

5. From Mr. Wright's letter I learn, that he estimated some of your Carriages as follows :

	Tons.	Cwt.
1st Class.....	8	0
2nd do.....	7	10
3rd do.....	6	10
Guards van.....	7	0

The difference of guage is about 10 inches, and the very great difference in weight of stock can hardly be attributable to the increase of guage.

6. It would appear, that since the 1st Class Carriages carry 24 passengers, that, if they were quite full, the movement of each passenger would involve that of $\frac{1}{3}$ of a ton besides, or about five times his own weight.

7. In the 2nd Class, under similar circumstances, about $\frac{1}{3}$ of a ton would go with each passenger; and indeed it seems likely that in every case the amount of dead, or non-paying, weight on your line will be very great.

8. It is desirable that this matter should be considered carefully and dispassionately, every effort should be made to determine, as nearly as possible, the amount of strength which it is necessary to give to the several parts of the carriage, with reference to the work they have to do, the load they have to carry, the speed at which they are to travel, and the shocks to which they are consequently exposed; while the arrangement (with a view to the attainment of that strength) of the several component parts of the carriage in such a manner, as to combine the maximum of strength with a minimum of weight, is a study well deserving the consideration of the Officer at the head of your Locomotive Department.

I have &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 2d April 1856.

(True copy.)

T. T. PEARS,

Consulting Engineer for Railways.

MADRAS RAILWAY, 27TH MAY 1856.

No. 319.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

SIR,

With reference to your letter No. 171, dated 2nd ultimo, I have the honor to annex a copy

of a report from the Locomotive Superintendent upon the strength and weight of Rolling stock of this Company as therein called for.

I have &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

Submitted (with Report) for the orders of Government.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 24th September 1857.

MADRAS RAILWAY,
LOCOMOTIVE DEPARTMENT, 22ND MAY 1856.

No. 141.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

I have the honor to acknowledge the receipt of your letter No. 33, dated 4th April, annexing a copy of a letter from the Consulting Engineer, No. 171 of 2nd April, calling for a report as to the practicability of effecting a reduction in the weight of our Rolling stock.

2. I have delayed my reply thus long for the purpose of preparing myself with information as to the weight of the Ironwork and Timber in the Passenger vehicles referred to by the Consulting Engineer.

3. The result of my calculations estimating the Timber at 1 Ton weight for every 50 cubic feet is as follows.

1st Class Carriage.				Tons.	Cwt.	Qr.	Lbs.
Ironwork (including wheels, springs, axle boxes, &c.).....	3	7	0	0			
Timber.....	5	0	0	0			
Glass and Fittings.....		10	0	0			
Total Weight.....	8	17	0	0			
2nd Class Carriage.							
Ironwork (including wheels, springs, axle boxes, &c.).....	3	7	0	0			
Timber.....	5	0	0	0			
Glass and Fittings.....		3	0	0			
Total Weight.....	8	10	0	0			
3rd Class Carriage.							
Ironwork (including wheels, springs, axle boxes, &c.).....	3	7	0	0			
Timber.....	3	0	0	0			
Canvas and Sundries.....		1	2	0			
Total Weight.....	6	8	2	0			
Guards Van.							
Ironwork (including wheels, springs, axle boxes, &c.).....	3	7	0	0			
Timber.....	3	6	0	0			
Fittings and Glasses.....		2	0	0			
Total Weight.....	6	15	0	0			

4. By my present calculations which are founded upon the actual weights of Ironwork and a careful measurement of the timber composing each vehicle it would appear that the 1st

and 2nd Class carriages each exceed in weight by about one Ton, whilst the 3rd Class and Guards Van are somewhat lighter than the weights given in my previous rough estimate.

5. In para. 3 of the Consulting Engineer's letters he refers to the weight of the stock on the London and Birmingham line 10 years ago by which it appears that the weight of the carriages on that line was at that period only about half that of those on the Madras Railway at the present time.

6. It has however been found in practice of late years necessary to increase greatly the strength of the rolling stock on the various lines in England, and an increase of strength (supposing the original vehicle to have been properly constructed) necessarily involves an increase of weight.

7. The stock made for the London and Birmingham line (now called the North Western) at the present day is much heavier than the weights quoted as the weight of carriages 10 years ago, and the new stock made for the Great Northern, the South Western, the Eastern Counties and the North Eastern (all narrow gauge lines) exceed in weight by about 50 per cent. the weights referred to, by the Consulting Engineer.

8. The difference of gauge does not necessarily involve any material increase of weight although it allows of a greater scope for increasing the size and weight of vehicles if desirable. The axles are of course longer and consequently somewhat stouter and heavier.

9. On the Great Western Railway (7 feet gauge) sixteen years ago the 1st Class six wheeled carriages weighed $6\frac{1}{2}$ Tons, and the 1st class four wheeled carriages 4 Tons 16 Cwt. The six wheeled 2nd Class weighed $5\frac{1}{2}$ Tons and the four wheeled 2nd Class 4 Tons 3 Cwt. These carriages were found to be insufficiently strong and the few that remain in use are run with slow trains only, or on branch lines where the loads are light. The present 1st Class carriages in use weigh 10 Tons, and 2nd Class 9 Tons.

10. The carriages in use on the narrow gauge lines usually hold 3 persons abreast in the 1st Class and 4 persons in the 2nd Class, and the light carriages referred to by the Consulting Engineer would I believe at most hold 18 Passengers in the 1st Class and 24 in the 2nd Class. The carriages now generally made use of referred to above in para. 7 carrying 18 Passengers in the 1st Class and 32 in the 2nd Class and weigh from $5\frac{1}{2}$ to 6 $\frac{1}{2}$ Tons. Our carriages carry 24 1st Class or 40 2nd Class Passengers.

11. The weight of our 1st and 2nd Class carriages is undoubtedly somewhat greater in proportion to the number of Passengers carried than the weight of stock generally in England, but our carriages are much higher and more roomy than is usual at home, and when one takes into consideration the ventilations, extra fittings and the ponderous double roofs involving as they do upright and cover pillars of increased size and strength, all of which are extras, expressly furnished for the comfort and protection of Passengers in this climate you will readily see that such additions must very greatly add to the weight and bulk of our 1st and 2nd Class Carriages, and I do not think we could in any way safely reduce the weight of them if they are to be constructed of the dimensions and on the principles at present established as our standard.

12. There is a question arising out of the great size and height of our carriages which in its effect upon the consumption of fuel is as deserving of attention as the question of weights, I mean the atmospheric resistance to Trains which appears to me to be greater in this country than in England, and I believe that the effect of a side wind would tell greatly upon our double roofed carriages, thus again affording a strong argument in favor of the strength of the vehicles as made at present.

13. It was the practice of the early Engineers in England to begin with light rolling stock of every description both Engines, Carriages and Wagons, and on almost every Line I think it will be found that the weights of all these vehicles have been increased fully 50 per cent.

14. It is moreover considered preferable, I believe by most Engineers to run a Train of large vehicles holding respectively a large number of Passengers, to running a longer Train of smaller vehicles holding in the aggregate the same number of Passengers as the Train of large vehicles. The larger vehicles form a shorter Train from the smaller number of buffer spaces, and the windage between the carriages is less from the fewer intervening spaces.

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15. Our 3rd Class carriages could not be made lighter. The bodies weigh only 2 Tons, the under frame and Iron work weighing about 4 Tons 8 Cwt. The bodies are only about half the weight of the 1st and 2nd Class bodies, the additional weight of the latter vehicles being due mainly to the provisions made for the superior comfort of Passengers by those classes.

16. The Passengers Break Vans will weigh about 6 $\frac{1}{2}$ Tons. The heavier these vehicles are made the more efficient they are in breaking the Trains. It is usual in England to weigh Break Vans generally as is done here in the case of our Goods break Vans by building in heavy cast Iron plates to give increased power to the action of the break.

17. My opinion on the subject of the reductions of the weight of our Rolling stock is that it would be unsafe to lessen the strength and consequently the weight of vehicles of the dimensions and descriptions we are constructing at present.

I have, &c.,

(Signed) W. B. WRIGHT,
Locomotive Superintendent.

(True Copy.)

(Signed) T. A. JENKINS,
Agent and Manager.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 333.

To E. MALTBY, Esq.

Acting Chief Secretary to Government, Fort Saint George.

SIR,

From Cons. Engr. to Agt. No. 19, dated 12th Jan. 1856.
From Agt. to Cons. Engr. No. 64, dated 28th Jan. 1856.
From Cons. Engr. to Agt. No. 171, dated 2nd April 1856.
From Agt. to Cons. Engr. No. 319, dated 27th May 1856.

I have the honor to lay before Government a correspondence which took place, as will be observed a considerable time back, on the subject of the weight of stock, constructed for, and now in use on this line of Railway.

2. I have long been under the impression that the stock was much too heavy. It will be observed, however, that the Locomotive Superintendent has recorded* his opinion in the following words.

" My opinion on the subject of the reduction of the weight of our Rolling stock is, that it would be unsafe to lessen the strength, and consequently the weight of vehicles of the dimensions and description we are constructing at present."

3. I have not lost sight of the subject; but my reason for not before submitting it for the consideration of Government has been, that in the face of such an opinion as the above, recorded by an intelligent and experienced professional man, I wished for time for further deliberation and opportunity of observing the practical working with the present description of stock.

4. I am still of opinion that it is much too heavy; and I am glad to have discovered since I first raised the question, what seems to me to be irresistible support to my views, in the following opinion given by Mr. Whitworth, the well known and highly distinguished Mechanical Engineer.

5. In a letter, dated the 19th January 1856, addressed to Mr. G. Hatfield M. P. this Gentleman writes as follows:—

"With reference to the lightness of engines and carriages, it appears to me that there is an immense amount of unnecessary dead weight conveyed on our Railways; a comparison of the weight of a first class carriage with the actual paying weight of passengers and luggage conveyed will show this at once.

They are generally made heavy enough to carry two or three tons of luggage on the top, whereas from my own observation I should say there was not on an average one-fourth that weight conveyed, and this would be more conveniently and more cheaply carried in a separate and less expensive carriage.

"Protection from the weather is all that is wanted above the seats of the passengers, and light elastic material might be used for this purpose.

"When the upper part of the carriage is made so heavy the under part also has to be made stronger to support it, and the evil is increased.

"The Engineering officers of the Company have I know paid attention to this subject; for at the Exhibition in 1851 a passenger carriage was exhibited which had been built under the superintendence of Mr. M'Connell, but generally speaking the importance of the subject is not sufficiently recognized.

"Mechanically speaking, in making anything which is to be kept in motion, lightness is of the greatest importance, and, as far as circumstances will permit, it ought to be a first consideration.

"Durability should be sought for in the use of strong elastic materials, instead of increasing the size and weight of substance that are not suited to the purpose.

"On Railways where the cost of transit per ton per mile is so often estimated, it does appear singular that the great loss sustained by dragging along such useless dead weight has not received more attention.

"The marine Engineers of this country have latterly shown what can be effected in the saving of weight in the construction of the Marine steam engine, one of whom Mr. Penn has reduced the weight of those he makes to one-fourth of what was the practice a few years ago.

6. And again, in a lecture delivered on the 27th September, Mr. Whitworth thus speaks:—

"Inferior Iron (with the use of other defective and improper materials) is perhaps the main cause of one of the greatest errors committed in the construction of whatever in Mechanism has to be kept in motion. I mean the increase of size, of the parts of a Machine or carriage in order to get strength, thereby adding weight until they are considered to be strong enough. In our vehicles of draught and carriages, this is strikingly the case. Now this ought not to be. Lightness is the thing to aim at, and safety should be sought in the elasticity, form, and good quality of the material. Should a carriage be found to twist and get out of form, that would be a proof of its being too light. But to prevent a carriage breaking down by increasing the size of its parts, and thereby adding weight is Mechanically wrong. Indeed it is quite distressing to see the enormous weight of our carriages particularly those drawn by animal power.

"It should be an axiom in Mechanics that whatever has motion should be as light as circum-

"stances will admit, and this applies equally whatever the source of power may be whether the motion is produced by human, horse, or steam power."

7. It is not necessary that I should add a single word in support of my position. It is well known that the English system of building has been introduced here with a broader gauge, making the carriages heavier in proportion to the load, and we see what Mr. Whitworth thinks of the English system.

8. Mr. Wright says, that on the Great Western Railway (7 feet gauge) the first class 4 wheeled carriage weighed (16 years ago) 4 tons and 16 cwt. (On this Railway with a 5 feet 6 inches gauge they are now estimated to weigh very nearly 9 tons) but that these were found insufficiently strong, and the few that remained were run with slow train only, the very point, for this is one among many advantages of our slow speed, that we require less solidity in the carriages; and there can be no use in our keeping our speed down, if our expenses are to be kept up to high speed standard. The Great Western Railway run their passenger trains frequently 60 miles an hour, and their goods trains at much higher speed than is contemplated here.

9. But it should be noted, that strength is not necessarily gained by addition of material, that on the contrary weight in these moving masses is an element of weakness; and what we want is the utmost skill and science in the disposition of the smallest possible quantity of material, with a view to a certain amount of strength.

10. The strength to resist shocks is required in the frame only, the upper works have only the resistance of the air to contend with, and the lighter they are the less the damage done by their own weight, working as it necessarily does with every jolt and heaving of the carriage. To meet this evil by adding to that weight, is clearly, as Mr. Whitworth expresses it, "Mechanically wrong."

11. The weight of our several vehicles, as estimated by the Locomotive Superintendent, the means of weighing not being yet available, will be found in the Appendix* given in maunds and tons.

12. It will be seen from this, that a "covered goods wagon" is estimated to weigh 218 maunds, or about 8 tons (looking at the recorded weight of the 1st class passenger carriage, it will be probably found to weigh even more than this.) Be that as it may, we shall find by the last half year's working, that the mileage of dead weight performed with the goods trains in the 6 months was 71,729,092 maunds or 2,635,258 tons, while the total mileage of net or paying weight was 32,315,984 maunds or 1,187,258 tons; with the passenger trains, the mileage of non-paying weight was 1,583,869 tons, against 2,05,140 tons of net weight.

13. Our policy here is to carry every body, and everything, as cheap as possible, our speed should be reduced therefore; because in reducing that we reduce our expenditure in every department, and among the rest in the quantity of materials put into our carriages.

14. I trust the Government may consider this point deserving of special reference to the Honorable Court. If the average weight of our goods stock had been during the past half-year half what it was, the dead non-paying weight carried about would have been less to the extent of 1,317,629 tons carried one mile, and if this be the amount of unnecessary expenditure on a very light traffic, it is easy to estimate the importance of this subject to a line in full operation.

15. It would be worth a bonus of ten thousand pounds to any man, such as Mr. Whitworth, who would furnish models of stock of improved construction, having sufficient strength for our purpose, and with half the weight of those now in use.

I have, &c.,

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 24th September 1857.

A.

Statement showing the description and weight of Rolling stock in use on the Madras Railway.

Description of Stock.	Estimated weight in Maunds.	Estimated weight in	
		Tons.	Cwt.
Engine with Tender Passenger.....	1,091	40	...
Tank Engine do.	682	25	...
Engine with Tender Goods.....	1,091	40	...
Tank Engine do.	682	25	...
Do. do.	682	25	...
1st Class Carriage.....	241	8	17
2nd do.	225	8	5
3rd do.	174	6	8
Do. do. built here.....	...	...	...
Passenger break van.....	184	6	15
Open Goods wagon.....	150	5	10
Covered do.	218	8	...
Goods break van.....	272	10	...
Cattle wagon.....	204	7	10
Carriage Truck.....	136	5	...
Coke wagon.....	177	6	10
Coal do.	170	6	5
Horse box.....	231	8	10

Note 82½ lbs. Avoirdupois = 1 Maund
27·219 Maunds = 1 Ton

T. T. PEARS,
Consulting Engineer for Railways.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 496.

Extract from the Minutes of Consultation under date the 16th October 1857.
Read etter from the Consulting Engineer for Railways.

Submits correspondence on the subject of the weight of Stock constructed for and now in use on the Madras Railway. (Here enter 24th September 1857, No. 333.)
Resolved that a copy of the foregoing letter and of the correspondence submitted with it be forwarded to the Honorable the Court of Directors by the next Mail, and that their particular

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attention be drawn to the remarks of Colonel Pears on the weight of Stock constructed for, and now in use on the Madras Railway.

(True Extract.)

E. MALTBY,
Acting Chief Secretary.

REPORTS ON THE HALF YEARLY ACCOUNTS OF REVENUE.

MADRAS RAILWAY,
MADRAS, 31st JANUARY 1857.

No. 90.

To LIEUTENANT COLONEL T. T. PEARS, c. B.,
Consulting Engineer for Railways.

SIR,
With reference to your letter No. 70, dated the 20th instant, I have the honor to forward the half-yearly Revenue Account from 1st July to 31st December 1856.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the orders of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 6th February 1857.

No. 40.

On letter from the Agent and Manager of the Madras Railway Company, No. 90, dated 31st January 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent forwards with this letter the Revenue account for the 6 months ending 31st December last, showing the receipt and expenditure on account of traffic on that portion of the line (65 miles,) which has been during that period open to the public.

2. The gross receipts has been Rupees 1,27,862-9-9, expenditure Rupees 66,057-8-6, leaving a balance to profit of Rupees 61,805.

3. The amount of business done during the period has not been great; exclusive of a very few extra trains on occasions of festivals, one daily passenger train each way, between Madras and Arcot, and one goods train each way every day, except Sundays, have more than sufficed to do the whole work.

4. This is not however from want of work to do, since the traffic on the high western road has continued, during this period at least, as large as ever.

5. The passenger traffic at the rate of about 12,000 of all classes booked monthly appeared soon to find its limit, the goods continued to increase steadily and satisfactorily until the end of October, when, in consequence perhaps of the monsoon, it fell off and has not yet recovered.

6. That the Railway should have failed as yet in drawing from the high road the whole, or even the greater part of the goods traffic, may be attributed in a measure to the following causes.

7. A great portion of that traffic comes from a distance as from Salem, Bangalore, Bellary and Cuddapah. It has been loaded at those places on common carts and consigned to Madras, and the owners of the carts have no instructions, and are little disposed to transfer their loads to the Railway.

8. Again the bandymen are naturally disposed at first to see in the Railway nothing but a formidable competition to employment, and have notoriously made great efforts to keep the carrying business in their own hands. These efforts injurious to themselves, while they last, must we know be vain in the end; but they produce their effect now and are made under more favorable circumstances, while the line open is relatively short, than they will be hereafter.

9. The goods traffic on the Railway, exclusive of Railway materials, is almost all, as might be expected, in one direction eastward. The trains travel in the other direction nearly empty; and it is a remarkable fact that the present rates, by Railway, have not had the effect of bringing the salt on to the line to any great extent.

10. The carts entering Madras with loads from a distance have, as heretofore, the choice between returning empty, or taking salt at a low charge. They prefer the latter, and have been compelled of late to reduce their charges, to prevent the Railway from getting a monopoly of the salt.

11. This competition on the part of the common carts can only continue, so long as a considerable portion of the country produce is brought into Madras by those carts, as this diminishes, which it must do with the extension of the Railway, the salt will also fall into the hands of the latter.

12. Of the expense during the half year, it will be observed that maintenance of way forms no part. This until the expiration of the 1st year goes to Capital. The expenditure in the Traffic Department is relatively high, a circumstance attributable to the fact of the whole of the salaries of the European staff, including that of the Traffic Manager, having been necessarily thrown upon the short line; as the line is extended this portion of the expenditure will become relatively less.

13. Estimating maintenance of way at Rupees 25,000 for the half year, we should have a profit for the same period of about Rupees 37,000; until the cost of rolling stock is ascertained, and the quantity required on an average of a considerable length of the line, it is impossible to say what the capital cost of the line is; making a liberal allowance on this account, and setting the

capital down as Rupees 65,000 per mile, the profits of the first half year would be at the rate of 1.7 per cent per annum.

14. I shall in accordance with the instructions conveyed in Extract from Minutes of Consultation, No. 430, dated 26th November last, submit an analysis of the working expenses, as soon as I can get all the necessary information from the Agent and Manager.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 6th February 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 92.

Extract from the Minutes of Consultation, dated 23rd February 1857.

Read the following letter from the Consulting Engineer for Railways.

Here enter 6th February 1857. No. 40.

Ordered that the Revenue Account of the Madras Railway for the half year ending 31st December 1856, and the Consulting Engineer's report thereon, be transmitted to the Honorable Court for their information and in view to the same being communicated to the Board of Directors.

(True Extract.)

T. PYCROFT,

Chief Secretary.

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Cr.

FITGGERALD CHURCH, *Accountant.*

Cr.

Smbmitted with observations for the orders of Government.
(Signed) T

Consulting Engineer for Railways.

Agent and Manager.

19th August 1857.

On Revenue account for the half year ending 30th June 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

The Agent and Manager forwards the Revenue account for the 6 months ending 30th June 1857, showing the receipts and expenditure on that portion of the line which has been open to the public during that period, viz., 65 miles up to the 7th May, 81 miles from that date to the close of the half year.

2. The gross receipts have been,.....Rs. 1,56,498 11 4
The expenditure....., 76,760 0 9
Leaving a balance to profit of....., 79,738 10 7

3. The increase over the traffic of the previous half year has not been considerable, and is in great measure due to the extension of the line from Arcot to Vellore, which gave, on the 7th May, an increase of 16 miles to the total length in work.

4. The total receipts from coaching were, for the half year ending 31st December 1856.....Rs. 74,298 13 10
For that ending 30th June 1857....., 92,119 15 8

From goods the receipts were for the former period....., 53,563 11 11
For the latter....., 64,378 11 8
Increase....., 10,814 15 9

This increase is, however, due to the extent of Rupees 8,753 0 11, to the Railway material carried during the period in question.

5. It will be seen by the following statement, that the number of passengers carried has diminished in the higher classes, while it shows an increase in the lower:—

Passengers booked during the half year ending.

	31st Decem- ber 1856.	30th June 1857.	Increase.	Decrease.
1st Class.....	871	687	...	184
2nd ".....	3,481	3,112	...	369
3rd ".....	68,936	86,523	17,587	...

6. The above is exclusive of Soldiers, of which the following is a comparative statement for the two periods.

Half year ending.	Booked.	Receipt.
31st December 1856.....	2,787	Rs. 3,335 9 5
30th June 1857.....	6,588	,, 8,539 8 10
Increase.....	3,801	,, 5,203 15 5

7. In my report* for the previous half year, I observed that the passengers traffic appeared soon to find its limit, the goods continuing to increase steadily and satisfactorily until the end of October, when, in consequence perhaps of the monsoon, it fell off and had not yet recovered.

8. The traffic continued to languish during the greater part of the half year, and though the weekly receipts have much improved since the line was opened to Vellore, the amount of goods booked during a week, has never reached that recorded during October of last year. There is at the same time no doubt, that during this period a considerable traffic has been carried on

* B. by the high road, as will be seen by the traffic report* for April last appended, wherein the average number of bandies passing the village of Wochery, 13 miles east of Arcot, was 1596 per diem.

9. I stated in my last report, the several causes to which might be attributed the fact of the Railway not having yet drawn from the high road the whole, or even the greater part, of the Goods traffic, and as the length of line remained the same, or nearly the same, during the half year now under review, the same obviously apply in the present case.

10. The nature and amount of the principal articles conveyed by rail during the half year, as reported by the Railway Authorities, will be found in a statement* appended. From this it will be seen that the salt for inland consumption has been coming on to the rail steadily, though slowly. This is the more important to the

* A. Railway, as being the only commodity that offers, in any considerable quantity, a return freight westward, the general traffic of the country being towards the coast.

11. The Government have it in contemplation to construct, in conjunction with the Railway Company, a branch line from the main line to the salt Cotaurs, and it is generally expected that the business in salt will be greatly increased thereby in the Railway. Such will probably be the result, but it is remarkable that the salt is now sold at a point less than two miles from the Railway Station, and while it is proposed to carry the salt 65 miles to Arcot, or as at present 81 miles to Vellore, the small distance from the salt stores to the Station should not, if the Railway possesses the usual advantages over the common road in point of economical working, be sufficient to give the latter the victory in competition.

12. I believe it to be merely a work of time, and I believe also that the reason of much salt going by common road is to be found in the relative shortness of the line, in consequence of which many hundreds of carts come yet to Madras from great distances from Bellary, Mysore, Bangalore and Salem, &c. and naturally seek, even at very low rates, for a return load from Madras itself to those places.

13. From a statement furnished me by the Collector of Madras it appears, that between the months of October 1856 and July 1857, there was sold at the Cotaurs for conveyance westward.

By high road.....Mds. 3,58,140

By rail....., 52,022

14. The rates charged during the period now under review were as follows:—

	Passengers.	A.	P.
1st class.....	1	6	per mile.
2nd ".....	9		"
3rd ".....	4		"
	Goods.		
1st class.....	1	pie	per maund per mile.
2nd ".....	1	"	"
3rd ".....	1	"	"

with a terminal charge of 8 annas on consignments not exceeding 32 maunds, and 1 anna per maund on all exceeding that quantity.

15. The passenger fares appear to me to be too high for the people of the country. The charge for 1st class goods, which includes most of the more important articles of raw produce, is low enough, as the line extends, to Monopolize all existing traffic; but not materially to affect prices, or to extend the business of the Railway by thus augmenting the demand and the production.

16. The expenditure has, in its relation to the gross receipts, been somewhat less during this than during the preceeding half year, having been 49 per cent on this occasion, against 51.6 on the former. The relative expenditure in the Locomotive Department has increased, that in the Traffic Department has decreased, as might have been expected, up to a certain point, from an increase in the amount of work, much more of the expenditure in the Locomotive Department being directly dependent on the amount of work done than the Traffic.

17. The whole of the expenditure recorded in this statement has been passed from time to time in this Office on periodical bills, with the exception of Rupees 28,577-1 which being the value of Coal, Coke, and other materials, issued from the Railway General Stores, cannot be checked till the periodical accounts of that Department are submitted, the latest yet presented being brought up to 31st December 1855.

18. I trust to be enabled to submit very shortly the usual Analysis of these working expenses for the half year ending 30th June last.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 19th January 1857.

A.

Statement showing the Quantity of the most important Items comprising the Merchandize Traffic for the half year ending 30th June 1857 on the Madras Railway.

Description of Commodity.	Eastward.		Westward.	
	Maunds.	Seers.	Maunds.	Seers.
Betel Nut.....				
Baggage.....	3,946	20		
Beams.....	667	10	45	
Beans.....	164			
Beer.....	300	10	517	
Cotton.....			232	30
Cloth.....	17,281	28		
Coffee.....	824	10	743	30
Coriander seed.....	4,462	10		
Cummin seed.....	69	30	962	10
Chillies.....	79			
Dyewood.....			540	30
Dholl.....	1,959	30		
Dates.....	1,086			
Fruits.....			11	20
Furniture.....	7,716			
Gunnies.....	112	10	624	20
Gingely seeds.....	620	10	992	
" Oil.....	3,599	20		
Ground nuts.....	1,490	30		
Gram.....	7,879	10		
Garlic.....	1,087	20	1,417	20
Ground nuts oil.....	105	30		
Horns.....	1,585	30		
Hides.....	54	10		
Indigo.....	2,916	30		
Jaggery.....	1,079	10		
Mustard.....	19,477	10		
Oil.....			34	30
" seeds.....	4,417	20		
Onions.....	785	10		
Paddy.....	75	30		
Palmyrah Jaggery.....	28,322			
Rice.....			157	10
Redwood.....	70,435	10	89	
Raggy.....	14,132	10		
Sundries.....	1,021			
Sugar.....	19,163	38	21,471	20
Skins.....	29,537			
Silk.....	2,405	20		
Saffron.....	55	30		
Saltpetre.....	860			
Salt.....	494	30		
Tamarind.....			38,905	10
Tobacco.....	6,531	10		
Vegetable.....			185	
Wheat.....	715	20	4	30
Wax.....	1,943	20		
Wood.....	93	20		
Wine.....	168	10		
			49	
Total	2,59,723	6	66,983	20

Salt.

	Maunds.	Seers.
1856 October.....	352	17
" November.....	113	30
" December.....	374	30
1857 January.....	2,859	
" February.....	6,731	20
" March.....	7,335	10
" April.....	6,924	20
" May.....	6,975	20
" June.....	8,079	20

Madras, 19th August 1857.

T. T. PEARS,

Consulting Engineer for Railways.

No. 1 TRUNK ROAD, 2ND DIVISION.
Abstract Statement shewing the Traffic passing along the undermentioned line of Roads, viz. Woocherry, Arcot, Vellore, Pullicondah, Ambore, and Vanimbady, for the month of April 1857.

		Elephants.		Carts.		Camels.		Horses.		Donkeys or Mules.		Horned Cattle.		Sheep or Goat.		Porters.		European foot Passengers.		Native foot Passengers.		Palkeys or letters.		Spring Carriages.		Artillery Guns or Carriages that form Carts.		Women.		Remarks.		6th		15th		22nd		
		Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.	Laden.	Unladen.									Laden.	Unladen.
Woocherry	..	..	..	24 18	1596	681	68	50	287	227	278	235	506	3022	..	1345	804	2833	..	47	22	170	16 44 3	22 27	..	..	..	342	1285	1st	..	..	..	..	..	..	..	
Arcot	..	..	..	25 11	529	166	217	372	244	189	308	133	779	300	..	154	128	..	..	25	589	672	28	5	49 34	..	..	2683	3998	..	..	..	..	..	..	..	..	
Vellore	..	..	..	16 11	515	252	115	81	198	371	696	614	866	721	..	680	2613	566	5 72	550	1579	67	56 12 1 84	..	..	..	2881	1827	..	..	..	..	..	..	..	..	..	
Pullicondah	..	..	..	..	669	82	..	..	103	89	119	25	157	50	..	110	831	448	..	11	118	325	3	..	26 4	..	..	843	1491	..	..	..	..	..	..	..	..	
Ambore	..	..	..	37	6	433	132	44	21	579	142	103	1505	910	..	13027	618	1582	23 54	1744	1506	236	391	43	26 13	5	3757	4464	..	..	..	..	..	..	..	..	..	
Vanimbady	..	..	..	10 16	331	185	113	..	307	201	1011	227	134	4101	..	4577	1533	1203	85 51	218	2544	15	16	15 16	..	..	..	5191	6933	..	..	..	..	..	..	..	..	..

(Signed) J. O. MAYNE, LIUT.
 Acting Deputy Engineer North Arcot.

(Signed) W. BARBER, CAPTAIN.
 Ex. Engineer of North Arcot.

(Signed) C. F. SHOPMAN,
 Assistant Officer D. P. W. North Arcot.

(True Copy)

(True Copy)

(True Copy)

(Signed) T. T. PEARCE,
 Consulting Engineer for Railways.

(Signed) C. C. JOHNSTON, CAPTAIN.
 Acting Superintending Engineer Northern Circle.

Camp Agaram River, 24th April 1857.

FINANCIAL (RAILWAY) DEPARTMENT.
 No. 434.

Extract from the Minutes of Consultation, under date the 3rd September 1857.

Read the following letter from the Consulting Engineer for Railways.

Observations on Revenue Account of the Madras Railway for { (Here enter 19th August 1857, No. 295.)
 the Half Year ending 30th June 1857.

Resolved that the foregoing communication be forwarded to the Honorable the Court of Directors for their information and communication to the Directors of the Railway Company.

(True Extract.)
 E. MALTBY,
Acting Chief Secretary.

NATIVE AGENCY.

FINANCIAL (RAILWAY) DEPARTMENT.
 No. 140.

Extract from the Minutes of Consultation, dated 23rd March 1857.

Read the following letter from the Secretary to the Government of Bombay.

No. 219 of 1857.

PUBLIC WORKS DEPARTMENT.
 RAILWAY BRANCH.

TO THE SECRETARY TO THE GOVERNMENT OF FORT SAINT GEORGE,

SIR,

Under instructions from the Honorable the Court of Directors, I am directed to request that you will, with the permission of the Right Honorable the Governor in Council of Fort St. George, favor this Government with information as to the measures which have been adopted by the Madras Railway Company for the training and employment of Native Agency on their line of Railway.

I have, &c.,
 (Signed) W. HART,
Secretary to Government.

Bombay Castle, 12th March 1857.

ORDER.—Communicated to the Consulting Engineer for Railways, who will furnish the information required by the Government of Bombay.

(True Extract and Copy.)

T. PYCROFT,
Chief Secretary.

MADRAS, 26TH MARCH 1857.

No. 309.

TO MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

SIR,

I have the honor by order of Government to request you will favor me with full information and with as little delay as practicable, as to the measures which have been adopted on your line

c 2

of Railway for the training and employment of Native Agency, and the success which has attended these measures.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
MADRAS, 26TH MAY 1857.

No. 447.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter No. 309, dated the 26th of March, requesting full information as to the measures which had been adopted for the training and employment of Native Agency and the success which has attended those measures. I have the honor to state that Natives and East Indians have been employed upon this Line to as great an extent as possible.

2. It was supposed some years ago that European Supervisors from England, with one or two exceptions, could be dispensed with, the Native, consequently, up to a recent period, has had but few opportunities of improvement by example. Within the last year Supervisors and Overseers as shewn in the margin have arrived from England skilled in Trades; the Natives working under such supervision will soon improve in their respective handicraft.

European Agency.

Inspectors..... 12
Platelayers..... 5

3. The Engineer Pupils under the instructions of District Engineers are stated to have made very favorable progress in the knowledge of Engineering.

4. In the *Traffic Department* with the exception of four European Subordinates, the whole working of the Line is carried on by Native Agency, and satisfactorily.

5. In the *Locomotive Department* the Natives are said to work well under European supervision, and that their aptitude to learn is as great as could reasonably be expected; they are slow in their work as yet, and some time must elapse before they can be left entirely to carry out the details connected with the working repairs, and construction of Locomotives.

European Agency arrived since last Report.
Engine Driver..... 1
Foremen..... 1
Fitter Erector..... 1

6. In the *Carriage building Workshop*, the Carpenter's work, as the out turn of that shop bears testimony, is well executed. The Pupils of this Department also are reported as evincing intelligence and attention.

I have, &c.,
(Signed) T. A. JENKINS,
Agent and Manager.

Submitted (with observations) for the information of Government.

Madras, 25th August 1857.

T. T. PEARS,
Consulting Engineer for Railways.

MADRAS, 13TH JUNE 1857.

No. 562.

To MAJOR T. A. JENKINS,
Agent and Manager of the Madras Railway Company.

SIR,

In acknowledging the receipt of your letter No. 447 of the 26th ultimo, I have the honor by order to request your attention to my letter* of the 26th March in which you were requested to explain the measures which have been adopted on your line for the training and employment of Native Agency.

* No. 309.

2. Your letter treats rather of the success that has attended the employment of that Agency.

3. I am to request therefore that you will be good enough to furnish the information called for which has reference to such points as the terms and conditions under which natives, whether as pupils or not, were employed, and the system followed in their training in the several departments. A further illustration may perhaps be given of the nature of the information sought by a reference to the arrangement made, if any, for instructing natives in the duties of Firemen and Engine drivers.

I have, &c.,
(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY.

No. 674.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to your letter No. 562, dated the 13th June last, requesting further information in regard to the measures adopted for the training and employment of Native Agency, I have the honor to annex copies of letters* from the late Acting Chief Engineer and the Locomotive Superintendent affording the information required.

* No. 122, dated 8th July 1857.
No. 123, dated 14th August 1857.

I have, &c.,
(Signed) T. A. JENKINS,
Agent and Manager.

Madras, 22nd August 1857.

Submitted (with observations) for the information of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 25th August 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 8TH JULY 1857.

No. 122.

To MAJOR T. A. JENKINS,
Agent and Manager.

SIR,

1. I have the honor to acknowledge receipt of yours No. 524 of 15th ultimo, with copy letter from the Consulting Engineer No. 562 of 13th ultimo, requesting information as to the mode we have adopted in the department in training native agency.

2. As to terms and conditions I have to refer you to Lithographed blank copy herewith enclosed.

3. The system followed in training varies to some extent, but as a general rule the pupil first enters this office, and remains in it about six months, during which time he learns some little of drawing, he is then sent out to some District where he has an opportunity of becoming acquainted with surveys and the conducting of works, and he remains on the District until within six months of the termination of his pupilage when he again returns to this office to finish his education.

Such is the general rule laid down by Mr. Bruce, and approved of by me, but of course in all cases cannot be followed out.

I have, &c.,

(Signed) ALEX. BEATTIE,
Acting Chief Engineer.

(True Copy.)

(Signed) T. A. JENKINS,
Agent and Manager.

Agreement between the Madras Railway Company on the one hand and
Civil Engineer Apprentice
on the other.

I agree to enter the service of the Madras
Railway Company as an Engineer Apprentice for the term of four years from this date and
honestly faithfully and zealously to serve the said Company in any way which they may direct,
whether that may be in the Office or out of doors, upon the works or in Surveying.

We Major T. A. Jenkins Agent and George B. Bruce Chief Engineer, agree on account of
the said Company to receive the said as
Civil Engineer Apprentice and in consideration of his servitude to grant him the following
advantages.

He shall have every opportunity of learning the art and mystery of a Civil Engineer both
in the Office and out of doors and during the time of his service he shall receive the following
rates of pay.

For the First year Rupees 10 per mensem.
For the Second year Rupees 20 per mensem.
For the Third year Rupees 35 per mensem.
For the Fourth year Rupees 50 per mensem.

When an Apprentice is required in the discharge of his duties to move up country or re-
side temporarily from home such an allowance shall be made to him for this expense as the Engi-
neer may consider proper.

It is further agreed and determined that the said Railway Company shall be at liberty
to terminate this agreement with said at
any time should he by wilful disobedience, neglect of duty, or incompetency, fail to give
satisfaction. And further that the said may

be incited to the prosecution of his studies he will be required previous to each increase of Salary
to pass an examination by which his increase in practical knowledge may be tested.

Witnessed

Madras Railway,
Chief Engineer's Office,
185

Chief Engineer.

MADRAS RAILWAY,
LOCOMOTIVE AND CARRIAGE DEPARTMENT-
ENGINEER'S OFFICE,
MADRAS, 14TH AUGUST 1857.

No. 128.

To MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway.
SIR,

I have the honor to acknowledge the receipt of the copy of a letter from the Consulting

Engineer No. 562, dated the 13th June, requesting information respecting the measures which
have been adopted for the training and employment of Native Agency.

2. In this Department Natives are employed in all the various trades connected with Loco-
motive, Engineering, and carriage-building.

3. The Carpenters and Blacksmiths are usually skilled at their trades on coming to us,
some of the Hammermen or strikers have however been promoted to Blacksmiths.

The Carpenters require but little interference with their own style of work. They are gene-
rally good workmen and can handle the regular English tools in a workman-like manner.

4. The smiths have all been trained to work in the English mode, which differs consi-
derably from that to which they have been brought up.

5. Other men are going through a course of training as Fitters, Turners, Machinemen,
Coppersmiths, Moulders, &c., many of them had a slight knowledge of these trades, whilst others
were mere coolies. No distinction is made. Any likely looking man is employed who is willing
to try his hand at a trade, but they are remunerated only in proportion with their skill or merit.

6. We have also Natives trained as Firemen, Lighters up, &c., some of the firemen, get
through their duties remarkably well; these are all picked men and they require to live well from
the arduous nature of their work. They are paid higher rates than most men on this account
and to enable them to pay for their clothes which are necessarily much injured by the nature of
their work. I do not however see any early prospect of making Engine Drivers of these men.

7. The lighters up are very attentive and now have the charge and responsibility of lighting
up the Engines themselves, a proof of their attention is the fact that during the past two years
that the Engines have been running there has never been a mistake in the lighting up and none
of the fire boxes tubes, or boilers have suffered or been endangered by neglect in the proper
filling of the boilers.

I have, &c.,

(Signed) WILLIAM BARTON WRIGHT,
Locomotive Superintendent.

(True Copy.)

T. A. JENKINS,
Agent and Manager.

No. 302.

On letters from the Agent and Manager of the Madras Railway Company Nos. 447 and 674, dated
26th May and 22nd August 1857 respectively.

OBSERVATION OF THE CONSULTING ENGINEER.

In obedience to the orders of Government, conveyed in an extract from the Minutes of
Consultation Financial (Railway) Department, No. 140, dated 23rd March last, the Agent was
requested to furnish information as to the measures which had been adopted for the training
and employment of Native Agency, and the success which had attended those measures.

2. That Gentlemen's reply (No. 447) was received on the 1st June, but it seemed necessary
to request more detailed information, which has been furnished and
is now submitted.

3. It will be observed that the Pupils or Apprentices in the Locomotive Department are
not noticed in the Agent's letter or in that form the Locomotive Superintendent; but although
I imagine the information required by the Bombay Government has especial reference to the
Pupils or Apprentices, I have not thought it necessary to make another reference to the Agent,
thereby causing still further delay, inasmuch as the terms under which the pupils are enter-
tained in that Department, are to be found in the printed report of this Department for 1855,
page 374.

4. Some former correspondence on the subject of Native Agency on the Railway will be found in the same volume p. p. 377 384.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 25th August 1857.

MADRAS RAILWAY.

No. 850.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

I have the honor to annex a copy of a letter from the Chief Engineer No. 213, dated the 12th November, reporting upon the abilities and qualifications of time expired pupils.

J. Ryan, Balakistnah,
A. Rhodes, Vurdacharry and
D. H. Clarke, Parthasarathy.
M. Rajaruthnum,

It will be observed that the same is exceedingly favorable.

2. Mr. Heppel recommends that Mr. Ryan be appointed a Sub-Assistant Engineer, and that the other individuals have their salaries increased in proportion to the value of their services.

3. I beg to state that, subject to the confirmation of the Government, I have appointed Mr. Ryan a Sub-Assistant Engineer. I request that you will have the goodness to obtain the sanction of the Government for the disbursement to him of the salary and Emoluments of that rank, and that sanction may also be accorded to the disbursement to the other time expired pupils of salaries at a maximum rate of Rupees 100 a month, leaving it to the Chief Engineer to fix the sum to be granted to each individual in accordance with the value of his services, from the date of the expiry of their agreements, viz. the 31st of September last.

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

Madras, 13th November 1857.

Submitted (with observations) for the sanction of Government.

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 1st December 1857.

MADRAS RAILWAY, CHIEF ENGINEER'S OFFICE,
MADRAS, 12TH NOVEMBER 1857.

No. 213.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

The Apprenticeship of the first batch of Engineering pupils, seven in number terminated on the 31st September last. I have delayed bringing this to your notice until I was in a position to lay before you a definite proposal with reference to them.

So far as I can judge from what I have seen and from the reports which I have received from the Engineers under whom they have been placed, they have manifested much eagerness in acquiring information and have been one and all diligent in the discharge of the duties entrusted

to them. They have proved to be of very considerable assistance in making surveys and sections, setting out and measuring up work, and generally Superintending under the Engineer.

The following is a list of their names.

J. Ryan, D. H. Clarke,
A. Rhodes, Balakistnah,
M. Rajaruthnum, T. Parthasarathy.
E. Vurdacharry,

Mr. Ryan I consider qualified for the appointment of Sub-Assistant Engineer and beg to recommend that he be retained in that capacity, the others I should recommend for re-engagement at the following rates which I have endeavoured to proportion to the value of their services.

A. Rhodes.....	Rupees 100.
D. H. Clarke.....	„ 90.
Balakistnah.....	„ 90.
M. Rajaruthnum.....	„ 75.
E. Vurdacharry.....	„ 75.
T. Parthasarathy.....	„ 75.

As we may expect however, the service of some of them to acquire an increased value from further experience, I think it would be most convenient if sanction could be obtained for a maximum rate of Rupees 100 leaving us a discretionary power to make such addition as circumstance might seem to justify to the pay of any of them receiving less than the maximum.

I should propose that their increased pay should date from the expiration of their apprenticeship.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

(True Copy.)

(Signed) T. A. JENKINS,

Agent and Manager.

RAILWAY DEPARTMENT.
CONSULTING ENGINEER'S OFFICE.

No. 984.

To THE AGENT AND MANAGER OF THE MADRAS RAILWAY COMPANY.

SIR,

I have the honor to acknowledge the receipt of your letter No. 850, of the 13th instant, and to request you will be good enough to report for the information of Government what rank, these time expired Pupils are to hold. The original intention was to give them the rank of Sub-Assistant Engineer, and it is not desirable that this should be departed from.

2. It is satisfactory to learn that your Chief Engineer bears high testimony to the worth of these seven Pupils who have completed their term of Apprenticeship, but it does not appear advisable to re-engage them on increased rates of salary.

3. If not qualified for the situation of Sub-Assistant Engineer, their Apprenticeship might be renewed for whatever further time appears necessary, on the understanding that at the expiration of that time, if they fail in qualifying themselves, their services will be dispensed with altogether.

4. Of the 7 Pupils originally entertained only one having qualified himself, at the expiration of 4 years, it may be advisable either to prolong the term of Apprenticeship, or to introduce 2 or more grades in the Class of Sub-Engineers, the rates of pay varying between the sanctioned salaries of Rupees 50 and Rs. 150.

5. On these points I am directed to request the favor of your early opinion.

I have, &c.,

(Signed) C. C. JOHNSTON, CAPTAIN,

Offg. Consulting Engineer for Railways.

Madras, 17th November 1857.

(True Copy.)

C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

Madras, 1st December 1857.

MADRAS RAILWAY.

No 880.

To CAPTAIN C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

SIR,

With reference to your letter No. 984, dated the 17th Instant, I have the honor to annex for your information a copy of a letter from the Chief Engineer No. 223, dated 24th idem, in which he has set forth at length his views in respect to the employment of time expired pupils in his Department. I beg to state that I concur in Mr Heppel's observations and I do not think it expedient or desirable that the Class of Sub-Assistant Engineers be increased, or that the Engineering pupils should on the completion of their probation, be all, as a matter of course appointed to the grade of Engineers; nor would there be any benefit derived from entering into new agreements with them as pupils.

2. The grade of Engineering pupils is open to all Classes, and promotion to the highest rank is held out, as an inducement to such as by extraordinary ability, zeal and probity shew themselves to be fitted for such appointments, and an exception of the kind has been made by the Chief Engineer in favor of Mr. Ryan.

3. In respect to the others, having had the opportunity of learning Engineering duties as pupils they are now eligible for employment in those positions, the want of which has been noticed by the Government. I mean Superintendence by "Native Agency." I therefore beg to recommend that the pupils named in my letter No. 850, dated the 13th Instant, be designated Engineer's Assistants, and that the sum of Rupees 100 per mensem be sanctioned for that grade as the maximum rate, but that the Chief Engineer have the power to grant to each individual the sum that he deems his services to be worth, within that limit.

I have, &c.,

(Signed) T. A. JENKINS,

Agent and Manager.

Madras, 27th November 1857.

MADRAS RAILWAY,
CHIEF ENGINEER'S OFFICE,
MADRAS, 24TH NOVEMBER 1857.

No. 223.

To MAJOR T. A. JENKINS,

Agent and Manager.

SIR,

Yours No. 993, November 20th forwarding letter of Officiating Consulting Engineer No 984, November 17th having reference to the Engineering pupils whose term is expired. If I rightly understand the views expressed in the Officiating Consulting Engineers letter, the 2nd alternative in para. 4 comes so near to the course proposed as to leave very little substantial differ-

ence, and I hardly know how to reconcile it with that part of para. 2 where it is said that "it does not appear advisable to re-engage them on increased rates of salary."

2. If the only point is the finding a suitable name from their new position I would beg to suggest Engineering Assistant as in my opinion preferable to any grade of Engineer, to the use of which term I have an objection in which I am in hopes the Officiating Consulting Engineer may be disposed on reflection to concur.

3. I think the term Engineer should be confined to such Officers as by the simple fact of their Employment in a district should in the absence of a superior Engineer be understood to be in charge of it, and in command over every other person engaged in it, and I do not at present see my way to placing any one of these pupils except the one recommended in that position, nor to say the truth do I in the case of the majority of them see any great reason to expect very confidently that even after two years further probation I should be enabled to do so.

4. This involves no blame to the pupils who have I consider done well, and whom I am anxious to encourage and assist by giving them employment at a rate of pay commensurate to the value of their services, and placing them in a position where they will have every chance of doing themselves credit, and possibly by degrees removing difficulties whose nature it is perhaps unnecessary for me now to give in detail, which at present stand in the way of giving them higher responsibilities.

5. It seems to me that the views of the Government would be substantially met by creating a class of Engineering Assistants, which might if thought desirable be divided into several grades at different rates of pay, what however I should consider much more simple and convenient would be that a maximum rate should be sanctioned, and the fixing of each individuals pay up to that limit left to the Railway Authorities.

6. The duties of the class so created would not differ materially from those now performed by the senior pupils except that with increasing efficiency, greater trust would naturally be reposed in them, and whether ultimately leading to appointments in the class of Engineer or not the Railway Company would be securing the services of a very useful set of men, who would be encouraged to further efforts by the advancement they had already merited and obtained.

7. I presume that in Mr. Ryan's case there is no objection to his appointment to the position of a Sub-Assistant Engineer.

I have, &c.,

(Signed) J. M. HEPPEL,

Chief Engineer.

(True Copy.)

(Signed) T. A. JENKINS,

Agent and Manager.

RAILWAY DEPARTMENT,
CONSULTING ENGINEER'S OFFICE.

No. 1034.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

SIR,

In reply to your letter No. 880, dated 27th ultimo, I have the honor, by order, to observe, as in my previous communication of the 17th Idem* that it is not considered advisable to re-engage as pupils on increased rates of salary men who have failed during their term of Apprenticeship to qualify themselves as Sub-Assistant Engineers. This remark applying of course to existing arrangements.

2. The alternatives proposed in the same communication, were either to prolong the term of Apprenticeship, or to introduce 2 or more grades in the class of Sub-Engineer, on salaries varying from Rupees 50, the highest rate paid to a pupil, to Rupees 150, the salary of a Sub-Assistant Engineer.

3. The highest salary then fixed for a Pupil being Rupees 50, to increase that salary must, on principle, involve a change in his position, which change constitutes the difference your Chief Engineer expresses himself at a loss to understand, and to provide for which the second alternative, in para. 4 of my former letter, was suggested for your consideration.

4. The introduction of grades in the Engineer Department, subordinate to that of Sub-Assistant Engineer, is much to be desired, and will offer encouragement for exertion to those pupils whose abilities (though the term of their Apprenticeship were prolonged) would probably never enable them to qualify themselves for the grade of Sub-Assistant Engineer.

5. The term of Engineering Assistant for these subordinate grades, as proposed by Mr. Heppel, appears to be appropriate, and the subject will now be submitted for the orders of Government.

I have, &c.,

(Signed) C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

Madras, 1st December 1857.

(A true Copy.)

(Signed) C. C. JOHNSTON, CAPTAIN,

Officiating Consulting Engineer for Railways.

No. 400.

On letters from the Agent and Manager of the Madras Railway Company, Nos. 850 and 880, dated 13th and 27th November 1857.

OBSERVATIONS BY THE OFFICIATING CONSULTING ENGINEER.

In a letter No. 850, dated 13th November, the Agent and Manager applied for sanction for increased rates of salary being given to seven Engineering pupils whose term of Apprenticeship, 4 years, expired on the 30th September last.

2. Of the seven pupils, one only Mr. Ryan, has qualified himself for the duties of Sub-Assistant Engineer, and the Agent reports that, pending the authority of Government, Mr. Ryan has been appointed to that grade.

3. In reply to the foregoing letter, the Agent was informed,* that it was not considered advisable to re-engage the pupils on increased rates of salary, and the alternatives suggested for consideration were, either to prolong the term of Apprenticeship, or to introduce two or more grades in the class of Sub-Engineers, the Salaries to vary between the sanctioned amounts of Rupees 50 and Rupees 150; the former being the highest rate of salary given to pupils and the latter being the salary of Sub-Assistant Engineers.

4. Under existing arrangements it was considered objectionable to re-engage pupils on increased rates of salary, and in order to overcome the objection, the second of the alternatives above noticed, was suggested.

5. It may be expected that among the Engineering pupils entertained, there will be some whose abilities will never enable them to fully qualify themselves as Sub-Assistant Engineers, and for such, who may be deserving men, and sufficiently well qualified to be of great service, the introduction of a Subordinate class in the Engineering Department, is very desirable.

6. The Agent with his second letter* of the 27th ultimo, forwards transcript of one from Mr. Heppel, and supports that Gentlemen's proposition, that the Sub-ordinate class to be introduced, should be styled Engineering Assistants; the maximum rate of salary to be fixed at Rupees 100.

7. The term Engineering Assistant appears to be an appropriate one, and it also seems desirable that the salaries, within the amount specified, to be paid to the pupils on promotion,

should be left to the discretion of the Chief Engineer, the sanction of Government being of course obtained in each case.

8. I now beg to recommend that authority be given to the Agent for promoting the under-mentioned pupils, as requested in his letter of the 13th ultimo,—the promotions to have effect from the 1st October last.

Mr. Ryan to be Sub-Assistant Engineer	Rupees 150
Mr. A. Rhodes, Engineer Assistant.....	„ 100
Mr. D. H. Clarke, do.	„ 90
Balakistnah, do.	„ 90
M. Rajaruthnum, do.	„ 75
E. Vurdacharry, do.	„ 75
T. Parthasarathy, do.	„ 75

(Signed) C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

Madras, 1st December 1857.

No. 580. FINANCIAL (RAILWAY) DEPARTMENT.

Extract from the Minutes of Consultation, dated the 4th December 1857.

Read the following observations of the Officiating Consulting Engineer on letters from the Agent and Manager of the Railway Company.

(Here enter dated 1st December 1857 No. 400.)

The Government resolve, as recommended to authorize the Railway Agent to promote the seven Engineering Pupils whose term of Apprenticeship has expired, to the grades and rates of pay specified in the last para of the Officiating Consulting Engineer's report; the promotions to have effect from the 1st of October last.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

Communicated to the Agent and Manager of the Madras Railway Company in letter No. 1076, dated 11th December 1857.

MISCELLANEOUS.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 168.

Extract from the Minutes of Consultation, dated 31st March 1857.

Read the following

MILITARY DEPARTMENT.

No. 951.

Extract from the Minutes of Consultation, dated 23rd March 1857.

Read the following letter.

No. 102.

TO THE SECRETARY TO GOVERNMENT.

MILITARY DEPARTMENT.

SIR,
His Excellency the Commander-in-Chief has directed me to forward, for submission to Government a Copy of letter from Major McGoun, Commanding 6th Regiment N. I. setting

forth the very complete arrangements of the Railway Establishment on the occasion of the Corp's late transit by Rail from Amoor to Madras, and the great assistance he experienced from the Railway Officials, especially Mr. Fletcher, Traffic Manager.

In regard to the knapsacks of a Regiment, His Excellency observes that in England the packs of the men are on the roof of the carriage, in which they travel, protected by a tarpaulin, from the weather and this the Commander-in-Chief thinks would be a good arrangement to adopt here.

Qr. Mr. Genl's Office,
Fort St. George,
21st March 1857.

I have, &c.,
(Signed) F. A. REID,
Qr. Mr. Genl.

No. 70.

TO THE QUARTER MASTER GENERAL OF THE ARMY,
Fort St. George.

SIR,

Having recently brought the Regiment under my Command by Railway to the Presidency, I deem it my duty to bring to the notice of His Excellency the Commander-in-Chief the great assistance I received from all the Railway Officials and more especially from the Traffic Manager Mr. Fletcher, the weighing of the Baggage occupied only a few hours, while the whole of the Regiment and Followers were placed in the carriages in an hour. The arrangements were complete and would have been perfect had the train started an hour earlier, so as to have brought the Regiment to its encamping ground before it was dark. The men took their knapsacks with them in the carriage which is at variance with the recently issued Railway Rules, but it is so obviously desirable that the Soldier should always have his pack with him that a change in the rules on this point would seem desirable.

I have only to repeat that all the Railway arrangements were excellent and reflected great credit on the Railway Officials.

Camp,
Madras, 18th March, 1857.

I have, &c.,
(Signed) T. MCGOUN, MAJOR,
Commanding 6th Regt. N. I.

True Copy.)

(Signed) H. O'CONNELL, CAPTAIN,
Ag. Dy. Assist. Qr. Mr. Genl. of the Army.

Communicated to the Railway Department.

(Signed) C. A. BROWNE, COLONEL,
Secretary to Government.

ORDER.—Ordered to be forwarded to the Consulting Engineer who will communicate to the Railway Agent the satisfaction of Government at the arrangements made by the Railway Officials and especially by the Traffic Manager, Mr. Fletcher, for bringing down the 6th Regt. N. I. Colonel Pears will report on the arrangement suggested by His Excellency the Commander-in-Chief for the conveyance of the knapsacks of a Regiment by Rail.

(True Extracts.)

T. PYCROFT,
Chief Secretary.

MADRAS, 3RD APRIL 1857.

No. 339.

TO MAJOR T. A. JENKINS,

SIR,

Agent and Manager of the Madras Railway Company.

I have the honor, by order, to communicate the satisfaction of Government at the arrange-

ments made by the Railway Officials, and especially by the Traffic Manager Mr. Fletcher, on the occasion of the late transit by Rail from Amoor to the Presidency of the 6th Regiment N. I.

2. His Excellency the Commander-in-Chief having suggested, with a view of obviating the exceeding inconvenience of separating more than possible the men from their packs, the adoption of the arrangement observed in England, in regard to fixing on the roof of the carriage in which they travel, protected by a Tarpaulin, the knapsacks of the men, I am directed to request that you will be so good as to report whether there is any, and what, objection to such an arrangement, or whether you consider that the object can be better attained by allowing the men to take their Packs along with them in the carriage, in the manner of Passengers baggage, as was the case with the Regiment on the occasion above alluded to.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railway.

MADRAS RAILWAY.

No. 482.

TO LIEUTENANT COLONEL T. T. PEARS, c. b.,
Consulting Engineer.

SIR,

1. With reference to your letter No. 339, dated the 3rd of April last, in which you request to be informed whether on the occasions of Troops proceeding by Rail, the men's knapsacks can be carried upon the roof of the carriages, or in what other manner, so that they be not separated from the men; I have the honor to annex for your information a copy of a letter from the Traffic Manager No. 40, dated the 12th instant, affording the information called for.

2. I beg to state that the roofs of our carriages are of too light a construction to admit of their bearing any load. The knapsacks of each man, it is supposed, can be conveniently placed under his seat in the carriage; but should the Military Authorities desire to test this point by sending a party of 44 men to the Station with their knapsacks, a carriage will be placed at their disposal and every facility afforded to enable them to ascertain the best mode of conveying knapsacks.

I have, &c.,

(Signed) T. A. JENKINS,
Agent and Manager.

Madras, 15th June 1857.

Submitted (with observations) for the orders of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

MADRAS RAILWAY,
TRAFFIC MANAGER'S OFFICE,
12TH JUNE 1857.

No. 40.

TO MAJOR T. A. JENKINS,
Agent and Manager, Madras Railway.

SIR,

Referring to your letter No. 50. dated the 4th April, enclosing letter No. 339, from the Consulting Engineer upon the subject of loading Soldiers' knapsacks on the roofs of carriages, or allowing the men to take their packs along with them in the carriage. I have the honor to

observe that the roofs of the carriages as at present constructed would not admit of the knapsacks being loaded upon them, as some of them are double roofed for the purpose of rendering them as cool as possible, whilst others (the third class,) although not double roofed, would scarcely admit of any weight being placed upon them.

2. As a General rule in England, Luggage is not loaded upon the roofs of carriages, as it has been found to be a tedious method of loading and unloading, and leading to delay; but there are cases in which loading Luggage upon the roof of the carriages is a convenience; as for instance, when one or two carriages for a Branch Line are attached to a "through" Train to be despatched at a junction: in that case loading the luggage upon the roof saves the haulage of a Luggage van.

3. I think that knapsacks are generally taken by the Soldiers into the carriages with them at home and I imagine that such would be the most convenient course to pursue here, and I think that with management in the stowage of the packs under the seats we could carry the same number of men, or nearly so, that we now do, viz., 44 in one carriage.

4. I have observed that it is attended with very great inconvenience to separate the men from their packs, and I have seen that much time is lost in each man searching for his own pack amongst so many indiscriminately loaded into wagons, and I would suggest that with a view to obviating this as far as possible, that 44 Soldiers with their knapsacks should be marched to the Station at Royapoorum at any time that may be convenient to the Authorities, with a view to our ascertaining the best way of meeting the views of His Excellency the Commander-in-Chief by placing the men in a carriage with their packs under the seats; if this can be effected conveniently, no better course could, in my opinion, be pursued in all future movements of Troops.

I have, &c.,

(Signed) H. A. FLETCHER,

Traffic Manager.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

No. 223.

On a letter from the Agent and Manager of the Madras Railway Company, No. 482, dated the 15th June 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

In Extract Minutes of Consultation, No. 168, dated 31st March 1857. I was directed to report upon an arrangement suggested by His Excellency the Commander-in-Chief, with a view of obviating, as far as possible, the exceeding inconvenience of separating the men from their Packs while travelling on the Railway, viz., the fixing on the roof of the carriage on which they travel, protected by a tarpaulin, the knapsacks of the men.

2. I accordingly requested the Agent to report whether there was any and what, objection to such an arrangement, or whether he considered that the object could be better attained by allowing the men to take their packs along with them in the carriage, in the manner of Passenger's baggage.

3. The Agent in his reply, noted at the head of these observations, in the submission of which, it will be observed, there has been some delay, states "that the knapsacks of each man, it is supposed can be conveniently placed under his seat in the carriage," and suggests in order to test this point that a party of 44 men be sent to the Station with their knapsacks.

4. It appears to me, however, unnecessary to subject 44 men to this amount of additional duty for this express object, since the test can be applied equally as well on the first opportunity of a Regiment proceeding by the Railway. But one man with his pack and musket complete, might, if necessary be ordered down to the Station, to enable the Railway Authorities to ascertain the exact amount of space required for each Soldier, or Sepoy, proceeding by Rail, fully equipped.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 17th June 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 326.

Extract from the Minutes of Consultation, under date the 24th June 1857.

Read the observations by the Consulting Engineer, dated 17th June 1857, No. 223.

Ordered to be communicated to the Quarter Master General of the Army, through the Military Department, with reference to his letter of the 21st March last, No. 102.

(True Extract.)

E. MALTBY,

Acting Chief Secretary.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 148.

Extract from the Minutes of Consultation, dated 19th May 1856.

Read the following letter from the Secretary to the Government of India.

No. 1842.

PUBLIC WORKS DEPARTMENT, RAILWAY

To. J. D. BUCURDILLON, Esq.,

Secretary to the Government of Fort St. George, dated the 25th April 1856.

SIR,

I am directed to forward herewith copy of a Draft prepared by the Great Indian Peninsula Railway Company, containing additions and alterations, under the Section "Enginemen and Firemen," in the printed Rules and Regulations for Indian Railways passed by the Government of India under date the 14th August 1854, and communicated to you from the Home Department in letter No. 949 of the same date, and to request that you will call upon the Railway Company at Madras to report for the information of the Right Honorable the Governor General in Council whether they consider these alterations to be improvements on the present Rules or not.

I have, &c.,

(Signed) W. E. BAKER,

Secretary to Government of India.

Fort William, the 25th April 1856.

SECTION XIII.

5. Every Engine Driver shall have at all times on his tender or with him the following articles; he will be held responsible for them and he must produce them whenever the Foreman requires him to do so.

Engine Tools.

- | | |
|---------------------------------------|--------------------------------|
| 1 Case of Detonating Signals. | 2 Hammers and Chisels. |
| 1 Set of lamps for Engine and Tender. | 3 Half round Tiles. |
| 1 Set of screw keys. | 1 Set of Oil cans and Fillers. |
| 1 Large and small Monkey Wrench. | 4 Tube Plugs and one Driver. |
| 1 Screw Jack. | 1 Spare clock. |
| 2 Pinch Bars. | 2 Syphon Cups. |
| 2 Shot chains with Hooks. | 1 Shovel and Fire iron. |
| 2 Fire Buckets. | |

A few spare Bolts and Nuts, Cord, Flax, Spun yarn, and a Rope.

The Lamps are to be delivered into the Lamp-house when the journey is completed and taken out again when required.

Attention to Signals.

6. Engine Drivers are bound to observe all signals without exception, and under all circumstances.

An Engine Driver must pay instant attention to every signal whether he understands it object or purpose or not, and should he fail to do so, he will be liable to dismissal, and such severer punishment as is provided for under the Railway Act. When a red signal is shown he must under no circumstances pass it, but as soon as possible after seeing such signal bring his Train to a stand, he may then, if he can make himself perfectly acquainted with the circumstances under which the signal is exhibited move his Train slowly inside the signal for protection, and having moved sufficiently far to protect his Engine or Train, he must stand still until the "Danger" signal is taken off.

11. Every Engine Driver on going out is to take with him his time Table, Rule Book and special instructions, and while on duty to have them always with him to be produced at any time when asked for, he must pay particular attention to the Time Bill, and so regulate the working of his Engine as to maintain a uniform speed between Stations, and when not attached to a Train, he is not to prolong his stay at any intermediate station or place unless otherwise instructed, or except when compelled to do so by accident or necessity.

12. Whenever an Engine on either line of Rails is disabled or obscured by steam, it must be approached very cautiously so that if necessary the Driver of the approaching Engine can stop, and the whistle is always to be sounded, that full warning may be given. If the Driver of the approaching Engine finds it necessary to stop, he must ascertain the cause of the obstruction and render to the disabled Engine such assistance as is in his power, and he must report the obstruction and the cause of it to the Station Master at the next Station; should it not have been necessary for him to stop, he must still report at the next station what he has observed.

13. Engine Drivers with Pilot Engines must be prepared while on duty to start immediately on receiving an order from their superior officer.

No Pilot or other Engine without a Train shall stand on the main line, but always in a siding, and while the steam is up, an Engine Driver must never leave his Engine without shutting the Regulator, putting the slides out of gear, screwing up the Tender Break, and placing the Fireman in charge of the Engine. The Engine Driver will be held responsible for his Engine being in working order, and always ready to start.

18. Speed in passing junctions sidings or crossings should not exceed 10 miles an hour in clear weather. In foggy weather or at night it should not be greater than 5 miles. Facing points ought not to be passed at more than 5 miles an hour under any circumstances.

19 Cancelled, provided for in rule 13.

25. The Engine Driver is to take particular notice of the state of the Permanent way while out with his Engine, and in case any part of the road is in bad condition, he must proceed with caution, at a reduced speed, and at the termination of the journey, report any loss of time thereby caused.

He must also both before commencing, and on terminating his journey with a guage try the wheels of his Engine and Tender, and with a hammer sound the wheels and axles, to ascertain that all is correct and sound, any defect he must at once report to the Foreman.

Every Engine Driver at the end of his journey is to report to the Locomotive Superintendent or his Foreman, 1st, The state of the Engine and Tender, 2nd, any defect in the Road Works, Signals, or any unusual circumstances that may have taken place during his journey, and to fill up such returns as may be required of him.

26. When an Engine is travelling without a Train after sunset, it must always carry a white light in front and a red light in the rear.

28. Every Engine will when considered desirable by the Locomotive Superintendent, carry in addition to the Engine Driver an Fireman, an Assistant Fireman whose duty will be strictly confined when the Train is in motion to watching any signals which may be made by guards or others, and to any irregularity in the motion of the Trains, and to act generally as an Assistant, under the direction of the Engine Driver. The Fireman and Assistant Fireman may relieve each other by changing places at such periods or stages of the journey as may be determined upon by the Superintendent or his Foreman. Although the duty of this Assistant is to look out for signals he will not relieve the Driver and Fireman from any like duties previously specified in the rules as applicable to them.

29. When more than one Engine is attached to a Train the signal of one distinct whistle will signify to go on, and two distinct whistles to reverse and to put back. In all cases the first Engine Driver must give the signal, and the others immediately repeat and obey them, and great care must be taken that the Engines may start and stop together; to avoid any great check or breakage of couplings, should the following Engine Driver discover any thing wrong, he must sound his whistle to warn the Engine Driver in front.

30. When the assistance of a second Engine may be required to a passenger or goods Train, the assistant Engine must invariably be attached in front.

No Engine will be allowed under any circumstances except with the order of the Locomotive Superintendent, to push a Train but always to draw it. This does not refer to shunting Trains at stations and across points.

31. When Engine Drivers are required to shunt trains, they and their Firemen must keep a sharp look out either in front or behind, according to the position of the points, to see that all is right before crossing, &c.

If there be no pointsman on duty, the Guard must hold the points, otherwise the Driver must refuse to move his Engine, reporting the circumstances at the end of his journey.

Before putting on steam to shunt, Drivers must always receive the "all right" signal from the man at the points.

32. When an accident or stoppage occurs to any Engine or Train on the main line, the Engine Driver must see that some competent person is sent back immediately a distance of 600 yards with signals to stop any approaching Train or Engine, and when it is necessary for an Engine to move in the wrong direction on the main line, the Engine Driver must previously see that some competent person has gone 600 yards in advance of his Engine to stop any coming Train, such person must continue so in advance while the Engine is moving in the wrong direction, and the Engine must not follow him at a speed greater than 4 miles per hour.

33. In case an Engine Driver may be unable to proceed with his whole train when on the line, he shall take part of it to the nearest siding returning immediately for the remainder. Before going on with any portion of such train, the Driver must see that some competent man is in charge of that portion left behind and is properly supplied with signals.

34. Should a stoppage occur near a station and the Engine Driver receive a written order

Precautions to be taken when Train has to be divided.

from the station Master or Guard to proceed in a contrary direction, this will be sufficient authority for so doing at a speed not exceeding 15 miles per hour.

35. Firemen shall act under the direction of their respective Engine Drivers in all matters not inconsistent with the duties laid down in the Rules; at the same time they will be held jointly responsible with the Engine Driver, for their proper execution.

Stoppage near a Station how to act.

36. Any instance of inattention to these Rules or to the special orders, and which on investigation shall be proved, will be at the discretion of the Locomotive Superintendent punished by Fines.

Rules to be observed by Engine Drivers and Firemen on a single line of Rails.

All the previous Rules apply in this instance, and in addition thereto, the following ones.

Lamps for single Engine at night.

37. An Engine travelling without a Train after sunset must in addition to the usual white head Lamp carry a red head Lamp, also a red side Lamp on the Tender and a red tail Lamp in the rear.

39. Engine Drivers on approaching single line stations must so reduce the speed of their

Speed when coming to stations and when two trains meet at a Station.

Engines as to be able to stop before reaching the facing points at the station entrance, and when passing such facing points, they must not exceed 4 miles per hour. When two Engines approach a station at the same time both Engines must be brought to a stand before passing the facing points, and there remain until specially signalled to advance.

SECTION XI.

3. It will be the special duty of every Officer in charge of a station to attend to the arrival, Despatch and departure of Trains, and, when he has ascertained that the work of the station is performed, that the passengers have entered the carriages, and that the time as printed in the Time Table has arrived for the departure of the Train, will have the hand bell rung as a signal to the Guard to proceed. He will be held answerable for the Station et seq.

SECTION XII.

3. He will receive his instructions from the Clerk in charge or Station Master to whom he is to make known, whatever is wanting. The Clerk in charge or Station Master, when he has ascertained that the work of the station is performed, that the passengers have entered the carriages, and that the time as printed in the Time Table has arrived for the departure of the Train, will have the hand bell rung as a signal to the Guard, and the Guard will thereupon see that all the carriage doors are closed and secured, and that the luggage is properly sheeted, and then sound his whistle as a signal to the Engine Driver to proceed.

SECTION I.

10. cancelled.
13. cancelled.

(Signed) T. R. WATT,
Secretary.

(True copy.)

(Signed) W. HART,
Secretary to Government.

(True Copy.)

(Signed) W. E. BAKER, LIEUTENANT COLONEL,
Secretary to the Government of India.

Ordered to be forwarded to the Consulting Engineer, who will call upon the Agent and Manager of the Railway Company to report upon the proposed additions and alterations in the Rules for Indian Railways.

(True Extract and Copy.)

T. PYCROFT,
Chief Secretary.

MADRAS RAILWAY,
MADRAS, 2ND FEBRUARY 1857.

No. 98.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

With reference to order of Government No. 148, dated 19th May 1856. I have the honor to annex a report from the Traffic Manager and Locomotive Superintendent of this line, upon the proposed additions and alterations in the printed Rules and regulations for Indian Railways.

I have, &c.,

T. A. JENKINS,
Agent and Manager.

Submitted for the information of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 11th February 1857.

MADRAS RAILWAY.

Observations by the Traffic Manager and Locomotive Superintendent upon proposed additions and alterations in the printed rules and regulations for Indian Railways forwarded in accordance with a letter from the Secretary to the Government of India No. 1842, dated 25th April 1856 and conveyed under Extracts from the Minutes of Consultation Financial (Railway) Department No. 148, dated 19th May 1856.

Section 13. Rule 5. The addition to this rule of "he will be held responsible for them, and he must produce them whenever the Foreman requires him to do so" can scarcely be considered necessary as it is provided under section 2. Regulations generally applicable to the "servants of the Railway Company." Rule 18. "That every person receiving" "and if any article of" "tools or other things provided by the Company shall have been improperly used or damaged, the person receiving it will be required to make it good, on leaving the Company's service, each article of tools or other things which have been supplied must be delivered up." There could be no objection to the alteration proposed but it is not of sufficient importance to justify the printing of new rules.

Rule 6. The proposed change in this rule stating. "An Engine Driver must pay instant attention to every signal whether he understands its object or purpose or not" is merely to reiterate Rule 5 Section 4, viz., Engine Drivers seeing a red Signal whether it be by flag, lamp or any other contrivance are required under all circumstances and without exception to stop their Engines as soon as possible." We think Rule 6, Section 13 is better without the reiteration so clearly provided in the Rule above quoted under the head of "signals." Rule 6, Section 13 provides clearly for the neglect of signals, the Rules for working them being applicable to every servant of the Company, they are placed under a general heading and are supposed to be well understood by every servant of the Company and we see no particular reason for repeating them especially in the Rules for Enginemen and Firemen.

The alteration proposed viz., "when a Red Signal is shewn he must under no circumstances pass it, but as soon as possible after seeing such signal, bring his Train to a stand" and the following words from Rule 6 as it stands, viz. "On seeing a Red Signal he must if possible bring his Engine or train to a stand still short of such signal" constitute no very material difference.

The change proposed in Rule 11 we think is not necessary. Rule 11 applies to the Engine Driver keeping time with his train for which purpose he "is to take with him his book of time tables and special instructions and regulate by it the speed of his Engine." "Under Regulations

generally applicable to the servants of the Railway Company, Section 2, Rule 20 it "is provided that the book of Rules in English is to be kept in the possession of every Engineman, Fireman and such other servants understanding English to whom it may be delivered, and any such servant found without one will be fined" &c.,

We think therefore the addition proposed of "Rule Book" "and while on duty to have them always with him to be produced at any time when asked for" &c., is provided for and that it is unnecessary to repeat it in the Rules especially applicable to Enginemen and Firemen.

Section 13 para. 12. We see no objection to the change proposed in this Rule the expression "whenever an Engine on either line of Rails is disabled" &c., implies that the Railway consists of a double line of rails, the Madras Railway is a single only.

Rule 13. There can be no objection to the addition proposed in this Rule we would suggest that the latter part of Rule 19 should not be cancelled that is to say "and he must on no account leave his Engine or train on the Main line except in charge of the Fireman or some competent person."

Rule 18. The proposed additions to this Rule appear applicable to double lines of Railway and as such there is no objection to them.

We think that the rates of speed might judiciously be made 10 miles per hour instead of 5 miles an hour through facing points during day light and restricted to 5 miles an hour at night or in dark or foggy weather.

Rule 25. We see no objection to the addition proposed to this Rule.

Rule 26. The proposed change from a red light in front of an Engine travelling without a train to a white one is we apprehend intended to apply to a double line of Railway and as such would not apply to the Madras Railway.

Section 8. Train signals "provides that no Engine or Train shall start from any station between Sunset and Sunrise without the red head, and Tail Lamps being lighted."

Under proposed Rules to be observed by "Engine Drivers and Firemen on a single Line of Rails." Rule 37, proposes that "an Engine travelling without a Train after Sun-set must in addition to the usual white head lamp carry a red head lamp also a red side lamp on the tender and a red Tail lamp in the rear. If this be carried into effect to suit a double and single line where they may exist under the same management it would be unnecessary on a strictly single Line of Railway, but it would involve a single line in the expense of an extra lamp, the white one, which is the only objection we see to the Rule being made.

Proposed Rule 39. Rule 18 provides "In going through points at Junctions or sidings no Engine is to run at a greater rate than 5 miles an hour" we should construe this Rule as being applicable to facing points which are no where distinctly specified as facing points in the Book of Rules.

We have stated that we think that for trains passing a station with facing points a speed of 10 miles per hour might be allowed. If the "all right" signal be made we see no objection to such a speed, if not then the Engineman should so reduce the speed as to be able to stop before reaching the facing points at the station entrance. We think it is an excess of caution to reduce the speed to 4 miles an hour when passing such facing points, and must be found in practice exceedingly inconvenient with through trains particularly, if there should be many stations to pass.

We concur with the latter part of this rule, viz. "When two Engines approach a station at the same time both Engines must be brought to a stand before passing the facing points and there remain until specially signalled to advance."

Section 11 Rule 3. The proposed addition to the Rule would be an improvement as prescribing the mode of starting the Train which is no where described in Book of Rules.

Section 12 Rule 3. We think that the station Master should not cause the Bell to be rung until he has satisfied himself that the Train is ready to start by all the work appertaining to it having been properly performed, and this can scarcely be the case, if the Guard has afterwards to see "that all the carriage doors are secured and that the Luggage is properly sheeted" at least should be made responsible that before the Train is started it is all right in every respect. The

station Master causes the Bell to be rung as his all right signal to start and the Guard taking the order as prescribed in Rule 3 that he shall receive instructions from the station Master "sounds his whistle as a signal to the Engine Driver to proceed."

We are of opinion that a white Flag should be used as an all right signal by day precisely as a white light is used for an all right signal at night. At points and gates the white Flag exhibited would satisfy an Engine Driver or Guard that all was right and we would propose that all Trains should stop at points or gates unless an all right signal be made. It is prescribed section 3, That "white is a signal of all right to" go on. The signals will be made by Flags in the day time and by lamps at night which seems clearly to authorize a white Flag being used, but Section 4 para. 1 describes the signal man as standing out with his Flag brought to the shoulder and shewing a white Flag.

(Signed) H. A. FLETCHER,
Traffic Manager.

(") W. B. WRIGHT,
Locomotive Superintendent.

(True Copy.)
T. A. JENKINS,
Agent and Manager.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 474.

Extract from the Minutes of Consultation under date the 3rd October 1857.

Read the following letter from Colonel W. E. BAKER, Secretary to the Government of India; to T. PYCROFT, Esq., Chief Secretary to the Government of Fort Saint George, dated the 11th September 1857, No. 4491.

Public Works Department } SIR,
Railway.

With reference to your Office letter, No. 101, dated 27th February last, I am directed to forward to you the accompanying copy of my letter* this day addressed to the Secretary to the Government of Bombay, communicating the views of the Government of India on the additions and alterations proposed by the Great Indian Peninsular Railway Company in the printed Rules and Regulations for Indian Railways, under the Section "Enginemen and Firemen," and to state that the modifications on the various rules therein noted, should be adopted in the next edition of the Rules which may be printed at Madras.

(Signed) W. E. BAKER, COLONEL,
Secretary to the Government of India.

From Colonel W. E. BAKER, Secretary to the Government of India; to W. HART, Esq., Secretary to the Government of Bombay, dated the 11th September 1857, No. 4489.

Public Works Department } SIR,
Railway.

With reference to your letter, No. 176, dated 24th March 1856, on the subject of certain additions and alterations proposed by the Great Indian Peninsular Railway Company in the printed Rules and Regulations for Indian Railways under the Section "Enginemen and Firemen," I am directed to state that, after consulting the East Indian Railway and the Madras Railway Authorities, The Right Honorable the Governor General in Council sees no sufficient reason for generally adopting the modifications proposed; for although with two exceptions (Section 1, Rule

10 and Section I, Rule 13) to the cancelment of which the Supreme Government is not disposed to accede, as they are perfectly consistent with the spirit of the rules already in force, it is not considered that any better practical results commensurate with the great disadvantages accruing from their amplification and the consequent probable confusion in their working, is likely to attend their introduction. The modification proposed in Section 11, Rule 3, and Section 13, Rules 13, 19, 26, 29, and 30 are however approved, but as they are not considered of sufficient importance to call for an immediate revision of the Rules, the East Indian and Madras Railway Companies will be requested to introduce them in the next edition. The alteration affecting Rules 13, 19, will not be made compulsory on those Companies.

2. I am however to add that, notwithstanding the preference felt by the Government of India for the more concise set of Rules, His Lordship in Council has no wish to prohibit the Bombay Railway Company from using the more diffuse and amplified form which they appear to prefer.

(Signed) W. E. BAKER, COLONEL,
Secretary to the Government of India.

(True Copy.)

(Signed) W. E. BAKER, COLONEL,
Secretary to the Government of India.

Ordered that copy of the foregoing letter and its Enclosure be furnished to the Consulting Engineer, for communication to the Agent and Manager of the Railway Company for information and guidance.

(True Extract and Copies.)

E. MALTBY,
Acting Chief Secretary.

MADRAS, 9TH OCTOBER 1857.

No. 868.

To MAJOR T. A. JENKINS,

Agent and Manager of the Madras Railway Company.

SIR,

With reference to your letter, No. 98, of the 2nd February last I have the honor, by order, to forward for your information and guidance, a printed copy of Extract Minutes of Consultation, Financial (Railway) Department No. 474, of the 3rd instant, embodying a letter and its enclosure from the Secretary to the Government of India, regarding the Modifications proposed to be made in the printed Rules and Regulations for Indian Railways, under the Section "Enginemen and Firemen," and I have to request that the injunctions of the Government of India on the subject of the modifications may not be lost sight of when the next edition of the Rules is printed.

I have, &c.,

(Signed) C. C. JOHNSTON, CAPTAIN,
Officiating Consulting Engineer for Railways.

No. 106.

Extract from the Minutes of Consultation dated 28th February 1857.

Read the following.

REVENUE DEPARTMENT.

No. 187.

Extract from the Minutes of Consultation under date the 20th February 1857.

Read the following Extract from the Minutes of Consultation in the Financial (Railway) Department, dated 28th January 1857, No. 53.

Read the following letter from Lieutenant Colonel T. T. PEARS, c. b., Consulting Engineer for Railways; to T. PYCROFT, Esq., Chief Secretary to Government, Fort Saint George, dated Madras, 16th December 1856, No. 264.

SIR,

I have the honor to forward herewith a Report,* drawn up at my request by Lieutenant Roberts, Deputy Consulting Engineer, on the subject of the Pettah proposed to be constructed in the vicinity of the Vellore Railway station..

2. Before submitting this report, I thought it advisable to obtain from the Agent and Manager of the Railway Company, an expression of his opinion, regarding the sufficiency or otherwise of existing accommodation for future wants.

3. As the Acting Chief Engineer is of opinion that it may, possibly, be found necessary to apply for more land at some future period, he considers "for the sake of health and to prevent pilfering from our goods' sheds," that the Pettah should be kept well clear of the station.

4. In conformity with this suggestion, the Agent and Manager recommends that "a space of 200 yards clear might be kept round the station ground.

5. It will be observed from Lieutenant Roberts' Report that it is not in contemplation, to build round the station, but to restrict the Pettah to the high land to the north of the station, and on the East side of the Chittoor road.

6. Instead therefore of retaining a blank space of 200 yards as proposed by the Agent, but which has the double inconvenience of locating the Pettah at an unnecessarily great distance from the station, in the first instance, and in the 2nd, a possible enlargement of the premises bringing these into close proximity with the Pettah, thereby not only facilitating theft but increasing the danger from fire, I would recommend that a space between the North boundary paling (of the station) and a line running parallel thereto from the small temple, which is situated at a distance of about 120 or 130 yards in advance, on the plain already alluded to, should be left neutral ground, with the distinct understanding that it shall always remain so. The Pettah would therefore extend to the North of that boundary line, and the additional premises that may eventually be required for the station might be erected on the extensive plain on the west side of the Chittoor road, and the North of the present boundary paling.

7. These suggestions are, I believe, altogether in accordance with the opinions of Mr. A. W. Sullivan the Sub-Collector of North Arcot, who has given the subject a good deal of consideration. If therefore the Government approve of the same, and should be pleased to furnish the Collector with instructions in accordance therewith, the necessary arrangements might at once be carried out with the aid of the District Engineer.

From Lieutenant R. A. ROBERTS, Deputy Consulting Engineer for Railways; to Lieutenant Colonel T. T. PEARS, c. b., Consulting Engineer for Railways; dated Madras 2nd December 1856, No. 2.

SIR,

I have the honor to inform you that I yesterday inspected, in Company with Messrs. Sullivan and Pochin, the Sub-Collector and Head Assistant of North Arcot, the ground in the vicinity

of the Vellore Railway station, with a view of deciding on the best site for the Pettah, which it is proposed to construct there.

2. Mr. Collins, the Resident Engineer, who met us by appointment, pointed out the sites of the various buildings (connected with the Railway) that he is about to construct, on the land given over to the Railway Company for that purpose, but as that land appears only sufficient, and barely so, for present purposes, I think it might be as well to obtain the opinion of the Agent and Manager as to whether the accommodation that will be afforded is sufficient, or otherwise, for until this question is definitively settled, it is useless to attempt to set out the boundaries of the proposed Pettah.

3. The most advantageous site for this Pettah appears to us to be the plain to the North of the station, and to the East of the high road from Vellore to Chittoor. Its proximity to the station will depend on the result of the proposed reference, should you think it advisable to make any such.

4. The first thing to be done is to have the ground properly surveyed, and sections, crossing each other at right angles, taken to show the natural slopes. This, I imagine, will have to be performed by some member of the D. P. Works under the orders of the District Engineer. The Plans and Sections of the buildings, and the staking out of the main and cross roads, drains, &c., could eventually be done by the same officer.

5. The leading features to be kept in view, in forming a Pettah, appear to us, "uniformity of construction," as regards the houses, "abundant ventilation, and effective drainage."

6. The houses might be of 3 classes, and built in blocks of the same class, each block containing 6 or 8 houses, according to their respective size.

7. The main street should be 120 feet wide, from house to house, with a roadway of 60 feet; and the cross and other streets of half these dimensions.

8. A 1st class house, whether terraced or tiled, should be pukka built throughout, with a frontage of 12 yards, and a depth, including back yard of 34 yards. Immediately in its rear would run a drain of 4 yards width, at the back of which would come the back yard of a house of the same description and dimensions.

9. As it is proposed to have six houses contiguous, each block would be a square of 72 yards.

10. Houses of the 2nd and 3rd class, built with burnt, and sun burnt brick in mud, respectively, and tiled, would have a frontage of only 8 yards, but the same depth; so that a block, measuring 72 yards square, would contain 9 houses of each of these two classes.

11. These appeared to us the leading points to be kept in view, and, should you approve, it would be as well to obtain the sanction of Government, for the matter being now placed in the hands of the D. P. Works for execution.

12. As I inspected the line of Railway yesterday between Vellore and Trivellum, I take this opportunity of informing you that the works appear to be proceeding vigorously and well; though there is still a great deal to be done, both in earth and masonry work, to complete the line.

13. I observe that one of the Local Papers of this day's date states that the Bridge over the Chittoor road, near Trivellum, is completed. This is not the case, though the arch will doubtless be turned during this, and uncentered next week.

From Major T. A. JENKINS, Agent and Manager; to Lieutenant Colonel T. T. PEARCE, C. B., Consulting Engineer for Railways, dated Madras 11th December 1856, No. 904.

SIR,
With reference to your letter No. 689, dated the 5th instant, and its enclosure, I have the honor to annex a copy of a letter from the Acting Chief Engineer No. 714, dated the 10th idem, in which he states that the ground made over to this Company at Vellore is sufficient for the erection of the station buildings as now proposed, but that he thinks it is not desirable that a Pettah should be built in close proximity to it; and in this opinion, I beg to state that I concur.

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as doing so would not only facility theft but would increase the danger from fire. I therefore beg to suggest that a space of 200 yards clear might be kept round the station ground.

From ALEX. BEATTIE, Esq., Acting Chief Engineer; to Major T. A. JENKINS, Agent and Manager, dated Madras 10th December 1856, No. 714.

DEAR SIR,

The ground made over to this Company at Vellore, I think, affords sufficient accommodation for all the buildings we at present require at Vellore station.

Possibly at some future period the traffic may increase, so that it might be advisable to apply for more land; for this reason it would be advisable to keep the proposed Pettah well back, from the present Railway boundary.

For the sake of health and to prevent pilfering from our goods' sheds, which are on the same side of the line as the proposed Pettah, I think it would be advisable to keep the Pettah well clear of our station.

(True Copy.)

T. A. JENKINS,
Agent and Manager.

The Government approve the location of the proposed Pettah in the vicinity of the Vellore Railway station and the other arrangements connected with it suggested by the Consulting Engineer.

2. Resolved that the papers be transferred to the Revenue Department, in reference to Extract Minutes of Consultation in that Department 28th September 1855, No. 1094, whence orders will be issued in regard to the laying out of the intended Pettah. The Government view with approval the interest taken in the question by Mr. A. Sullivan, and would wish him to be employed in superintending the construction of these Pettahs, both at Vellore and at any other stations on the line through the North Arcot District at which they may be built.

(Signed) T. PYCROFT,
Chief Secretary.

Ordered to be communicated to the Board of Revenue, with a request to issue orders for the formation of the proposed Pettah in the vicinity of the Vellore Railway Station, with particular reference to the instructions contained in the orders of Government, dated 28th September 1855, No. 1094, and 11th August 1856, No. 866.

(A True Extract.)

(Signed) H. FORBES,

Acting Secretary to Government.

Ordered to be communicated to the Consulting Engineer for Railways for his information.

(True Extracts.)

T. PYCROFT,
Chief Secretary.

MADRAS RAILWAY,
MADRAS, 3RD FEBRUARY 1857.

No. 99.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

The Medical Officer at Paulghaut has raised the question that if he be required to leave his Station and to proceed to any place upon the line, to afford Medical aid to servants of this Company, how his expenses are to be defrayed.

2. I have the honor to state that I have referred the question to the Consulting Physician, a copy of whose letter, I annex, No. 7, dated the 17th of January, and beg to state that I concur in the opinion therein expressed, and as the services of the Medical Officer out of the Station, can be but seldom required, indeed only in the case of severe illness of a European or serious accident, I beg to recommend that the expenses incurred by the Medical Officer may be allowed when the distance exceeds 10 miles.

I have, &c.,

T. A. JENKINS,

Agent and Manager.

Submitted and recommended for the Sanction of Government,

T. T. PEARS,

Consulting Engineer for Railways.

Madras, 5th February 1857.

No. 7.

To MAJOR T. A. JENKINS,

Agent and Manager, Madras Railway Company.

DEAR SIR,

In reply to your letter, of yesterday's date No. 2, enclosing a communication (herewith returned) from Dr. Renton, relative to the providing of a conveyance should it be necessary for him to visit any of the Railway servants at the out Station, and requesting my opinion on the subject. I have the pleasure to inform you that it appears to me to be advisable that the usual expenses incurred for Palankeen or Bullock carriage Travelling by the Medical Officers to any distance of ten miles or upwards should be defrayed by the Railway Company, but not for any shorter distance.

I beg, &c.,

(Signed) J. SANDERSON,

Consulting Physician, Madras Railway Company.

(True Copy.)

T. A. JENKINS,

Agent and Manager.

Madras, 17th January 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 75.

Extract from the Minutes of Consultation, dated 10th February 1857.
Read the following letter from the Agent and Manager through the Consulting Engineer for Railways.

(Here enter 3rd February 1857.)

No. 99.

The Government sanction the arrangement recommended for providing for the payment of the expenses incurred by Medical Officers when proceeding beyond ten miles from their Station to afford Medical aid to servants of the Railway Company.

(True Extracts.)

T. PYCROFT,

Chief Secretary.

Communicated to the Agent and Manager in letter No. 164, dated 11th February 1857.

REPORTS ON THE STATE OF THE WORKS ON THE LINE.

MADRAS, 21ST JANUARY 1857.

No. 1.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,

Consulting Engineer for Railways.

SIR,

I have the honor to report the result of my examination, according to your instructions, of the works on the Line of Railway lying between the Pachaicoopum cutting, at the 109th mile; and Vellore.

2. The work at the cutting itself is apparently progressing, but from the difficulties encountered, in the quantity of rock met, which will have to be blasted out, the operation of excavation is necessarily tedious, and some months may be expected to elapse before the cutting is completed.

3. The progress of the cutting has been hindered, also, by the arrangements requisite so as not to interfere with the traffic, passing along the high road (Trunk road No. 1.) which is met here, as is also a small irrigation channel.

4. The channel is now bridged with the exception of its skew faces, and the road crossing made more direct and passing over it, is nearly completed, and in use.

5. I could not ascertain what arrangements have been determined on regarding the erection of a wall, or screen, required to divide the road from the Railway. Owing to the nature of the ground the road crossing is unavoidably lengthened, and as the right bank of the Palar is very precipitous here, skirts the north side of the road, it is a question whether, for the safety of the Public, a wall, or screen, should not likewise be built to shut out the view of the river, and prevent all risk of accident.

6. The cutting when I examined* it was 18 feet deep in one or two places, and from about 10,000 to 11,000 cubic yards had been excavated. It has to be, in the deepest part, 26 feet at the centre, and at the hill side will be, perhaps 50 or 60 feet deep.

7. Between the Pachaicoopum cutting and the Palar Bridge (2½ miles) scarcely anything but the staking out of the line has as yet been done. There are, however, no difficulties encountered on this portion, which will be put in

Up to the Palar. hand, Mr. Hederstedt, the District Engineer, informs me, so soon as he can spare hands from the other more laborious works under progress.

8. The Palar Bridge works are to be begun on the 15th instant. Preparations are being made to prosecute vigorously the work from that date, previous to which the amount of water in the river did not admit of the foundations being commenced upon.
9. The wells which Mr. Hederstedt proposes using will be of a superior description, and built of bricks specially moulded, and with great care, for the work.
10. The work done, by a contractor, during the last season in the attempt to form a foundation of wells having completely failed, the bridge has to be commenced entirely afresh this year.
11. The bridge consists of 24 arches of 30 feet span, and Mr. Hederstedt hopes, under tolerably favorable circumstances, to complete it in 15 months.
12. From the Palar Bridge to the end of District 4, no masonry work, with scarcely one exception, is completed, and very few even begun, though materials are in many places lying ready for the speedy commencement of the work; the embankments are for the most part completed, and have stood the late rains exceedingly well.
13. From the end of District 4, to the Goriattum Bridge, earthwork is in an advanced state of progress; and the masonry works, generally, have a fair start.
14. The Goriattum Bridge, 24 arches of 30 feet span, has not yet been, though it will be very shortly, recommenced upon. During the last season, the foundations of the north abutment, and of (5) five piers were built up to springing, and the foundation of one pier, on southern side, up to bed surface, below which all these foundations are carried 16 feet down, as Mr. Collins the Resident Engineer informs me.
15. The foundations are not built on wells, but with pukka stone masonry throughout, resting on a hard gravel, which was reached by means of a coffer dam of palmyrahs and mango planking well puddled.
16. Mr. Collins informs me that the required depth of 16 feet for the foundations was accomplished with great difficulty, as the picottahs of the country do not answer for a depth exceeding 12 feet, and it was only by lowering the river, by a channel 4 feet deep, that he was able to work out of water.
17. For this season, it is only when the river water is at its lowest level that the prosecution of the work, to the remaining foundations, can be attended with advantage: though it appears to me that a pump, and an artificially prepared hydraulic cement (instead of the common mortar used) would make these obstacles somewhat less formidable.
18. To the branch Goriattum Bridge, 12 arches of 15 feet span over a branch river, little also has as yet been done; though steps for the immediate commencement of the work have been taken.
19. Between the Goriattum river and Vellore the work both earthwork and masonry is in various stages of advancement, commenced mostly everywhere, but completed nowhere, either as regards permanent way or ballasting.
20. Mr. Collins expects to have District 4 finished entirely in October; and the first 8½ miles, or up to Vellore by the 1st April next.
21. At the Vellore station itself there appears to be some confusion, in regard to a plan for the disposition of the station buildings having been forwarded from the Railway Chief Engineer's Office to Mr. Collins, altogether at variance with that prepared by himself. As the Acting Chief Engineer and Traffic Manager are about to visit the spot, on their return to Madras, when they cannot fail to perceive the manifest necessity

in order to prevent further delay in the extension of the line, and for other obvious reasons for retaining Mr. Collin's arrangement, I need not allude, further, to the matter here.

22. Before concluding this report, I think it as well to advert to the delay, in the further extension of the line, that is likely to arise by the comparatively backward state of District 5.

23. Mr. Hederstedt, the District Engineer, has frequently mentioned to me the great difficulty he experiences in getting labor. On District 4, coolies to the amount of 6,000 to 9,000 daily can be obtained with ease, but on (his) District 5, only 1,500 to 2,000 daily, with difficulty, bricklayers and skilled workmen being in a like proportion.

24. He says, and very justly as it appears to me, that being tied down to certain rates he can hardly expect to attract labor, when there is so great a demand for it, at the same pay, in the neighbouring and more inviting District 4. If he attempts to raise his rates, in order to make his District commensurately attractive, he is told that he is drawing away coolies and workmen from other Districts.

25. It appears to me, however, that there must surely be some means of preventing the one from being a sequence of the other, and it is sufficiently apparent that some such means ought to be resorted to, so as to relieve Mr. Hederstedt from his disadvantageous position, and enable him to carry on his work vigorously.

26. I have delayed this report in the hope that I should be able to submit, at the same time, an analysis of the various specimens of rock I brought down with me from the Pachaicoopum cutting in the valley of the Palar. I was in hopes that these might to a certain extent be indicative of the existence of coal, but Dr. Hunter informs me* that they are not necessarily so, and he has kindly promised me an analysis, not yet received however.

I have, &c.,

RICHARD A. ROBERTS, LIEUTENANT,
Deputy Consulting Engineer for Railways.

Submitted (with observations) for the information of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 28th January 1857.

No. 28.

On a Report by Lieutenant Roberts Deputy Consulting Engineer for Railways on the state of the works No. 1, dated 21st January 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

Government will learn from this Report the actual state of the works in Districts 4 and 5. It appears to call for few remarks from myself.

2. The subject brought to notice in para. 5, regarding a screen between the rail and the trunk road, will not be lost sight of, when it shall be proposed to open that portion of the line.

3. In paras. 23 to 25, Mr. Roberts notices the difficulty under which the Engineer in District 5 labors, from being tied down to certain rates for labor, arrangements of this nature are made by the Chief Engineer of the Railway, and being responsible to his employers for the expeditious and economical execution of the work, matters of this kind are necessarily left to his discretion.

I have, &c.,

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 28th January 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 61.

Extract from the Minutes of Consultation, dated 3rd February 1857.

Read the following letter from the Consulting Engineer for Railways.

(Here enter 28th January 1857.)

No. 28.

Ordered that the above papers on the state of the Railway in Districts 4 and 5, be brought to the Notice of the Honorable the Court of Directors by an early opportunity.

(True Extract.)

T. PYCROFT,

Chief Secretary.

No. 2.

MADRAS, 28TH FEBRUARY 1857.

To LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to report the result of my tour of inspection, according to your instructions, of 1st the stations and general arrangements for the traffic on the open portion of the line.

2nd. The portion of line between Arcot and Vellore and 3rd of Districts 6 and 7.

2. At 11 A. M. of the 6th instant, I proceeded, in company with Mr. Fletcher, the Traffic Manager, and Mr. McMaster, the Resident Engineer of Districts 1, 2 and 3, to inspect the various Stations, but as I have already had the honor, with regret, to inform you, that I was so knocked up, that I found it impossible to proceed with the inspection further than Trivellore that day. I was obliged therefore, to defer the examination of the remaining Stations until Saturday the 14th instant, when, in company as before, with the Gentleman above named, I made a complete inspection of the whole line.

3. There were several points which could not well be decided upon, until estimates were prepared, showing the relative costs of improvements, which could be carried out in more ways than one, besides sketches to be made of several of the station-sites, to show how the extra sidings required could best be laid down, and the extent of fencing be more distinctly determined.

4. As Mr. McMaster promised to have these ready in a week's time, we agreed to have a final meeting on the 23rd instant, at the Traffic Manager's Office, to discuss these several points, and arrive at some decision upon them. At that meeting we were unanimously of opinion, I believe, that the following embodies all that is required to meet the requirements of the traffic.

5. 1st. In regard to fencing, in order to prevent Passengers leaving the Platform by any other than the regular gate, or gates, of egress, that a fixed plan should be laid down for all stations. Mr. Fletcher proposes that the platform railing should, in every case, be constructed in a line with the Railway.—Front of the station, the two ends of the Platform being railed off in the same way, with the exception of a blank space of 3 feet, next to the line, so as not to interfere with the opening and shutting of the carriage doors. In the verandah of each station, on either side, would be a swing gate, at one (or both) of which (as circumstances require) the ticket porter would stand, and prevent egress to any passenger without the delivery of his ticket.

6. This arrangement appears to me to meet all that is required. It would prevent that confusion and distraction that frequently occur at some stations, such as Perembore, where strangers, as I have seen, wander about at a loss to know to whom to give up their tickets, while the swing-gates would afford access by passengers to the necessaries, which, always at a distance from the line, are frequently so fenced in that the irresolute traveller may often be seen returning, with purpose unaccomplished, dreading the departure of the train before he can surmount the difficulties he sees before him in their access.

7. The 2nd point deserving of attention is some fixed plan of sidings, as a lie-by for wagons, at all stations where there is or will be a good's warehouse. Mr. Fletcher has given Mr. McMaster a general sketch of the arrangement he proposes, and the latter Gentleman will, I believe, submit the estimate for the same shortly.

8. At stations where the goods warehouse is already or in part, constructed, Mr. Fletcher's plan cannot be carried out in its integrity, but a modification becomes necessary, as these buildings are generally too near the main line to admit of it. But in whatever way carried out, such lie-by is indispensably requisite at all stations forming meeting places, or of sufficient importance to require a good's warehouse, so as to prevent carriages, as at present, being left either on the main line or through siding.

9. With these general heads, I proceed to point out, in detail, the arrangements we consider still requisite in order to complete the traffic arrangements for each station.

Perembore.

The station is a tiled couple-roof Bungalow, on north side of line, containing a Booking Office, 31 x 26 feet, ladies waiting room, and bath room, and sleeping apartment with bath-rooms for the Station-Master. The building is clean and in good order, with the exception of the flooring in the corner of the ladies' room and bath room, as also in the verandah (6½ feet wide) which has sunk somewhat in places, and requires slight repairs.

Improvements proposed. Passengers platform to be lengthened at its present height (2'8" above the rails) to end of paling on west side of Station.

Present siding, insufficient length, requires to be extended on west side, and made a total length of 500 feet, instead of 330 feet as at present.

A small siding as a lie-by for wagons, either damaged or from other cause detached from a train, is necessary, so as to prevent such being left either on main line, or through siding. There is space for such a siding, sufficient to hold 3 wagons, being led off, the through siding to the gate at east end of Station.

Fencing with gates to be put up as per Mr. Fletcher's general plan.

Red Hill.

This building is on the same plan as that at Amoor, described below; the walls, which are of brick and chunam, of an ordinary description, are for the most part completed, but nothing has been as yet done towards the roofing. The building rises from an earth platform raised from 10 to 12 feet above the surrounding paddy fields, and I presume it is the unequal settling of this earth, and of the foundations that has caused the cracks, and exceedingly ugly fissures, that are apparent about the basement in all parts of the building.

The Station stands at present, an island, as it were, in a sea of paddy fields, and until the formation of a road of approach to it, on either side of the rail line, the deferring of its construction can be of but little moment to Traffic interests.

Before any such further progress is made, therefore, in the building, I think it essentially necessary that the Acting Chief Engineer be called upon to inspect it, and report, whether he considers the foundations, above alluded to, to be in a condition to permit the completion of the buildings.

Avady.

The Station is a small tiled Bungalow with laterite walls and pillars, on south side of line; It has a convenient recess for the weighing machine for Passenger's baggage. The building is in good order and clean, the Passenger-platform is not perhaps quite so long as might be desired, but as its extension would involve either the removal of the water column at one end, or the Semaphore at the other, and thus be attended with more expense than the small amount of Traffic at this Station would justify, it is considered preferable to leave it as at present.

As regards an outer-fence to enclose the station premises, it is not easy to form an opinion at present, as to how much of the ground, originally allotted for the station, will be actually required to be permanently fenced in. At present, therefore, the putting up of boundary stones, showing the limits of the station premises, appears all that is required.

Should also the goods Traffic justify, hereafter, the construction of a loading-platform, in rear of the, lie-by siding, proposed below, it can always be effected without interfering in any way with existing arrangements.

In like manner, the 'through' siding, now 420 feet long in the clear, may be lengthened hereafter, should it be found requisite to do so; though the present Traffic would scarcely justify such an expenditure.

Improvements recommended. A lie-by siding, sufficient to hold 6 wagons, to be taken out of through siding on east side of station. Fencing with gates as per general plan.

Tinnanore.

Station on north side of line, built on same plan (in brick instead of laterite) as that at Avady. The building is complete, and in good order. The Traffic at this Station being, at present, very inconsiderable, it is not proposed to make any great expenditure on improvements here.

The Passenger platform can, at any time, be lengthened should it be, hereafter, found desirable to do so.

There has been, as you are aware, a petition in regard to the alteration of the site of this Station, with what likelihood of success you are better able to judge than I am. The following suggestion is of course, made therefore, under the idea that the present Station will be retained.

Improvement proposed. Fencing to platform, &c., to be erected on the proposed standard Plan. A lie-by siding, sufficient to hold 4 wagons, to be led from through siding on west.

Trivellore.

Station on north side of line, a terraced building of the 2nd Class, roomy and in good order, and, with the exception of the back verandahs, very clean. The Goods' warehouse is under construction; the walls are built, and the roof, constructed at Madras, is now being put up.

The present passenger platform (140 feet long) is found, on occasions of feasts, to be utterly disproportionate to the wants of the Traffic, and to be the cause of much confusion and danger to passengers, who alight from either side of the carriages on to the main line.

The question of remedying this want, either by extending the present platform, or erecting an additional one on the opposite side of the station, has been fully considered, and with the assurance, independent of its manifest advantages, that the former course will be far less expensive, as per a rough comparative estimate prepared and submitted by Mr. McMaster, we quite agree in recommending the same for adoption.

Improvements proposed. Fencing to Platform, &c., on the proposed Standard Plan. Passenger Platform to be lengthened, on east side, 160 feet, making a total length of 300 feet of high Platform, besides the 100 feet in front of the station, i. e. in all space for 19 carriages. The water column will have to be removed to the east end of new Platform. The main-siding to be lengthened at east end, and made similar to that at Sholinghur, viz., 600 feet long, or sufficient for 28 carriages.

The siding to the goods warehouse to be taken off through siding on Mr. Fletcher's proposed plan, alluded to in para. 8 of this letter. This siding will be continued up to the water tank, or 275 feet from the west end of the goods' warehouse; i. e. sufficient to hold 15 wagons.

An aloe fence to be planted on south side of, and close to, main line, and on north side a similar fence, running parallel to the line, at a distance of 220 feet from it; the fence, in either case, to extend from end to end of ground originally allotted for this station. The huts, at present standing within the limits above proposed, north of the line, to be pulled down. Boundary stones, showing the extent of the premises belonging to, though not at present

required at this station to be set up. A wall, with paling at top, to be built on east side of the Poodoochutrum road, between the aloe fence on the north side, above proposed, and the Railway gate on main line.

Cuddumbatore.

Bungalow and out-houses constructed, but in abeyance as a station at present.

Chinnamapett.

Small tiled Bungalow, on north side of line with 7½ feet verandah and recess, in fact on same plan as that at Avady, above described; complete with out-houses, in good order and clean.

Passenger platform can't well be lengthened, without a greater expense being incurred than the demands of the traffic at this small station render requisite.

The through siding, 420 feet in length, though rather short, is perhaps sufficient for present purposes, or until this station becomes a meeting place for trains.

Improvements proposed. Fencing to platform on proposed standard plan. A goods' warehouse required, should be on same plan as that now constructing at Companypett, and a siding to the same, on Mr. Fletcher's proposed plan, (vide para. 7;) boundary fence, on north side of line, to remain as at present, but to be extended up to west boundary, by means of an aloe hedge, distanced 90 feet from main-siding. On south side, an aloe fence close along main line, from east to west boundary.

Companypett.

2nd Class station, on north side of line, on same plan as that at Amoor described below, the walls are nearly up, but none yet quite completed; bricks required for the completion of the building are being made at Cuddumbatore.

Good's warehouse nearly completed, the walls of rather ordinary work are built, and the timber of the roof, of neat construction is up.

Passenger platform and main siding to remain at their present length.

Improvements proposed. Fencing same as for other stations. Front, or north side of station to have an earth platform, 10 feet wide at top, raised along the whole length of the verandah, the sides being sloped and turfed, with steps equivalent in length to frontage of Booking Office. A similar berm of earth for west side of station.

Good's warehouse siding to be on same plan as that proposed for Trivellore; the siding to be extended 300 feet making the total length from west end of goods' warehouse feet; water column to be erected near west end of platform.

Boundary fence of aloe to be planted round original boundary of Station on north side, and close along main line on south side.

Sholinghur.

3rd Class station, on south of line, contains two rooms one (Booking Office) 29×18', and the other 20×18, the walls and pillars are built of roughly worked stone in chunam, the roof (terraced) of the Booking Office, and of the verandah all round, is completed; that to the 2nd room has still to be built, the godowns are completed.

Improvements recommended. Fencing as for other stations. Platform to be extended to west up to water column some 30 feet.

Station to be supported, on its front or south side, by a bank of earth, 10 feet wide at top, sloped and turfed, with steps in front of Booking Office.

A goods' warehouse required to be built on the plan (with arrangements for siding) proposed for Chinnamapett, except that in this case the goods warehouse and its sidings will be on the east, instead of the west side of the station.

The proposed site for this goods' warehouse is near the Railway gate, on north side of the Road between Caverypauk and Sholinghur.

This road must be diverted a little to the west, and cross the line at a distance of 15 feet east, from the Semaphore. There will be a wall-paling (as at Avady) on south side of line, running parallel to the east side of the station, and closed up by a perpendicular line of paling running parallel to the main line, at a distance of 140 feet from centre line of Rails, to extend westward 440 feet. The road will have its east side fencing with an aloe hedge, and in continuation of the paling, above alluded to, a similar aloe fence will run from its east end to the east boundary of the station premises.

On the north side of line, an aloe fence, distanced at 140 feet from centre of the line, will run parallel to line from end to end (E. to W.) of original boundary.

The road, on north side of the line, will have its eastern boundary closed with a wall paling, and its western one by an aloe fence. In the former, i. e. paling, there will be a gate opening to the goods warehouse.

Amoor.

Station 2nd Class, built of brick masonry with terraced roof. The design (Gothic) of this building has been found difficult for execution, and the pillars have been frequently had to be more or less pulled down, from not being according to plan. The walls are all built to the required height, and the roof nearly finished. Mr. McMaster, hopes to have the building completed by the end of the current month.

The goods warehouse is completed, with the exception of the sliding doors yet to be fixed up, and a little plastering; the roof (38 feet span) of timber, with vertical iron ties, is of neat construction. There appears ample space afforded for what will be the traffic requirements of the place, when the line is open to Vellore; loading wall and other arrangements for goods very complete.

Improvements recommended Fencing, on general plan for all stations. Station verandah on south side to be closed with a Platform of earth, 10 feet wide at top, and sloped and turfed with steps of equal length with the Booking Office. The space between the stations and godowns being small, it will be as well to have "way in" and "way out" Boards, for all carriages entering the station premises.

10. The improvements, above suggested, are I believe not only conducive to the comfort and convenience of both passengers and traffic, but to the interest and well being of the Railway itself, and as, in each case, it has been attempted to confine these requirements to what is more urgently and immediately considered necessary, I trust you will be prepared to recommend the same to the favorable notice of Government for sanction.

11. In regard to the Amoor station, you are aware that application was made to the Agent sometime since for information as to whether extra ground was required, or not, beyond that already made over to the Railway Company at that place, and that the Agent's reply, in the affirmative, and sketch of ground so required, was forwarded to the Collector of North Arcot on the 9th December last. This ground has not yet been made over to the Railway Officials, and a Madras Firm (Messrs. Commiade and Co., as I am informed) have taken advantage of the opportunity to erect a small bungalow, with compound regularly hedged in, on a portion of the ground in question.

12. In regard to the line between Amoor and Vellore, the portion up to Trivellum is complete in every respect. I passed over it on a Ballast engine, with Mr. McMaster, on the 13th instant, and found the rails evenly laid, and sleepers well ballasted up, in fact in perfect working order. The skew bridge over the Chittoor road near Trivellum is complete, with the trifling exception of some pointing and the copings, and is a very neatly finished work.

13. The Trivellum Station is under progress, the foundations of roughly dressed stone masonry are built up to plinth, and the door and window frames are up. The walls of the goods warehouse are nearly up to their full height, and the roof, I am told, is ready at Madras. The out houses are in the same state, and the roof is likewise said to be ready at Madras. The Passengers' platform is built rivetted with the same description of masonry. There can be no mistake, I think, as to the works at this station being at the present time pushed on vigorously,

and in a manner, both as regards workmanship and materials, far superior to the general run of station buildings on the open portion of the line.

14. Between Trivellum and Vellore, the work, both in masonry and embankments, is being carried forward with great spirit at the present time. Rails are down for the whole of the distance, with the exception of the few breaks where the masonry works are still incomplete. On the 13th instant, when I went over the line in a Lorry with Mr. Collins there were 5 breaks as follows.

At 74 miles 6 chains, A triple 15 feet, arch abutments and piers up to springing; centres and stones for arches ready.

At 74 miles 9 chains, single 3 feet, culvert, of stone, not yet commenced.

At 75 miles 48 chains, single 15 feet arch, stone masonry throughout; arch under progress.

At 78 miles 6 chains, single 15 feet arch, abutment of stone, up to springing.

At 79 miles 66 chains, 9 feet timber top Bridge, abutment of stone masonry, wanting 4 feet in height to complete. Timber platform ready.

15. Mr. Collins is in expectation of being able to complete this portion of his District by the middle of March, when, but not before, he will be able to get up from Madras the turn-tables, and other heavy articles connected with the permanent way to Vellore. This portion of the line will probably be open to the Public, for traffic by Easter Monday.

16. *Vellore Station.* Temporary station has walls up to full height; the bottom 2 feet are of stone, and above sun burnt brick in refuse chunam; they are to be roughly plastered. The buildings consisting of 3 rooms, each 14' x 15', with 2 bath rooms, is doubtless finished by this time. Temporary passenger platform completed and the carriage dock likewise. Temporary Engine shed not commenced (on the 13th) but materials are all ready; it is to be built on palmyrah posts, to have sides left open, or merely matted, and a tiled roof. It will in all probability be early completed by this date.

17. Of the permanent buildings of the Vellore Station, the foundations for the station are excavated, but as there is still some doubt as to whether the Tower is to be built, or not, delay must arise unless this point is settled shortly. The Goods warehouse has foundations 3 feet high, up to level of rails, the work has been taken out of the contractor's hands, and the roof, which is now being made at Madras, will, if received soon, enable the building to be completed by the time that the line is open.

18. Before quitting the subject of the Vellore Station, I should inform you that Mr. Collins brought to my notice that he is unable to make the owners of 3 huts situated within the limits of the station premises to the south of line, and west of the Vellore road, clear out, as they decline doing so until they have received compensation for their houses. As the line to Vellore will be shortly open, it seems advisable to clear away from the premises all such incumbrances with as little delay as possible, and also to set in hand the laying out of the proposed Pettah, regarding which I was not able to discover that any thing practical had yet been done.

19. *District VI.* The work on this District appears to be progressing in a most favorable manner, large gangs of Woders are at work on various parts of it, and brick making, on a very extended scale, is being carried on by Mr. Johnston, the District Engineer, in such a manner as to ensure a very large supply of a superior description of brick, sufficient, in all probability, for the season's work. No estimate having been as yet received for this District, I am unable to state, in figures what proportion of work is executed, Mr. Johnston indeed promised me a memorandum of the kind, but as I have not yet received it, I can only speak in a general manner regarding the progress hitherto effected, no masonry works of any magnitude have as yet been commenced, but 8 culverts from 3 to 6 feet span are built, and 15 from 3 to 12 feet span are under progress. Earthwork perhaps in few parts fully completed, is in most in a fair way of being so. In fact, it may be said that the District will in all probability be completed before its neighbouring District No. V. The masonry works of importance in this District are.

1. The *Godaur Bridge*, at 3 miles 45 chains, plan not yet received in this Office, but I am informed it is proposed to have a skew bridge, with seven 20 feet openings; materials being prepared.
2. *Kulaur Bridge*, at 6 miles 60 chains, 5 arches of 30 feet span; stones in large quantities have been delivered by the contractors here for the foundation.
3. *Godaur 2nd Bridge*, at 7 miles 40 chains, 3 arches of 30 feet span; materials being collected.
4. *Patchay Cavañ Bridge*, at 14 miles 12 chains, altered from 2, 12 feet arches, to 3 12 feet arches.

This Bridge, constructed just previous to the setting in of the last monsoon, and while the work was still green, suffered considerably during the rains of 28th and 29th August last, so much so that it has been thought advisable to take up the old foundations, and to rebuild the work entirely afresh with additional water-way, which work is about to be commenced. The south west wing wall was completely carried away on that occasion, and the west end of the pier likewise settled slightly, causing a fracture through both arches and through the west parapet at the junction with each abutment, as Mr. Johnston informs me, he reported, at the time of the occurrence, to the Acting Chief Engineer.

20. As the estimate for this District has not yet been received, I think it very necessary, in calling for it from the Acting Chief Engineer, that that Gentleman be requested to submit it previously to the present District Engineer of No. VI District, for revision if necessary, since Mr. Johnston, being present on the District at the time of the great floods, on the dates above named, will be able to state decidedly what alterations, if any, he considers requisite to prevent the risk of any of the works, if carried out on the original design, being breached, which it is not too much to say (judging from how Government works in the vicinity suffered) they might have been, had they been constructed at the time.

21. In an Appendix* extracted from Form D is shown the amount and cost of earth and masonry work executed on District VI up to the present time, 30th January 1857, both by Mr. Johnston and his predecessor.

22. Of the two Stations in the District, viz., at Vaniembady and Tripatoor, no arrangements have as yet, as far as I could learn, been made towards their construction. Mr. Collins, the Resident Engineer, pointed out to me that as the site selected for the former station comprised a number of paddy fields which would require some expense to be incurred in raising, in order to make the ground available for the station, it would be advisable to encroach upon the village of Cadavaputty, through the east end of which the line passes. The village is a trifling one, and considering the undoubted importance of placing the station on such an advantageous site as that now occupied by the village in question, I certainly think that Mr. Collin's suggestion might be carried out, if it appears that there is no particular objection to such an alteration being effected.

23. *District VII.* From the beginning of the District up to the Muttloor Bridge, a distance of $\frac{1}{2}$ a mile, the earthwork is complete, with the exception of a small piece of rock to be taken out, and the ballasting laid.

24. Muttloor Bridge altered to 7 arches, and rise to 10 feet in lieu of 6 feet, so as to make the centering of the Panar Bridge suit, the level of the crown of arches has been lowered 6 inches to allow greater thickness of material between the rails and masonry; the piers are, therefore, $4\frac{1}{2}$ feet less in height than originally intended. The north abutment is built up to springing, and the south abutment, the foundation of which, I am informed, goes 15 feet down (to gravel,) is 3 feet above ground, and wants 7 feet in height to complete it. Of the piers, that to the south a dry pier is built to within 5 feet of springing, the foundation of 1 wet pier is just being commenced, and the remaining two wet and two dry piers have yet to be set in hand. The piers will be 5 feet thick as per plan, and, like the abutments, be built of rough stone masonry.

25. The amount of earthwork (extracted from Mr. Henderson's books) completed, up to the 31st January last, in each mile of this District, is seen in the attached Appendix,* in which, for reference, the estimated amount per mile is included. I should

* B. observe, however, that the comparison of these amounts does not give altogether an accurate idea of the length of line actually ready for the rails, since the cuttings being for the most part in very hard soil, their banks stand almost perpendicular, and consequently the estimated allowance for sloping not being executed, as in all probability it will not in a great measure be required, gives the impression of the work not being in such a complete state as it actually is. In the 5th mile, it will be observed, that the work executed (cubic yards 69,488) exceeds that estimated (cubic yards 54,997) by cubic yards 14,991; this is in consequence of the siding being taken out for the station, in the estimate for which such excavation is included.

26. Of the minor masonry works executed up to the present time, a table* is appended, showing, from information derived from Mr. Henderson, the amount executed up to the present time, 30th July 1857, compared with that still to be done, as per estimate for each such work. From this table it will be seen that more than one half of these minor works are completed, and that the remainder, with one exception, are all commenced, and in many cases in a fair way towards completion. In their present unfinished state, these works have not perhaps that appearance of neatness, which they will have when finished, but the work, as far as I could judge, appeared to be strong and sound.

27. The Panar Bridge, at 14 miles, 50 chains, 18 arches of 30 feet span, has likewise had the crown level of its arches lowered 6 inches, to enable additional ballast being laid over it. The arches have been (*i. e.* will be) altered from a semi-circle, as originally proposed, to a segment of 10 feet rise. This alteration was rendered necessary, Mr. Henderson informs me, in consequence of a clerical error, in the Chief Engineer's Office, where the highest flood line was omitted from the section, and the ordinary flood line taken as the highest. The necessity for this step was sufficiently demonstrated during the floods of last September, when the river, unencumbered with a bridge, rose, I am told, over the level of the springing line of arches, as originally designed. The piers, therefore, will be each $4\frac{1}{2}$ feet higher than as originally intended, *i. e.* ranging from $7\frac{1}{2}$ feet to 21 feet in height, but of the same thickness, 5 feet, as designed. They will all be of brick. The abutments, of rough stone masonry, and 7 piers are completed up to springing, 6 piers are built to within a height of 5 feet of this line, and 2 piers to within 10 feet of the same. For the remaining pier, the coffer dam for the foundation is being prepared. The work done has the appearance of strength, and the progress of the bridge is all that can perhaps be fairly expected, considering the great difficulties (alluded to below) attended with its construction.

28. Between the 9th and 10th mile, rails and sleepers are laid for a length of 40 chains, and sleepers for a further length. Had he had more rails at his disposal, Mr. Henderson informed me that he would have led out the cutting (18 feet deep) at 9 miles, to the bank, at 10 miles 30 chains, through the bed of the Cullavy tank. If the tank however, continue to dry up, he will be able to carry up his bank without resorting to this arrangement.

29. Of the two stations on this District, viz., Shamulputty at 4 miles 70 chains, and Morapar, at 23 miles 15 chains, no arrangements have as yet been made regarding their construction.

30. Regarding the present progress of the works, I think it due to Mr. Henderson to bring to notice the great difficulties he has to contend with in the general unhealthiness of his District. During the time of my visit, the 10th and 11th instant, there was a great deal of Cholera on all portions of the line, and the dread of it had, during the 3 or 4 days previous, deprived him, as he told me, of from 60 to 70 gangs of earthwork coolies, each gang averaging 14 men to 26 women. As the greater portion of these coolies come from a distance (Ryacottah chiefly) it will be difficult to replace them, even at the increased rates of pay offered.

31. All that part of the District south of the Panar bridge is, as you are aware, very unhealthy, Mr. Henderson tells me that the bricklayers cannot stand more than a fortnight's work there, without getting fever; and that there is much delay and, as a consequence, inferior work from their being obliged to change so often. It appears very advisable that this District should be supplied well with quinine, of which I am informed there is none at present. A comparatively small expenditure on this drug may be the means of saving most important time in the completion of the works on this District.

32. Regarding this District, I have now only to say that Mr. Henderson appears very anxious and to be using his best endeavours to push on the works as speedily as possible. The District, from the line crossing the water shed of the country required heavy cuttings and embankments, the former in most cases through a very hard soil. If arrangements are made for supplying the permanent way in proper time, there is probably little doubt of the District being completed simultaneously with Nos. 5 and 6.

33. In conclusion, I have the honor to point out that in the improvements, proposed in this letter, for each of the stations on the open part of this line, no notice has been taken of the want of shelter for vehicles. I am not aware what decision has been come to regarding the general plan that it is proposed to adopt for such shelter, nor indeed does that question affect the arrangements proposed. It appears very necessary that some shelter should be afforded, and it is a mere question of expense as to what that shelter should be.

I have, &c.,

(Signed) RICHARD A. ROBERTS, LIEUTENANT,
Deputy Consulting Engineer for Railway.

Despatched 3rd March 1857.

Submitted for the information and orders of Government.

(Signed) T. T. PEARS,

Consulting Engineer for Railways.

Madras, 4th March 1857.

APPENDIX A.

MEMORANDUM.

Showing amount and cost of earth and Masonry work executed on District VI, up to the 30th August last (when Mr. Johnston took charge) and since that date up to the 31st January 1857.

	Cubic yards.	Rs. A. P.
Earthwork cubic yards done up to 31st August 1856.....	4,40,878	78,989 9 4
Do. done up to 31st of January 1857.....	3,75,654	57,288 6 9
Brickwork cubic yards done up to 31st of August 1856, including the purchase of stone (granite) as building material.....	1,064	5,438 12 0
Brickwork done up to the 31st of January 1857, including purchase of (granite) stones, erection of lime, kilns, &c.....	1,096	5,323 3 7

RICHARD A. ROBERTS, LIEUTENANT,
Deputy Consulting Engineer for Railways.

APPENDIX B.

Statement of Earthwork executed on the 7th District, Madras Railway up to 31st January 1857, compared with the estimate amount for the same.

Mile.	Amount executed C. yards.	Amount as per estimate C. yards.	Remarks.
1	41,417	53,080	Excess occasioned by earthwork for the station siding being included.
2	64,875	55,903	
3	56,853	72,248	
4	61,019	73,299	
5	69,488	54,997	
6	40,582	60,289	
7	16,421	25,817	
8	18,252	73,545	
9	21,016	70,344	
10	28,758	52,693	
11	29,254	77,387	
12	21,694	41,572	
13	26,517	35,680	
14	22,315	34,846	
15	15,950	89,897	
16	11,467	34,647	
17	23,773	28,218	
18	13,459	21,334	
19	32,823½	31,120	
20	39,790	28,065	
21	23,544	19,451	
22	35,816	30,755	
23	53,541	17,264	
24	27,128	50,071	
Total.....	7,95,752½		

RICHARD A. ROBERTS, LIEUT.,
Deputy Consulting Engineer for Railways.

APPENDIX C.

STATEMENT OF MASONRY EXECUTED ON DISTRICT 7.

Madras Railway up to 31st January 1857, compared with the amounts included in the estimate for the same.

Mileage.	Abutments up or in progress.	Bridges completed.	Amount as per estimate.	Remarks.
Ms. Chs.	C. yards.	C. yds.		
0 42	536		3730	Muttoor bridge 11-30 feet arches.
0 45		144		Irrigation lead.
1 45		145	204	6 feet arch.
1 71		145	Not in estimate	
2 18	224		231	9 feet do.
3 34		56	29½	Double 3 feet culvert.
3 71	40		204	6 feet arch.
4 57		548	393	12 feet do.
5 3		105	100	6 feet do.
6 40		164	100	6 feet do.
6 68		79	33	3 feet culvert.
7 8		326	373	12 feet arch.
7 39	373		580	12 feet do.
7 67		359	480	12 feet do.
8 34	222		184	6 feet do.
8 69		72	158	6 feet do.
9 36		215	190	9 feet do.
9 48		66	11½	18 inches drain.
9 61		56	15	18 inches do.
9 74		33½	36	3 feet culvert.
10 21		272½	23	2 feet drain irrigation lead.
10 48	216		Not in estimate	
11 12		43	19	2 feet drain.
11 44	303		480	12 feet arch.
12 1		10	8	2 feet opening.
12 38	249		210	9 feet arch.
12 60	93		121	6 feet do.
13 20	204		184	6 feet do.
13 60	233		121	6 feet do.
14 15	237		298	Double 12 feet arch.
14 50	1463		5978	Panar bridge 18.30 feet arches.
15 21	209		950	30 feet arch.
18 23	13		210	9 feet arch.
18 71	157		72	3 feet culvert.
19 11	149		200	12 feet arch.
19 60		14	19½	2 feet drain.
19 71		130	46	3 feet culvert.
20 41		6	11½	18 inches drain.
21 0		404	200	12 feet arch.
Total...	4921	3393		

RICHARD A. ROBERTS, LIEUTENANT.
Deputy Consulting Engineer for Railways.

Extract from the Minutes of Consultation, dated 2nd April 1857.

Read report of the Deputy Consulting Engineer, dated 28th February submitted through the Consulting Engineer for Railways.

(Here enter 4th March 1857.)

1. In the letter above submitted Lieutenant Roberts, the Deputy Consulting Engineer for Railways, reports the result of his inspection of the Stations and general arrangements for the Traffic on the open portion of the line, the portion of line between Arcot and Vellore, and on Districts VI and VII.

2. The improvements suggested by Lieutenant Roberts at the several stations visited by him are, he observes in para. 10 of his report, "not only conducive to the comfort and convenience of both Passengers and Traffic, but to the interest and well being of the Railway itself, and as, in each case, it has been attempted to confine these requirements to what is more urgently and immediately considered necessary," he trusts that they will be recommended for the sanction of Government.

3. Colonel Pears has not expressed any opinion on the subject of these improvements, but has submitted the report for the information and orders of Government—should he and the Railway Authorities concur in the necessity of the works proposed by Lieutenant Roberts, the Government Authorize their being executed at once.

4. With respect to the remarks on the state of the foundations of the Red Hill Station house the Government desire, that, as suggested by Lieutenant Roberts, the Acting Chief Engineer be called upon through the Railway Agent to inspect the building and report whether he considers the basement, in all parts of which "exceedingly ugly fissures" are said to be apparent, is in a fit condition to admit of the superstructure being completed. In the meantime no further progress should be made in the building, the delay in its completion, it is remarked, can be of little consequence, as the approaches to the station on either side of the line have not yet been formed. The Consulting Engineer will state whether these approaches should be made by the Government or the Railway Company, in view to orders being issued in the proper Department for the work being at once proceeded with.

5. The Government resolve to communicate para. 11 of the report to the Collector of North Arcot, and to call upon him to explain the cause of the delay in making over to the Railway Company the additional ground required at the Amoor Station, and applied for so far back as the 9th December last, as also the circumstances under which a portion of the ground in question was granted to Messrs. Cammiade, and Co. for building purposes.

6. A copy of para. 18 will also be furnished to the same Officer, and he will be requested to state what impediments exist to the payment of compensation to the owners of the 3 huts situated within the limits of the Vellore Station premises, and to take immediate steps for the removal of these buildings. The Collector will also report at once what measures have been adopted for laying out the proposed Pettah in the vicinity of this Station.

7. The Consulting Engineer will, if necessary, communicate with the Railway Agent on the subject of the Estimate for District No. VI referred to in para. 20, and suggest that the course therein proposed, which appears to be judicious, be followed. Colonel Pears will also communicate para. 22, to the Agent in view to the opinion of the Acting Chief Engineer being obtained on the alteration therein suggested of the site selected for the Vaniembady Station.

8. The subject of para. 31 and 33, regarding the prevalence of fever in that part of the District south of the Panar Bridge and the suggestion that it should be well supplied with Quinine, as well as the want of shelter for vehicles at the several Stations; should also brought to the

notice of the Railway Agent in view to his taking such measures as may be necessary for supplying these wants.

(True Extract.)

T. PYCROFT,
Chief Secretary.

RAILWAY DEPARTMENT.
DEPUTY CONSULTING ENGINEER'S OFFICE.

No. 3.

TO LIEUTENANT COLONEL T. T. PEARS, C. B.,
Consulting Engineer for Railways.

SIR,

I have the honor to submit the following report of the Inspection made according to your instructions and just completed, of that portion of the line of Railway comprising Districts 8 to 17, and lying between the 170th mile from Madras, and the Terminus, at Beypoor, on the Western coast.

2. I left Arcot on the evening of the 20th April, and reached Calicut, (via Bangalore and the Neilgherries) on the 4th May. Proceeding thence to Beypoor, I inspected all the works in progress on the above mentioned portion of the line, in company with the Resident Engineer of each Division of the same.

3. The proposed arrangement of relieving the Resident Engineer of every 3 Districts of the executive charge of one of those Districts, as originally held by them, is, as you are aware, under course of adoption, but Assistant Engineers appear still to be wanting to enable the arrangement to be carried out fully.

4. District 17, is one of those Districts still in executive charge of the Resident Engineer. An Assistant Engineer, Mr. Rowlands, was residing at Beypoor at the time of my visit, but did not appear to be employed on the District.

5. The earthwork is in a very forward state and, with the exception of the gaps, where masonry works have to come in, may be said to be completed, as far as Tannoor (14 miles) while the earthwork on the remainder of the District (5½ miles) is likewise well on to completion. In fact ¾ of the earthwork, on the whole District, may be said to be completed.

6. This work has been done principally on contract, at rates varying from 9 pie to 1½ annas the cubic yard, the contractors being Hindoos (Nairs and Tiers) for the Coast Moplah, curiously enough, refuses to have anything whatever to do with earthwork, preferring to confine himself to plate-laying (in which from his superior strength and energy he excels) and work involving mere haulage and carriage.

7. The masonry, of which but little has as yet been completed, has nevertheless made a good start. It is all laterite masonry, and appeared to me particularly good of its kind. Not only in the selection of the stones, but in the thinness of the joints, in obtaining which great care has evidently been taken. I was glad to observe too that the necessary precautions are being taken so that there may be no intermission in the prosecution of the work on account of the monsoon, which was fast approaching at the time of my visit.

8. Regarding the larger works of masonry, nothing has as yet been done towards their construction, in the way of preparing materials. The plans of the most important, viz., the 3

undermentioned bridges, have not yet been received, as you are aware, from the Agent, nor as far as I can learn have they yet been decided on. These are for,

1st. Kuddulhoondy Estuary at 13 miles from Beypoor.

2nd. Tannoor Canal.

3rd. Tiroor backwater, at 18½ miles.

9. Beypoor Terminal Station, nothing has been done regarding the the Terminal Station buildings. No plan has been received as yet, nor is it decided on, I believe. No plan too has been decided on as yet as to the necessary works of construction to render the station properly accessible for boats, lading and unlading. A wharf wall and quay along the backwater on the east bank of the station premises is indispensably necessary, as you are aware; but I could not learn that any steps had as yet been taken in the matter.

10. While on this subject, I would bring forward a suggestion made to me by the Resident Engineer, and worthy as it appears to me for adoption, as to the advisability of purchasing a steam-tug to haul materials, on rafts, from ships laden with stores, and to ply between Beypoor and Calicut by backwater.

11. Of the 2 stations sanctioned* for this District, viz., 3rd class at Purpanangaddy and 2nd class at Tannoor, the sites though selected, the former on the east, and the latter on the west side of the line, and approved, in either case, are not yet staked out, nor are materials being prepared for the buildings, plans of which have yet to be received.

12. Of the Permanent way, 2 miles, commencing from Beypoor, are laid down and worked with much advantage; and there is a branch about ¼ mile long, to the laterite Hill, from which, there being none obtainable along or nearer the line, all the ballast for this portion of the line has to be obtained.

13. Of Permanent way materials, rails sufficient for about 10 miles, and chairs, fishing plates, &c., in considerable quantities have been received on the District. At Beypoor there is an Agent specially appointed to look after the landing of stores.

14. Sleepers sufficient for 6 miles have been received on contracts still running, and which, when completed, will suffice for the whole District, and 10 miles of the next, District XVI.

15. The Workshop at Beypoor still continues to supply a great amount of useful labor. The work done being exceedingly neat.

16. The following shows the amount of work executed up to the present time on the District.

Earthwork.....	5,71,870	Cubic yards.
Masonry.....	1,772	do.
Of which were executed during April 1857.		
Earthwork.....	35,299	do.
Masonry.....	672	do.

Average daily number of coolies in April 1,166 (in addition to contractor's coolies.)

17. District XVI. Between Poodiangaddy and Pattamby. The earthwork on this District, since its commencement, on the 1st March 1856, has made good progress, the average monthly out-turn for the whole period, as will be seen below, being 46,400 cubic yards. The 1st section of the District has light earthworks and is completed almost, on Section 2, two thirds of the earthwork is done, but the remainder comprises much rock and hard cutting.

18. The earthwork here is all done, with scarcely an exception, by coolies paid by the day, the contractors having abandoned their work. Trifling as is the distance of this District from the sea the character of the Moplah begins apparently to change already, in regard to his aversion

to earthwork for he now no longer hesitates to join with men of other castes in carrying on works both of cutting and embankments.

19. 3 Small culverts built of an ordinary description of laterite comprise the only *masonry work* completed. The number of cubic yards executed is given below.

20. The Bridge over the *Tutha River* is the largest one in the District. The plan of this Bridge proposed to be of timber, is not yet fully decided on, as you are aware; but that proposed will not I think answer the purpose. The line crosses this river just above its junction with the *Ponany* river, which, when in flood and affected lower down by the tide, is headed back, or rather becomes for the time deeper, less rapid, and more troublesome to manage (more especially from the rush when the tide retreats) where it debouches into the *Ponany*, than it does higher up, where the bed is of rock, and not, as here, of deep sand. Trees of a large size are frequently borne along this river during the monsoon floods, and render necessary a larger space for their passage than that allowed by the spans of the plan alluded to.

21. The masonry works of next importance are the two crossings of the *Kutacherra River*, at 18½ miles, and 14 miles. 22 chains, respectively, from the east end of the District. Still and shallow in general, with occasional deep pools, and any depth of mud are the peculiar features of this river. No plan has yet been received for either crossing.

22. This District, lying in a hilly country, the line, which appears to me to have been selected with much care and judgment, has to follow the valley of the river. Thus, for its greater length, the line passes through wet cultivation, and as the necessary embankments throughout have been formed, not from the cuttings as originally proposed* by Mr. Bruce, but from deep trenches running parallel to, and on either side of the line, the result has been that the paddy fields in the vicinity are completely drained of their usual superincumbent water; and a large amount of very valuable land has been thus unnecessarily destroyed. The question of re-filling these side ditches, on the completion of the line, will probably have to be taken into consideration.

23. The ryots seeing their crops fail, are naturally enough far from appreciating this practical lesson in sub-soil drawing; and I should not be in the least surprised at hearing, (as the line advances toward completion) of their showing, in a manner perhaps equally practical, their utter reprobation of the arrangement. I must confess that I could not myself see that there was any real necessity for the practice in the majority of instances, since the required soil might have, in these, been taken with great advantage from the adjoining "Parambas" or high lands; as has been the case in other Districts, where the Natives have, as might be supposed, shown themselves only too eager to have such high lands cut down, and brought to the level of paddy fields. The Engineer in charge of this District, however, informed me that the owners of such lands, on his District, refused to let them be touched, unless they were paid so much the cubic yard, for the earth thus taken away.

24. Between the 12th and 14th miles, the line passes in many places very near the river, in fact so near that any serious abrasion of the river's right bank would probably sweep away a portion of the Railway. Near *Parashanoor* too, not far from where the station will be, something of the same kind is likely to take place, and I think it necessary therefore to call your attention to the subject, in order that you may take such further notice of the matter as you may think fit.

25. Stations.—There are 3 stations sanctioned for this District, viz., at *Betal Poodiangaddy* or (*Vengaloor*) (3rd class,) *Parashanoor* (2nd class,) and *Puttamby* (2nd class;) the site for the first of these stations is in part marked out (17 miles 40 chains) but nothing further is done towards the construction of either this or the other two stations. The Collector of *Malabar* has made a strong representation as to the expediency of the requirements of the Railway for the *Poodiangaddy* station being kept within as narrow bounds as are consistent with efficiency, on account of the great hardships that will, otherwise, be endured by the villagers of *Vengaloor*, on the high ground constituting the site of whose village an isolated piece of *Paramba* land amidst paddy swamp, the site for this Station has been selected. It appeared to me that, by keeping altogether south of the line, ample space would be afforded for the Station, without encroaching at all on the village in question.

But a very small quantity of *Permanent way Materials* have been received as yet on this District, or of *Sleepers* either; I was informed that of the former considerable quantities have been landed at *Ponany*, and as regards the latter the District Engineer intends procuring these from the *Manaar Forest*.

27. Subjoined is a Statement of work executed on the District, from the commencement (1st March 1856) up to 30th April 1857.

Earthwork	Cubic yards 6,50,340
Masonry	1,418½
Of which during the month of April itself were performed.	
Earthwork	Cubic yards 71,922
Masonry	933

The average number of laborers for the month being men 795, boys 7,139, women 202; Total 8,136.

28. District XV. This District is still, much behind the others in point of progress. The Engineer, who was in charge at the time of your last visit, in August last, was removed some months since, and another Engineer has now taken his place. This Gentleman arrived on the District but a few days previous to the date of my visiting it, and consequently is not answerable for the little progress hitherto made. The 2nd Section of the District is not yet even staked out, and of the 1st Section about ¼ only of the earthwork may be said to be executed, no masonry work being of course yet attempted.

29. With the present supervision, and the line throughout the District being light, both as regards earthwork and masonry, there is every prospect now, I should say, of the work getting a good start. There appears no difficulty in getting coolies to any number required; and the Moplahs hereabouts not only flock to the work (all earthwork as I have said) but they bring their wives and children.

30. It is of very great importance finishing Section I of this District, viz. from *Wuttapalam* (the head of the water carriage from *Ponany*) eastwards, so that the permanent way materials, which can be brought up the *Ponany River* as far as this during the monsoon, may be led forward by rail from *Wuttapalam* to *Paulghat* and *Coimbatore*.

31. Amount of work executed up to the 30th April last.
Earthwork

Cubic yards 1,81,040

Of which was done in April 16,000 Cubic yards.

32. District XIV. The Earthwork on this District has been progressing very rapidly of late, and the embankments have a very firm, solid, and satisfactory appearance. I am glad to be able to report too that these banks are progressing without destroying the Paddy lands; the required earth is obtained by paring the adjoining high lands, the owners of which are delighted with the arrangements, and occasionally bring their own coolies to assist. The earthwork of the 2nd Section, which comprises, several banks and cuttings from 12 to 25 feet high and deep, is nearly finished, and probably is quite so by the time I write. On the 1st Section, perhaps one half of the earthwork may be said to be executed; but the remainder will not be completed so soon as the average monthly out turn of late, viz. 2,00,000 cubic yards, would warrant one in supposing, since the deviation* of line near *Walliar* is not yet staked out, nor is the jungle cleared.

* Authorized Ext. M. C. dated 28th April 1857.

33. With the exception of one rough stone culvert, there are no masonry works completed as yet, the quantity of that work executed, as stated below, is for the most part, in the foundations of the *Cotagarde* and other Bridges.

34. The Bridge over the *Palaur*, at *Cotagarde*, 15 arches of 30 feet span, is the largest masonry work in this District, 4 of the piers, built of rough stone in chunam, are up to within 5 feet of the springing, and 3 within 10 feet of the same; and these 7 piers can therefore, be proceeded with during the monsoon without any inconvenience. The foundations are rock throughout. There is a large quantity of stone delivered here ready for use.

35. The Stations sanctioned* for this District are at *Perlai, Paulghaut* and *Gungee Colah*; but beyond selecting the sites, nothing has yet been done regarding them. The site, at present proposed, for the Walliar Station is about a mile west of Walliar River, but it is not finally decided on.

36. Of *Permanent way materials* sufficient for about 6 miles of Railway have been received, and stacked in the work shop yard; of the 18,000 *Sleepers* contracted for on this District, only 8,669 have been delivered as yet, principally in the vicinity of Cotagard.

37. *Paulghaut Work Shops*. Beyond the number of Carpenters (100) and Blacksmiths (125) daily employed, there is nothing worthy of particular remark in the shops themselves. The men work, as Paulghaut workmen always will do, when looked after, in first rate style of its kind, and you may get anything from a spur to a sledge-hammer made or repaired here. No attempt, however, has been made, perhaps advisedly, to introduce (with the exception of 1 lathe) European contrivances of any kind, and the work which consists, for the most part, in repeating after a set pattern the separate pieces (of wood or iron) going to form tip and other wagons, proceeds with the usual banging of hammers and chisels.

38. The work executed up to the 30th April is as follows:—

Earthwork.....	Cubic yards 15,78,969
Masonry.....	3,300
Of which during April were done of Earthwork.....	Cubic yards 1,22,000
Masonry.....	417
The work still remaining to be done being.	
Earthwork.....	
Masonry.....	Cubic yards 2,64,170
The average daily number of coolies employed during April was 9,779.	27,104

39. While on the subject of these Malabar Districts, I may as well allude here to a communication addressed me by the Acting Collector of Malabar, on the subject of Bridges required over the Ponany River. Mr. Robinson, after alluding to the fact of the Railway line, throughout its whole length through Malabar, running along the north bank of the Ponany River, and thus being cut off "by a deep and difficult trench from all the traffic of the country to the south," proceeds to point out the only way in which this great impediment to traffic may be overcome, viz., by bridging the River opposite every Station; thus, in addition to the Walliar Bridge already built, and the two (Kalpettah and Kamady) at Paulghaut lately sanctioned, he would recommend that bridges be built at *Conjeevottah Peroor near Luckady, Vottapalam*, and *Pattamby*, at a roughly estimated total cost of Rs: 63,500, "of which the Railway Company ought to pay down in cash a moiety, and the works be put in hand at once."

There can be no doubt of the advantages that such Bridges would be both to the country and the Railway; but considering the advantages that the Cochin people would derive from the Railway, for the construction of which, moreover, they are not called upon to contribute in any way, it appears to me that that Circar might be invited to erect a Bridge at Pambady, on the road leading from Cochin to Luckady Cotta and the interior of Malabar, and where the crossing of the river is not very unfavorable for such a purpose. Leaving the subject, however, for disposal as you may think fit, I proceed to the Coimbatore Districts.

40. Districts XIII. The *Earthwork* on the 1st Section of this District is quite completed,

and that on the 2nd Section is very nearly so; the little remaining will be finished probably within a couple of months. *Ballasting* is laid wherever the *Earthwork* is done. The slopes of the embankments are not turfed on account of the difficulty of getting turf, but plants (Caster-oil plants principally) have been sown on the slopes. An aloe hedge at the foot of the slopes would, I think, be still more efficacious. The line throughout the whole District, being hedged in with great care, wears a very neat appearance.

41. *Masonry*.—At the time of my visit, I found, in section 2, all the masonry done to the abutment of Bridges except two which were in progress, and the arches of six still to be turned. On the 1st section the works are all small. Some few are not yet begun, but the greater number are almost finished. The masonry consists generally of rough stone abutments, with

brick arches, built in rings. The works have a very neat and solid appearance, and the bricks are undeniable, of a description and finish which unmistakeably show the care and attention paid in their construction by the Engineer of the District.

42. The largest Bridge in the District is that over the Noyel River, 5 arches of 30 feet, the formation level being 18 feet above the bed of the river. The arches were being turned at the time of my visit. The next in size is a bridge of 7 arches of 15 feet (at 17 miles, 15 chains) and 30 feet high from foundation level to bed of Nullah. The highest pier is 21 feet high this Bridge is very neatly completed.

43. *Stations*.—The only Station sanctioned for this District is Coimbatore Station; beyond staking out the site nothing has been done to it, nor has anything been done regarding the road to connect the Station with Coimbatore. It will probably be necessary, on account of the steep gradients (85 feet to the mile) between Coimbatore and Walliar, to have a Station half way between those places. The ground at this mid-point on the line (opposite Muddaykerry) is very favorable for a Station.

44. *Permanent way*.—About 2 miles of permanent way are laid down, but owing to a deficiency of sleepers not in a complete manner, though sufficiently complete for use with light wagons. Beyond those laid down, there is a small quantity of rails and chains lying ready for use.

45. *Sleepers*.—Contracts for only 3,250 sleepers have been taken up altogether for this District, and of these as yet only 1,220 have been received. To meet the supply required, the Engineer in charge of the District is, I believe, going to the Anamalai jungles, so soon as they are clear from fever, where he will make the best arrangements in his power for getting the sleepers required, without the aid of Contractors at all.

46. There is a small but very useful *Workshop* at Coimbatore, giving employment to 12 Smiths and 20 Carpenters, who turn out, under good management, very satisfactory work.

47. The work performed on the District, up to the end of April last, was;

Earthwork.....	Cubic yards 12,20,254
And as the estimated quantity of earthwork is.....do.....	14,40,993
There remains a balance yet to be moved of.....do.....	2,20,739
Masonry total executed.....do.....	26,192
Estimated.....do.....	29,128
Balance yet to be executed.....do.....	29,36
Of the above quantities of earthwork and masonry performed.	
The amount of each done in April was earthwork cubic yards.....	24,451
Masonry.....do.....	1,966
The average number of coolies employed daily during April was.....	5,166

48. District XII. Beyond staking out the line, and the construction of Bungalows for the Inspectors and Sub-Inspectors, nothing is yet done. The Engineer in charge, at the time of your last visit, was appointed, shortly after to the charge of District VIII, and the District has, accordingly, been during the interval, and is still, without an Engineer; work is just being started. viz., jungle cutting by day labor, and earth work on contracts.

49. The work both earthwork and masonry, throughout the District is very easy, of the former there is only one stiff piece of work, viz., the cutting at the Wattakuly Ridge. This is 19.7 feet deep in the deepest part, and rock will be undoubtedly found in large quantities. Perhaps the greater part of it will be rock cutting. The gradient up to this ridge, the steepest grade on the District, is 1 in 137.5 for 1 mile 43 chains. *Stations*.* These

* Para. 50 Stations.

are not yet finally decided on. If the branch line, to the Neilgherry Hills leaves the main line, as has been proposed, near Kurmattumpetty, a Station will of course be required opposite that place. I shall address you, however, on this subject separately. The Station for Avenashy will probably be at 10 miles 20 to 40 chains (of the District) opposite the

58. *Errode Traveller's Bungalow.*—This Bungalow was offered, some year and a half back, by the Collector to the Railway Company for sale at Rupees 1,500 or for rent at per mensem. But beyond making use of it, nothing appears to have been determined on in reply.

Earthwork.....	Section 1.....	4,09,174	Cubic yards.
	„ 2.....	3,88,481	
Total.....		7,97,655	

	Cubic yards.
Of which during April was done on Section 1.....	26,433
„ 2.....	43,308
Total.....	69,741

Section 1.....	2,027
" 2.....	2,588
Total...	4,615

Total...4,615

61. The amount of work executed, up to 30th April last, is earthwork cubic yards 1,97,576, of which, during the month of April itself, was performed 34,111 cubic yards. The average daily number of coolies being (in addition to Woders) 1,495.

63. Nine tenths of the *earthwork* on the 1st Section may be said to be completed, and two thirds of that on the 2nd Section. In the cuttings, rock has still in many places to be taken out, and the slopes cut, and turfed to be done to the embankments.

64. The largest work of masonry on the District is the Bridge, four 30 feet arches, over the *Shevroy River*, at 6 miles. The foundations are excavated, and the work is about to be started. The materials (rough stone and chunam) are all ready; but as the natural foundation is bad, no hard soil being met and there being plenty of water, there will be perhaps some little difficulty, at this season, in giving the work a good start. As for the remaining *masonry works*

P 2

P 2

52. District XI (Cauvery District) The Resident Engineer has not yet been relieved from the charge of this District, but an Assistant Engineer is, I am informed, on his way to join. A great deal of work has been done on this District since the date of your last inspection. The whole of the embankments, some of which are 24 feet in height are finished; they have been all done on contract, at the contract price of 40 cubic yards to the Pagoda, exclusive of trimming slopes, which has still to be done. In this, as in District XIII, there is no turf to be had, and it will be equally advisable, therefore, to plant an aloe hedge along the foot of either slope of the banks. The earthwork in the cuttings is nearly finished, except where there is rock, of which there is still much to blast out, enough to occupy many months yet. *Ballasting* has been commenced. Taking the average of embankments and cuttings, inclusive of blasting rock and Superintendence, the price of earthwork on this District is 2 Ams. 5½ P. per cubic yards.

53. With the exception of the *Cauvery Bridge*, no masonry work has as yet been commenced. Rough stone has been collected for a number of Bridges, but no lime is yet burnt. The stone is delivered, on contract, at 12 Annas per cubic yard piled.

54. For the *Cauvery Bridge* (22 arches of 60 feet) permission to collect materials for which was sanctioned in December 1855, 6,223 cubic yards, piled, of rough stone have been quarried and delivered by contract at the rate as above, of this quantity, 2,393 cubic yards were delivered during April last. A number of masons are employed dressing stone at the Bridge for the foundation of the west abutment and adjoining pier, which are being taken out. At the quarries, great quantities of stone are being quarried and dressed.

55. *Stations.*—The station for Perandoray will probably be at Colattupollium, where the District Engineer's Bungalow is at present, i. e. at 11 miles 47 chains, and where the road (not marked in the Map) from Perandoray to Caroor crosses the line. The Errode station is proposed to be at the crossing of the Trichinopoly, Caroor, and Errode road with the line, at 2 miles 20 chains of District XI; it is a level crossing and the site is good.

56. Of *Permanent way materials* but a very small quantity has been received in store. No sleepers have as yet been supplied and their is only one tender as yet sanctioned for the District, viz. for 6,000 sleepers, at Rupees 3, per sleeper.

57. In the *Workshops* at *Errode* about 40 Blacksmiths, 50 Carpenters, besides Sawyers &c., are employed, on the average, monthly. Neat carts are made here, and all description of work done very fairly.

they are all light; the abutments of many are built, and the rough stone required is delivered for every Bridge in the District, at rates varying from 4 annas to 12 annas per cubic yard heaped.

65. *Stations.*—The *Salem* Station is staked out, and ground hedged in, but nothing has been done further in the matter; nor is the road between Salem and the Station yet traced.

66. *Permanent way materials* have been received at the Salem Station for about $\frac{1}{2}$ a mile in length, 2 contracts for 30,000 *Sleepers* each are out at Rs. 2 and Rs. 2-1 respectively for sections 2 and 1; but of these only 1,800 have been delivered, some of them being of a very inferior description.

67. Independent of the Permanent way and sleepers, the 1st Section of this District, or from its commencement up to Salem, will in all probability be completed in 15 months time.

68. The amount of work executed on the District is in earthwork.

	Section 1.	Section 2.
Previous to 1st April 1857	4,68,806	182,848
During.....April 1857	36,620	40,005
Total to 30 April 1857	5,05,426	2,22,853
	2,22,853	
Grand Total.....	7,28,279	Cubic yards.

	In masonry Section 1.	Section 2.
Previous to 1st April 1857	330	miles.
During.....April 1857	713	miles.
Total to 30th April 1857	1,043	

The average number of coolies employed, daily, during the month of April 1857, was 6,018.

69. *District VIII.*—Since the date of Mr. Beattie's departure from this District or of your last inspection, little progress has been made towards the completion of the line. The earthwork of section 1 was complete at the time of your visit, and the *Ballasting* nearly so. On Section 2, the earthwork is likewise completed, except at the great rock cuttings, and for about $\frac{1}{2}$ a mile at the end of the 2nd Section.

70. Of these rock cuttings, that at 17 miles 30, to 40, chains has about $\frac{1}{2}$ taken out, and the remaining $\frac{3}{4}$ ds which is of solid rock, will be a very tedious job, with the small amount of labour available, to take out. Work is going on here, and the stone is being thrown so as to form the base of the adjoining embankment, which is 30 feet high. The same may be equally said of the heavy cutting at 16 miles 60 to 70, chains, of which a like proportion still remains to be done.

71. The *masonry works* of section 1 that were likewise finished, with the exception of wanting their timber tops, at the time of your visit, have still that want unsupplied. These timber tops are all to come from Madras; as yet only 3 have arrived, and these are not put up. The remaining Bridges of that section, viz. the two bridges, each three arches of 30 feet span, near Mullapooram, at 9 miles 74 chains, and 10 miles 30 chains, respectively, have been lately constructed. The work in these is of an ordinary description and the latter had still the coping of parapets and the pointing and painting doing, at the time of my inspection.

72. Of the Bridges yet remaining to be done in the District, there is the Ahtoor or *Palamode River*, 7 arches of 30 feet, excavation of foundations just commenced.

2. A Bridge of three 20 feet arches, at 17 miles 77 chains, the abutments and piers of which are about $\frac{1}{4}$ th finished.

3. A Bridge of four 20 feet arches at 16 miles 14 chains, the piers and abutments half up to springing, besides several single 20 feet arches yet to be built.

The *Moroer Bridge*, one 20 feet and two 15 feet openings is built, and awaiting its timber tops.

73. *Ballast* for about $\frac{1}{4}$ th of the 2nd Section is laid, or for about 14 miles in length along the whole District.

74. There has been a great deal of sickness, I am told in this District of late. Within the last 10 months, *Cholera* has broken out for the 3rd time, at Convoy Poodoor, and the gangs have been broken up in consequence. An Inspector of masonry died (of Dysentery and Fever) on the 29th ultimo, and he is the second European in charge of the Convoy Poodoor work that has died within the year. This rock cutting will certainly impede the opening to Salem, unless arrangements are entered into, at once, for entertaining some properly qualified man, on an increased rate of pay, to attend on those who may fall sick here, and at Ahtoor, another very sickly place where the Palamode Bridge is to be built.

75. The work performed, up to the end of April last, is given below for each Section.

• Earthwork.	Section 1	Section 2
	Cubic yards	
Previous to 1st April 1857.....	4,51,843.....	4,04,030
During April 1857.....	138.....	4,606
Total.....	4,51,981.....	4,08,636
	4,08,636	
Grand Total 8,60,617 Cubic yards.		
Masonry		
Previous to 1st April 1857,....	14,599.....	4,765
During April 1857.....	239.....	190
Total.....	14,838.....	4,955
	4,955	
Grand Total 19,793 Cubic yards.		

76. Having thus described, in detail, the present state of the Districts inspected by me, as per your instructions, and the manner in which the works therein are progressing, I need only now call your attention to the principal points, as it appears to me, on which their further progress demands special attention. These are the supply of stores, *Permanent way materials* and *sleepers*. For the want of the first of these three, every District almost is languishing. This fact is too transparent to require any details being entered into. As for *Permanent way* and *sleepers* you will observe from what I have already written that on the 231 miles of line, comprised in the 10 Districts now inspected by me, there have been received as yet of *Permanent way* sufficient only for 21 miles and of *sleepers* for only 12 miles. This state of things requires no comment.

77. Were it not for the delays attributable to this cause there can be no doubt that the new arrangement, of the Resident Engineers along the line being relieved from Executive duties, would enable such steady progress being made in their respective Districts, as would ensure the completion of every portion of the line within a reasonable time.

78. In conclusion, I think it right to bring to notice that during my Tour I have, in nearly every instance received, and with cordiality, from the various Resident and District Engineers, all the assistance I could expect, to enable me to arrive at a correct conclusion regarding the present state and progress of the works along the line. I mention this, as I addressed you, from Salem, on the 1st Instant, a letter on the subject of a Circular forwarded by the Acting Chief Engineer to all the Engineers, directing them to be very careful in the information they supplied me with, for fear, as I understood, that harm should come of the same. I can only say that this

caution appears to me, from what I have seen, to attempt to throw discredit where none is due; and I cannot consent to believe that these Gentlemen have so much to conceal as to render such a caution in any way necessary.

I have, &c.,

RICHARD A. ROBERTS, LIEUTENANT,
Deputy Consulting Engineer for Railways.

Madras, 23rd June 1857.

Submitted (with observations) for the orders of Government.

T. T. PEARS,
Consulting Engineer for Railways.

Madras, 3rd July 1857.

On a Report (No. 3.) from Lieutenant Roberts, Deputy Consulting Engineer, dated the 23rd July 1857.

OBSERVATIONS BY THE CONSULTING ENGINEER.

Ex. Mins Cons. No. 169,
dated 1st April 1857.

Western Coast.

1. His report is now submitted and contains much interesting matter, and upon the whole satisfactory information.

2. The report is long, though not more so than the extent of work to be reported upon demands; and I shall not trouble Government with many remarks upon it.

3. The progress of the works during the late dry season has not been rapid. It has been on the average moderately so in regard to earthwork, decidedly unsatisfactory in masonry.

4. Of the Districts under consideration, 11, 13 and 14 seem to be those upon which work has been of late carried on with greatest vigour. The two former have shown indeed steady progress from the time of their commencement.

5. On the subject of the amount of land taken in the District of Malabar. I have already addressed the Agent and communicated to him the orders of Government.

6. The Agent has been again addressed, in consequence of the remarks made by Lieutenant Roberts on the works on District 16, with the view of ascertaining how far the orders of Government have been carried out on this important point.

7. Lieutenant Roberts notices the delay that has taken place in furnishing plans of the Beypoor Terminal Station buildings and other important works, the want of stores and permanent way materials, and the backward condition of station buildings.

8. The latter should be begun as soon as possible, as they would be very useful for the Officers of the Railway themselves if completed before the opening of the line. With regard to the permanent way materials, contracts for sleepers to a very considerable amount have been entered into and it may be presumed that the supplies will be delivered ere long. The completion of the line, considering the actual condition of the works on these several Districts, cannot be considered as delayed yet by the want of these materials.

9. On the subject of the Station and other buildings, for which plans are still wanting, the Agent will be addressed very shortly, and the occasion taken to notice some other points touched upon by Lieutenant Roberts.

11. Government will observe with satisfaction the report made by Mr. Roberts, of the courteous reception he has experienced at the hands of the several Resident and District Engineers. Anxious that the intercourse between these Gentlemen and the Government Officer should be carried on still in the same spirit as heretofore, I have made enquiries of the Agent on the subject of a certain Circular Letter, noticed in the same para. as having been forwarded by the Acting Chief Engineer, and shall report the result for the information of Government.

(Signed) T. T. PEARS,
Consulting Engineer for Railways.

Madras, 3rd July 1857.

FINANCIAL (RAILWAY) DEPARTMENT.

No. 404.

Extract from the Minutes of Consultation under date the 15th August 1857.

Read Observations by the Consulting Engineer on a letter from the Agent and Manager of the Madras Railway Company.

On the state of the works on the Line of Railway from District 8 to 17 inclusive. (Here enter 3rd July 1857, No. 244.)

With the foregoing observations a report, made by Colonel Pears' Deputy, on the state of the works from Beypoor to the vicinity of Salem, has been submitted.

3. Adverting to paras: 22 and 23 of Lieutenant Roberts' report Colonel Pears has stated that an explanation has been called for from the Agent in respect to the infraction of the orders of Government, noted in the margin. In

District XVI in Malabar, in lieu of taking the materials for the embankments from the cuttings, the Railway Officials have excavated the land on either side of the line into "deep trenches," and "the result has been that the paddy fields are "completely drained of their usual superincumbent water." The operation in short has been attended with all the effects of subsoil draining. Lieutenant Roberts anticipates, and not without reason, that the Ryots will ere long proceed to demolish the embankments, and thus that a serious disturbance will be engendered.

4. In other Districts, (para: 32,) the Ryots have cheerfully consented to allow the people of the Railway to procure what earth they require from the Parambas on high lands in the vicinity. The Ryots of the tract above referred to, however, it is stated, refused a similar consent, asking exorbitant prices for any soil that might be so removed. It is difficult to conceive that they should have been so blind to their own interests, as to object to a course which would make their dry lands wet lands, and secure to them at the same time the peaceful possession of lands already irrigated.

5. The Governor in Council will not believe that a reference to the Revenue Authorities of the District, the natural protectors of the Ryots, would not immediately have obviated the adoption of the hostile measures so precipitately taken in hand by the Officials of the Railway. It only remains to consider what compensation should be made to the Ryots for any loss they have already sustained, and what means should be taken to put a stop to the further and continued draining of their lands. If it should be decided that the trenches must remain as they are, the injury to the land will of course be permanent and the Railway Company must be prepared to compensate the Ryots accordingly.

6. After making the necessary enquiries Colonel Pears will furnish a special report on the subject. It is just ground for dissatisfaction that this is not the first instance in Malabar where the interest of the landholder have been rudely assailed during the progress of the line in that District.

(True Extract.)

(Signed) T. PYCROFT,
Chief Secretary.

PROGRESS OF WORK ON DISTRICT 4.

No. 427.

To N. B. ACWORTH, Esq.,

Agent and Manager of the Madras Railway Company.

SIR,

* Received 13th May.

In the remarks column of Form* E for the month of February last your Chief Engineer observes.

† Masonry.

"The amount of work† done on District 4 during the month appears large owing to an omission in the account for January being here supplied."

2. The No. of cubic yards of work reported in January is 65 and in February 11,786½, amounting together to 11,851½, and giving an average per month of 5,925¾ cubic yards.

3. It appears to me, however, that the omission, to which your Chief Engineer alludes must have occurred in several months, for in looking over the periodical Reports since the year 1854, I

* Note, including Stations the average is 9,052¾ cubic yards. do not find that in any District so large an amount as 5,925¾* cubic yards of masonry work has ever been executed in one month.

1857.	
January.....	707
February.....	2,025
March.....	2,426
April.....	1,986
May.....	2,843
June.....	735
July.....	733
August.....	487
September.....	74
October.....	110
November.....	"
December.....	"
Total....	12,106
1858.	
January.....	65
February.....	11,786½
	11,851½

4. Independent of this, judging from the work executed in District No. 4, during the year 1857, when it is presumed every exertion was being made to push forward the Bridges, &c., it is apparent that the omission has reference to other months besides January.

5. Omissions of this nature are very much to be deprecated, as the Government Officer in making his comments on the progress for each month, is guided solely by the figures exhibited in the Forms; and it is now evident that while he was finding fault with the small quantity of work done during certain months of last year in District 4, there was in reality no fault to find.

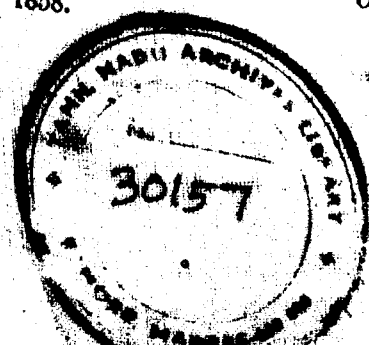
6. I need hardly say that to obviate any misunderstanding on this head in future, it is of the utmost importance that the progress in each District should be correctly reported month by month; and I have the honor, therefore, by order, to request you will be good enough to issue such instructions as you may consider necessary on the subject to your Chief Engineer.

I have, &c.,

(Signed) C. C. JOHNSTON,

Officiating Consulting Engineer for Railways.

Madras, 14th May 1858.



R
415.2 + m57
m58