

Papers regarding

- 1) Public works in India. D.2.M5 A853
- 2) Return of public works completed in India, in the last ten years, and of those now in progress. 1857
D.2.M5 A851
- 3) Documents relating to works of irrigation on the Godavari and Krishna rivers. D26.218.M5 A853
- 4) Reports on the irrigation of Rajahmundry and the delta of the Godavery. D26.2185.M5 A853
- 5) On embankments of the rivers of Bengal
D26, R.262 M5 A849
- 6) Papers relating to Public Works in India.
D.2.M5 A853
- 7) Correspondence relative to expenditure of Public Works in Madras. 1847-1853 D.21.M53 A853
- 8) Papers on the establishment of Electric Telegraphs in India. D66, 47.2.M5 A855
- 9) Report of the Commission appointed by the Hon. East India Company to visit the rivers Danube and Rhone with the view of obtaining a conclusive opinion upon the description of best adafotes for the rivers in India. X423.53.M56 A856

E A S T I N D I A.

RETURN to so much of an Order of the Honourable The House of Commons,
dated 29 July 1853;—for,

COPIES "of INSTRUCTIONS from the Court of Directors to the Government of India in their Despatch of the 30th day of July 1850, on PUBLIC WORKS:" Should be January

"Of Major Wylie's LETTER of the 21st day of December 1850, of INSTRUCTIONS of the Government of India respecting PUBLIC WORKS:"

"And, COPY of the LETTER from the Madras Government to the Honourable Court of Directors, Public Works Department; dated the 13th day of November 1852, No. 11."

East India House,
4 August 1853.

JAMES C. MELVILL.

Public Department, 30 January (No. 2.) 1850.

LETTER from the Court of Directors to the Government of India,
Public Department.

Our Governor-general of India in Council.

Para. 1. SEVERAL very important and intimately connected questions, in relation to the superintendence and management of public works, have been brought under our consideration in letters from all the Presidencies. We have thought it desirable to embrace the subject in one view, and to communicate our opinion on it to your Government. Public Works.

2. We shall notice these questions, and the subjects from which they have arisen, in the following order:—

- 1st. The Great Trunk Road.
- 2d. The Agra and Bombay Road.
- 3d. The District Roads of Madras.
- 4th. The Bombay Road and Tank Department.
- 5th. The separation, for India and Bengal, of the Civil Branch of Public Works from the Duties of the Military Board
- 6th. The Education of Young Natives as Assistant Engineers.

The Great Trunk Road.

3. The documents connected with the letters noted in the margin*, report the progress of the works on the Great Trunk Road, the amount already expended, * See below.

India, Public	—28 August	(No. 29)	1847, para. 74 to 83.
" "	10 December	(No. 52)	1847, para. 105 to 111, and 115 to 117.
" "	31 December	(No. 55)	1847, para. 83 to 89.
" "	11 March	(No. 17)	1847, para. 30.
" "	20 May	(No. 30)	1847, para. 88, 89, and 95.
" "	19 August	(No. 43)	1847, para. 108 to 110, and 121 to 124.
" "	21 October	(No. 53)	1847, para. 64 to 70, and 72.
" "	13 January	(No. 1)	1849, para. 74, 75 and 78.
Bengal,	21 March	(No. 9)	1849, whole.
India, Judicial,	10 July	(No. 9)	1847, para. 19 to 22; also,
Public		(No. 51)	1847, para. 15.
" "		(No. 41)	1848, para. 18 to 21; Letter (No. 1)
" "		(No. 2)	1849, whole, ordinary (No. 6)
Bengal, Judicial,	18 Nov.	(No. 24)	1847, pa

PAPERS RELATING TO PUBLIC WORKS, INDIA.

expended, the amount required for the completion of the road, and the probable annual sum which will be required for its maintenance.

4. The report of the superintendent, Captain Willis, of the 14th December 1847, gives a summary of the work that had been done up to that date, of deficiencies in the execution, and of the causes of those deficiencies.

5. Of the work that has been done, including a quantity of extra work resulting from damages by the floods of 1845, the report is on the whole satisfactory. Of the deficiencies, the causes are recapitulated as follows:

- The ignorance of overseers.
- The increase of work from the unprecedented floods of August 1845.
- The delay in passing estimates.
- The ignorance of accounts in one executive officer.
- The dilatoriness of another.
- The increase of Captain Willis's charge.
- The alteration of limits causing delay in transfer of duty.
- The cholera.
- The absconding of workmen from unhealthy districts.
- The illness and death of many overseers.
- The illness of Lieutenant Beadle, from the unhealthiness of his locality.
- The seizure of hackeries for troops.

6. The report of the Military Board, dated 15th December 1848, brings down the statement of expenditure to 30th April 1848.

	Rs.	a.	p.
7. The statement submitted to Government, with the Military Board's letter, dated 21st August 1846, showed the expenditure to 30th April 1845, as - - - -	38,41,489	2	11½
The expenditure in the three years succeeding was - - - -	10,50,108	11	3
Making the Total Expenditure to 30th April 1848 - - - -	48,91,597	14	2½

8. The estimate for the completion of the works was given in August 1846, as Rs. 43,68,818. 8., which included 18 lacs for the Soane and Jumna bridges. In December 1848 it is given as, -

	Rs.
For the road work - - - -	33,02,507
For the bridge over the Soane - - - -	60,00,000
For the bridge over the Jumna - - - -	10,00,000
TOTAL - - - -	1,03,02,507

9. The estimate for the completion of the works,* after deducting the intermediate expenditure, remains nearly the same in 1848, excluding the Soane and Jumna bridges, as it was in 1845, including them. It therefore appears, that there is an increase on the estimate for road works of 18 lacs, and a new estimate of 70 lacs for the two bridges in question, making a total addition to the estimate of .88 lacs.

10. We

	Rs.	a.	p.
Estimate for completion of works 1845-46 - - - -	43,68,818	8	-
Expenditure in three years, to 30 April 1848 - - - -	10,50,108	11	-
Balance of estimate, including 18 lacs for Soane and Jumna bridges - - - -	33,18,709	13	-
Balance of estimate, deducting the 18 lacs Estimate 1848, excluding bridges - - - -	15,08,709	13	-
Estimate 1848, excluding bridges - - - -	33,02,507	-	-
Increase of estimate for road works - - - -	17,83,797	3	-
New estimate of Soane and Jumna bridges - - - -	70,00,000	-	-
Total - - - -	87,83,797	3	-

10. We observe, on your proceedings of an earlier date, that the Governor-general of India, in consideration of railways, and in consideration of the great outlay in 1848 on the Ganges Canal, and on Aden, had proposed that the construction of all great bridges on this road should be suspended; and that this proposal had been adopted, one in favour of the Barrakur Bridge, in consideration of its the great accumulation of materials.

11. The road after completion was roughly given (at 1845) at 350 rupees per mile, or 3,50,000 rupees for the entire distance from Hooghly to Delhi.

12. The drawings of the second division of the road, transmitted with your letter dated 21st March (No. 9) 1849, reflect the highest credit on Captain Beadle, the late assistant surveyor, by whom they were executed, as he states, in hours of leisure; and it was his especial request that they might be transmitted to us. We desire that our acknowledgments and approbation may be communicated to him.

The Agra and Bombay Road.

13. The Agra and Bombay road was planned under the Government of Lord Auckland.* The projected expenditure was as follows: for the road from Agra to Dewas, with a branch road from Gwalior to Seepree. Rs.

For the road from Agra to Dewas, with a branch road from Gwalior to Seepree	60,000
For the road from Dewas to Akburpore on the Ner-budda	Rs. 60,000

Thus contributed:

British Government	20,000
Holcar Government	Rs. 20,000
Dewas Government	10,000
Dhar Government	10,000
	40,000

In November 1842, a further sum was sanctioned on account of this portion of the road of 43,000

Two estimates subsequently sanctioned as portions of the intended expenditure, 15,279 rupees for the first portion of the road, and 11,772 rupees for the second portion, were erroneously set down as additional grants 27,051

Rs. 1,90,051

14. The expenditure to November 1847 is stated as follows: Rs.

New work of road	1,94,310
Superintendence	1,13,106
Repairs and contingencies	47,542
	Rs. 3,54,958

15. The

* India, Public— 4 February (No. 8) 1848, para. 74.
 " " 20 May (No. 30) 1848, para. 67.
 " " 10 August (No. 40) 1848, whole.
 " " 14 August (No. 41) 1848, para. 18.
 " " 19 August (No. 43) 1848, para. 128.
 " " 21 October (No. 55) 1848, para. 73 and 74.
 " " 13 January (No. 1) 1849, para. 79 to 82.
 Bombay " 24 December (No. 132) 1845, whole.
 " " 1 April (No. 22) 1848, whole.
 " " 16 October (No. 84) 1848, whole.
 " " 15 November (No. 100) 1848, whole.
 " " 14 February (No. 6) 1849, para. 52 to 56, 63 to 67, and 69.

15. The new work, therefore, exceeded the whole amount sanctioned, intentionally and inadvertently; and the expense of superintendence, repairs, and contingencies carried on the amount to more than double the original intentional sanction.

16. We cannot suppose that the original sanction did not include the probable charge for superintendence, for, from the manner in which this portion of the expenditure is stated, "salaries and establishments for superintendence," it appears to be all special charge for this particular work; yet the statement that the charge had exceeded the estimate by 31,300 rupees, would seem to imply that an indefinite charge was to be understood as necessarily added to the original sanction. This is a point which requires to be distinctly cleared up and explained, with reference, not to this work only, but to all public works, as it is impossible to know what is sanctioned, if superintendence and contingencies are not included in the estimate.

17. Our sanction is now requested to an annual expenditure of 28,700 rupees, for the repair and maintenance of this road.

Madras District Roads.

18. The letters noted in the margin,* from the Government of Fort St. George, relate chiefly to the formation and maintenance of roads under that Presidency. The letter, dated the 3d January 1849, transmits a general report of the Road Department from its establishment to the 1st May 1848, and the orders passed thereon by the Government.

19. The whole of the proceedings referred to in these letters lead to the following conclusions:

20. The roads in some instances, from want of previous survey and other causes, have not been well planned with respect to the line; so that a road on a new line becomes desirable, and even necessary, for permanent traffic.

21. They have been carried below the level of tanks, when they might have been carried above it; and embankments have been broken, and bridges carried away by inundations, which, on the higher line, would have been comparatively innocuous.

22. They have been constructed without due provision for their permanent maintenance; so that either the entire road has gone to decay, or one portion of it has become unserviceable, while another portion was in progress of construction.

23. In many parts of the Presidency it is impossible, from the want of local materials, to construct metalled roads except at an altogether disproportionate cost.

24. The carts generally used are constructed on a principle calculated to destroy the roads. This principle was introduced about 50 years ago; and it may be therefore presumed, that the people would not object to the introduction of an improved form.

25. To construct a system of trunk and branch roads, on a permanent and generally useful principle, would require a greater outlay than can be afforded.

by

* Madras, Public—17 January (No. 1) 1848, para. 3.
 " P. W. 26 May - (No. 6) 1848, para. 17.
 " " 14 January (No. 1) 1848, whole.
 " " 29 January (No. 2) 1848, whole.
 " " 4 February (No. 3) 1848, whole.
 " " 13 March - (No. 4) 1848, para. 2, 12, 15, 18, and 23 to 24.
 " " 21 March - (No. 5) 1848, whole.
 " " 15 March - (No. 7) 1848, para. 2 to 6, 15 and 16.
 " " 12 July - (No. 9) 1848, para. 2, 3, 9 and 10.
 " " 25 September (No. 11) 1848, para. 6 to 9.
 " " 27 October (No. 12) 1848, para. 2 and 3.
 " " 3 January (No. 1) 1849, whole.
 " " 12 April - (No. 3) 1849, para. 2 to 4, and 6 and 8.

by Government, unless aided by one or all of three modes of contribution; the levy of tolls; the levy of a cart-tax; the requisition of village labour. The objections to the first of these methods are clearly and forcibly stated by Captain Best, who advocates the second and third. He calculates that the requisition of a day's labour, at the rate of one cooly per cawny, from places within two miles of a road, and of a commutation of two annas per cawny from places within that distance, and of one anna per cawny from places at a greater distance, would yield 3,400,000 days' labour, and 3,18,750 rupees per annum. But he does not state by what machinery, at what cost, and with what checks and securities against exaction and oppression, these very minute contributions of labour and money could be levied.

26. Captain Best appears also to regret the prohibition of a fourth mode of assistance—convict labour, which he thinks not liable in the Madras territory to the objections which were taken to it in Bengal.

27. Labourers require vigilant superintendence, and there is a great deficiency of practical knowledge in local overseers. Lord Tweeddale, in his minute of 25th January 1848, dwelt very strongly on the necessity of having men of practical experience to do justice to the science which is abundantly possessed by the engineers of the Presidency. The letter from the Government, dated 4th February, No. 3 of 1848, requested that two practical overseers, who understand the business of road-making in all its branches, should be sent out from England for the purpose of instructing the local overseers and operatives.

Bombay Road and Tank Department.

28. The letters noted in the margin, from the Government of Bombay, relate to the operations of the Road and Tank Department, which was established at that Presidency in 1835.

India, Public—	19 May	(No. 13)	1845.
Bombay	26 November	(No. 116)	1845.
"	31 December	(No. 135)	1845.
"	5 August	(No. 82)	1846.
"	31 March	(No. 81)	1849.

29. A proposal for abolishing this department, and forming a new system of local agency, under the superintendence of the Military Board, has been long under the consideration of the Government of Bombay. The chief engineer and the Military Board proposed the abolition in 1844. The government of Sir George Arthur did not concur in the expediency of the measure. The government of Sir George Clerk was divided in opinion, but the measure was resolved on by the Governor and Commander-in-Chief, in opposition to Mr. Reid and Mr. Willoughby. The government of Lord Falkland has suspended the abolition, and has referred the question for our orders on the measure generally, and on the several points on which a difference of opinion exists in regard to its details.

30. The arguments for the abolition are, principally that the machinery is too costly for the amount of work executed, and that the tank branch of the work has been either ill-done, or not done. Of this, some remarkable instances were given in the reports of 1844, from the chief engineer and the Military Board. Sir George Clerk says, in his Minute of March 1848, "My objections to the continuance of the road and tank department have been formed after much observation of its defects; these, among others, are inutility and costliness. These my objections are insuperable, because founded on its enormous waste of public money during 10 years, and on its entire disregard, during the whole period, of that important means of fertilising our territories, which was one of the two purposes for which, ostensibly, it was instituted, and which it is quite evident it has never been capable of applying."

31. The expense of the department for superintendence was stated by the chief engineer in 1844, to have been, for the nine years of its existence, Rs. 7,27,921. 2. 4; within the same period the total expenditure on tanks had been 42,000 rupees; a great portion of which had been lost by the failure of the works. The value of the department was, therefore, to be sought only in the road branch of its services; in this the charge for superintendence had been about 50 per cent. on the work performed. The Military Board saw no necessity for working out such an expenditure by such expensive machinery.

32. Mr. Reid, however, observes that much of the charge does not especially belong to the department, the separate expense of which consists solely of "the salaries and personal establishments of European officers of the department, since the charges of subordinate officers who are employed on particular works would be incurred, under whatever system of management those works may be considered."

33. Captain Berthon, superintendent of the department, in his last report, dated 22 September 1848, represents that the work done by the department had greatly increased, and had been all well done, and that the per-centage had been reduced from 50 to 18½ per cent., and submits that a more rapid advance from inexperience towards perfect efficiency was, perhaps, never accomplished by any department that had ever been formed in India.

34. The Military Board, 23 September 1848, submitted a plan for the organization of the proposed new Department of Public Works. Into the details of this plan it is not at present necessary to enter; the whole subject is well and fully discussed in the Minutes of the Government of December 1848 and January 1849, which terminate by referring the question for our decision.

India and Bengal.—Proposed Separation of the Civil Branch of Public Works from the Duties of the Military Board.

35. This proposal was discussed in Council in November 1846, and the opinion of the Military Board was requested on—

1st. The constitution of a distinct agency for each division of the Presidency, to be vested with the charge of all civil buildings, and with the superintendence and management of public forests, canals and embankments, roads and bridges.

2d. On the details of the proposed plan.

36. The Military Board, in reply (27 April 1847), were of opinion that public advantage would arise from the proposed separation; and submitted the outlines of a plan for carrying it into effect.

37. The Board incidentally submitted the question, whether the Great Trunk Road should be considered a civil or military work; with reference to the importance of retaining the superintendence of Captain Willis, and to some other details.

38. The President in Council determined (17 May 1847) to await the opinion of the Governor-general. This opinion has not yet been received; and here, for the present, the question rests.

Education of Young Natives as Civil Engineers.

India, Public—? September (No. 48) 1848.
Bengal " 27 December (No. 35) 1848.
Madras " 22 February (No. 5) 1848; para. 6 to 8.
Bombay " 16 October (No. 85) 1848.

39. The importance of educating young natives as assistant engineers is brought especially to our notice in your letter, dated 2 September (No. 48) 1848.

40. The proceedings previously examined contain many valuable remarks on this subject; the reports of all the superintendents dwell much on the necessity of having properly qualified assistants, capable of enduring the climate and conversing with the natives; the local experience of the ryot, it is observed, is often of great value, and is lost to those who cannot communicate with him in his own language.

41. The authorities at the several Presidencies for the most part appear to consider necessary for the purpose a higher degree of scientific attainment than is contemplated by Lord Tweeddale, or by any of the superintendents, with whom a certain proficiency in arithmetic, geometry, levelling, surveying, and mechanical drawing, combined with bodily activity and taste for the pursuit, seem to constitute the principal scientific requisites. Young natives thus qualified, receiving practical instruction from persons who, in addition to the necessary scientific

scientific knowledge, have had ample experience in the classes of public works in which those trained under them would be employed, would supply one of the greatest desiderata to the efficiency and economy of this department of the public service.

42. The want of properly qualified subordinates, and, in addition to the want of qualification, the frequent illness, and frequent removal and change of European assistants, is strongly dwelt on by all the authorities who have recorded opinions on the subjects previously noticed. These circumstances are placed most prominently forward as a principal cause of all the failures and disappointments, the combined costliness and inefficiency, which had been experienced in a greater or less degree in all the subjects of our previous examinations.

43. Bridges, embankments, annicuts, though essentially connected with, and indeed component portions of, roads and canals of irrigation, are severally in themselves great branches of practical engineering; and in all these, separately considered, the inefficiency of subordinate agency has been experienced.

44. The question appears to have been considered, whether native youths would be induced to undergo the necessary preliminary studies, by attending institutions which might be formed for that purpose, without a tolerably certain prospect that they would be employed in the public service if found qualified for it. It appears that the want of sufficient encouragement in the public service to young men who have distinguished themselves in this branch of study, has caused the engineering class in the Elphinstone Institution at Bombay to be deserted, and that you have expressed to the Bombay Government a desire that the youths who have been trained in that class, and whose qualifications are so highly spoken of, should have employment found for them as vacancies occur. We scarcely know how to reconcile these circumstances with the necessity for such assistance, so urgently pointed out by the superintendents of public works, unless it should have been found that the education which they have received has been more scientific than practical.

45. We shall now communicate to you the conclusions at which we have arrived on the several points which have been previously examined.

46. We attach great importance to the completion of the Great Trunk Road. We desire to see it completed, with substantial bridges. Those over the Soane and Jumma should be, for the present, suspended. But you will carefully consider whether the prospect of a railway through the North Western Provinces is sufficiently near to justify the suspension of any other portion of this great work.

47. The three superintendents of the Great Trunk Road, of the Madras District Roads, and the Bombay Road and Tank Department, Captains Willis, Best, and Berthon, appear to be well qualified and efficient in their respective departments. In so far as they are personally concerned no change is desirable.

48. But there are several points in respect to the authorities under whom they act, and the subordinates whom they employ, which admit of material amelioration.

49. To the first class belongs the delay in passing estimates; whereby the sanction for emergent work is frequently not given till it is too late in the season to execute it. On this point we cannot doubt that a due degree of energetic activity in the various departments through which the estimates pass would ensure, in most cases, the timely performance of that duty. We are much averse, if it can be avoided, to confer any greater degree of discretionary authority upon the superintendents, and it is desirable that you should prepare, and submit for our sanction, some rules calculated to expedite the progress of references respecting public works or repairs of an emergent nature, by limiting the time within which reports upon such subjects are to be made to you, or by other regulations, and by instructing your secretaries to pay the earliest attention to such references. It is most desirable that your authority should, if possible, be obtained for every such work. Where it is evident that time will not admit of the requisite delay, a discretionary power to commence a work might be lodged with the authority under whom the superintendents shall

eventually be appointed to act; but it should be so guarded as to bring the question at the earliest practicable period under your supervision.

50. To the second class belongs all that has been said of the inefficiency of local assistants. On this point we are disposed to entertain favourably the several proposals before us for educating young natives as civil engineers, and for giving a fixed position in the public service to a limited number of pupils of distinguished proficiency. But we fully concur in the reasons, already noticed, for thinking that this education should be in a great measure practical; that a mere scientific class at the Presidencies, though essential as a preliminary, should be but the first step of the system; and that the education of the assistants should be practically completed under properly qualified persons on the scene of operations.

51. We are disposed to approve the establishment of a course of lectures on geology; and we think it should be connected with the class of civil engineering, should such class be constituted. The importance of geological knowledge to engineers is well pointed out in the memorandum of Mr. Simms. We think also that the museum of economic geology should be assigned to the same class, and that the expense of the lectures and the museum should be brought under one head.

* See below.

52. We observe that the Military Board had proposed to assign a portion of the allowance made to the museum for the establishment of a course of lectures on the subject. You do not express an opinion on this suggestion, nor notice in any way the passage quoted in the margin* from the Military Board's letter of the 25th April 1848.

53. The ninth para. of your letter, dated 2d September (No. 48) 1848, adverts to the several applications for professors of civil engineering.

54. The application for a professor of civil engineering, for instructing the students in the Hindoo College at Calcutta, was suspended by the Bengal letter, dated 7th September (No. 26) 1847, and the appointment of Mr. Sutcliff as professor of natural philosophy and civil engineering in that institution, at a salary of Rs. 400 per mensem, was reported to us in the letter dated 27th December (No. 35) 1848.

Fort St. George
Letter, 22 February
(No. 5) 1848, para.
6 to 8.

55. The application from Madras was made conditional on our approval of the plan for the establishment of a class in the Madras University for training civil engineers.

Bombay Letter,
16 Oct. (No. 85),
1848.

56. As regards Bombay, it has been intimated that, until a scheme shall have been matured for the employment of those who are to be trained in civil engineering, it will not be desirable to engage a teacher.

57. The result of our inquiries satisfied us that the services of persons, properly qualified for these professorships, could not be again obtained on the terms formerly accepted by Mr. Pole, although the Bengal Government, by engaging a person on the spot, appears to have obtained his services on nearly similar terms. But whenever you may find it necessary to bring the subject again to our notice, it is desirable that you should state the amount of salary which you think should be assigned to the office.

58. In a foregoing para. we noticed, as a most valuable qualification of the subordinate officers whom it is proposed to educate for the public service, the knowledge of the native languages which they would certainly possess, and which should be in all cases an indispensable condition of their employment.

This

* "This proposal arrived in India at an unfortunate time, in November 1841, or thereabouts, and Lord Auckland transferred the matter to the Asiatic Society temporarily, together with the (300) three hundred rupees per mensem; and the Society made the money over to Mr. Piddington, who, though since appointed coroner, still retains the nominal duties; the specimens remaining in the rooms of the Asiatic Society a sealed book, instead of becoming, as they would do in the Medical College, the groundwork to a course of lectures for the instruction of native youth, where science may be made available towards the gradual accomplishment of the views of the Honourable the Court of Directors, the utility of which the Council of Education, as well as Mr. Simms, have so strongly pointed out."

This knowledge is not less necessary for our officers of engineers; and it is our intention to address you on the subject in the Military Department.

59. With respect to the chief superintending authorities, the present practice at the several Presidencies is different.

60. Under the Presidency of Fort William, the superintendence of public works is vested in the Military Board, in two branches, military and civil. It has been proposed to separate the latter altogether from the duties of the Military Board, and create a new department for the superintendence of the civil branch of public works. The duties of the military branch are stated to be fully as much as the Military Board can attend to. This proposal has been suspended for the opinion of the Governor-general.

61. Under the Presidency of Madras, the control of all works connected with the land revenue, especially all works of irrigation, is entrusted to the Board of Revenue in the department of public works, which consists of the ordinary members of the Board, with the addition of the chief engineer, and with a distinct establishment, at the head of which is placed an engineer officer as secretary. All other works are placed under the superintendence of the Military Board.

62. Under the Presidency of Bombay, the Military Board has the superintendence of all public works, in two departments; one of which, the Road and Tank Department, created in 1835, is, under the circumstances previously stated, proposed to be abolished by the majority of the Bombay Government.

63. It is most important that the system of the superintendence of public works should be assimilated at all the Presidencies, but considering that the opinion of the Governor-general has not yet been given on the division of public works in Bengal, considering also the unsatisfactory working of the system at Madras, which formed the subject of our despatch to that Presidency, 29th May (No. 12) 1845, and the great differences of opinion in relation to the change of system at Bombay, the subject is not brought before us in a state for final decision. It is desirable that the entire question in relation to all the Presidencies should first pass under the deliberate review of your Government.

64. In forming a judgment of the system of superintendence, it is necessary to have a clear view of the actual state of all the work which is the subject of superintendence. This, in the districts, and especially in the district roads, embraces a most extensive field of operations. The documents which we have examined, exhibit many proofs of cost and labour thrown away; of work done over again and again without a good final result; of great excess of expenditure over estimates; in short, an extensive admission of defects, and a great diversity of opinion as to the mode in which those defects should be remedied.

65. We think it desirable that you should select two or three competent officers from persons already at the Presidency, and whose services can be either wholly or partially spared for the purpose, to form a temporary commission to inquire into the whole subject of the superintendence and execution of public works, not omitting any subject noticed in this despatch; that similar commissions should be formed at the other Presidencies; that they should make full and detailed reports to their respective Governments, embodying such suggestions as may appear to them advisable; that these reports should be submitted to you, and that we should receive from you such a distinct opinion on the whole of the questions herein considered, as shall place it in our power to come to a decision respecting them.

66. In conclusion, as the letters before us make some specific applications:

67. We sanction the proposed expenditure of 28,700 rupees per annum, for the maintenance of the Bombay and Agra road.

68. We do not consider that any great public advantage would result from the engagement of two practical overseers, thoroughly conversant with road-making in all its branches, as proposed in Lord Tweeddale's Minute of January 1848, especially as it would be impossible to send out persons possessing the essential qualification of a knowledge of the native languages.

69. Of all other applications and suggestions for purposes of permanent utility, but not of immediate temporary necessity, we shall postpone the consideration till we are in possession of the opinions with which we have required you to supply us.

We are, &c.
(signed) *A. Galloway.*
J. Shepherd.
&c. &c.

London, 30 January 1850.

EXTRACT Bengal Military Consultations, dated 27 December 1850.

(No. 583.)

No. 152. From Major *R. Willie*, Officiating Secretary to the Government of India, in the Military Department, to, Lieutenant-Colonel *C. A. Browne*, Secretary to Government, Military Department, Fort St. George.

To the Secretary to Government, Military Department, Fort St. George, and Secretary at Bombay, dated 21 December 1850.

(No. 584.)

To Lieutenant-Colonel *P. M. Melvill*, Secretary to Government, Military Department, Bombay.

Sir,

Dated 21 December 1850.

I AM directed by the Honourable the President of the Council of India in Council, to transmit the accompanying copy of a despatch, in the Public Department, No. 2 of the 30th January 1850, from the Honourable the Court of Directors, and, with reference to the 65th para. thereof, to request that the Honourable the Governor in Council may be moved to appoint a commission for the purpose of inquiring into every branch of the existing system of public works, both as regards superintendence and execution, embracing all the various points adverted to by the Honourable Court.

2. A commission has been formed at this Presidency, consisting of Major Kennedy, consulting railway engineer, Major Baker, engineer, and Mr. Allen, of the civil service.

3. The Report of the commission at the { Madras }
{ Bombay } Presidency should be submitted to the Government, as desired by the Honourable Court.

I have, &c.
(signed) *R. Willie*, Major,
Off. Sec^y to the Gov of India
in the Mil^y Depart^t.

Council Chamber, Fort William,
21 December 1850.

Public Works Department, No. 11, of 1852.

LETTER from the Government of Madras to the Honourable the Court of Directors of the East India Company.

Honourable Sirs,

Para. 1. WE have the honour to address you, in continuation of our letter in this department, dated 6 August 1852, No. 9, relating to public works connected with the improvement of the country.

2. We have sanctioned the following estimates for repairing portions of certain trunk roads; * viz.

* Repair and formation of Trunk Roads.
Cons. 10 February 1852, Nos. 5, 6.
" 17 February 1852, Nos. 1 to 4, 13, 14, and 19, 20.
" 16 January 1852, Nos. 23, 24.
" 23 March - 1852, Nos. 9, 10.

PAPERS RELATING TO PUBLIC WORKS, INDIA.

17

<i>Rs.</i>	<i>a.</i>	<i>p.</i>	
3,240	-	-	For repairing the portion of trunk road, No. 9, between the lower Coleroon annicut and Combaconum, for the present year.
1,937	-	-	For keeping in good order a portion of the trunk road, No. 8, from Trichinopoly to Samianoram, for 1852.
50	-	-	As a monthly expenditure for keeping the Goolcheroo Ghaut in repair. We requested the superintendent of roads to report at the end of the second year whether any reduction in this allowance could be effected.

3. We have also sanctioned an outlay of Rs. 16,903. 1. recommended by the superintendent of roads for the construction of a new line of road, proposed by Lieutenant Hemery, from Bankrapett, near the foot of the Goolcheroo Ghaut, towards Cuddapah.

4. We have renewed for three years the sanction granted on the 8th April 1850, for the expenditure required to maintain in repair the portion of the trunk road between Wahaur and Ponang, in the district of Malabar, amounting to 7,100 rupees, being at the rate of 100 rupees per mile.

5. We transmit with this para. the reports of the superintendent of roads* and his assistants, with our observations thereon, from February to April 1852.

6. We have sanctioned the undermentioned estimates submitted by the Board of Revenue Department of Public Works, for the repair and construction of certain district roads and bridges,† &c.

<i>Rs.</i>	<i>a.</i>	<i>p.</i>	
9,312	-	2	For the repair and improvement of two branch lines, leading from Chingleput to Soorapen's choultry, by Wallajahbad, and Conjeveram, and from Conjeveram to the trunk road in the direction of Madras. We further sanctioned the admission in the annual accounts of a sum of 387 rupees for the repairs of these roads.
5,753	1	2	For the construction and repair of roads, bridges, and ferry-boats in the districts of Vizagapatam, Guntoor, South Arcot, Tanjore, Malabar, and Madura.
3,700	9	-	For the repair of roads in the Chellumbrum and Manargoody talooks of the district of South Arcot.
2,508	13	2	For the formation of a road from Sanecutla, the present termination of the line from Dharwar and Yellapoor by the Arbyle Ghaut, to the coast to Tuddry, in the district of Canara.
4,497	-	-	For the repair of roads and bridges in the districts of Guntoor, Malabar, Madura, and Tinnevely.
4,830	14	-	For repairing the road from Coimbatore to Avanashy, in the district of Coimbatore.
5,042	1	11	For the improvement and repair of the road from Trichinopoly towards Combaconum and Madras, in the Trichinopoly district.

* Report of the Superintendent of Roads.

Cons. 18 May - 1852, Nos. 16, 17.
 " 6 April - 1852, Nos. 14, 15.
 " 25 May - 1852, Nos. 15, 16.

† Repair and construction of district Roads and Bridges.

Cons. 25 November 1851, Nos. 8, 9, 12, 13.
 " 9 December 1851, Nos. 5, 6.
 " 16 December 1851, Nos. 5, 6, 11, 12.
 " 23 December 1851, Nos. 20, 21, 31, 32.
 " 6 January - 1852, Nos. 1, 2.
 " 16 January - 1852, Nos. 5, 6, 17, 18.
 " 23 January - 1852, Nos. 10, 11.
 " 10 February 1852, Nos. 22, 23.
 " 17 February 1852, Nos. 5, 6, 17, 18.
 " 24 February 1852, Nos. 7, 8.

<i>Rs.</i>	<i>a.</i>	<i>p.</i>	
9,163	6	10	For repairing and improving different parts of the road between Cuddapah and Cummum, in the Cuddapah district.
2,848	2	-	For bridges and tunnels in the districts of Nellore, South Arcot, and Malabar.
9,706	8	-	For the repair and improvement of the road from Coimbatore to Konghium, and for the construction of a bridge across the Nagel River, in the Coimbatore district.
2,760	10	-	For the improvement of roads and bridges in the districts of South Arcot, Masulipatam, Bellary, and Malabar.
4,328	14	-	For repairing and constructing roads, bridges, &c. in the districts of Canara, Coimbatore, Malabar, and North Arcot.
387	1	-	For rendering practicable another part of the road between Cuddapah and Cumbum.
5,242	12	-	For repairing the Bellary and Humsagur Road, which was represented to have received considerable damage by the storm of 1851.
6,243	8	-	For the reconstruction of drains ruined by the same cause on the same road, and of others found deficient in capacity.
400	-	-	For ordinary repairs to the Trichinopoly and Drealoor road, in the Trichinopoly district.

Construction of Roads and Bridges from the Surplus Pagoda and Chuttrum Funds.

Cons.	18 November 1851,	Nos. 3, 4.
"	23 March - 1852,	Nos. 17, 18.
"	27 January 1852,	Nos. 1, 2.
"	2 March - 1852,	Nos. 7, 8.

7. At our Consultation of the 18th November 1851, we sanctioned the appropriation of Rs. 10,766, 0. 8. from the surplus pagoda funds of the Tanjore district for the construction of masonry works required for a road from Tetrapoondy to Negapatam, recommended by the Board of Revenue in the Department of Public Works; the proposed line affording an additional means of conveying the produce of the important talook of Tetrapoondy to the port of Negapatam.

8. It will be observed, that the acting collector, Mr. Goodwyn, desired to relieve the merassidars from undertaking the earthwork for the formation of this road, ascertaining that the merassidars of Tanjore were not accustomed to supply gratuitous labour for the construction of new lines. But having reason to doubt the correctness of this opinion, and believing, on the contrary, that the merassidars had always cheerfully undertaken earthwork of roads, on the Government consenting to construct bridges and tunnels; and as it moreover appeared to us that this particular line must greatly benefit the villages through which it passes, as well as the talook in general, we were not disposed wholly to relieve the merassidars from the execution of the earthwork, and declined therefore to support Mr. Goodwin's rejection of the civil engineer's proposition, that the sum of Rs. 3,142. 1. should be deducted from the estimate for the above purpose. On the receipt, however, of the explanation of the acting collector of Tanjore, recorded in our Consultation of 23d March last, we accorded our sanction to the disbursement of the above sum.

9. We also sanctioned the construction of a bridge over the Vuddavaur channel at Nataramingalum, in the district of South Arcot, at an expense of 4,738 rupees, to be disbursed from the surplus chuttrum funds.

Proposed Roads from Berhampoor to Russelcondah in Ganjam.

Cons.	10 February 1852,	Nos. 1, 2.
"	11 June - 1852,	No. 1 to 6.

10. With their letter of the 11th December 1851, the Board of Revenue in the Department of Public Works submitted an estimate for the formation of a first class road, 45 miles in length, from Berhampoor to Russelcondah, in the Ganjam district, amounting to Rs. 1,42,246. 8. 1., and solicited an annual allowance of 4,500 rupees for maintaining it in repair, at the rate of 100 rupees per mile.

11. We had no doubt, from what was represented in the Board's letter, and its enclosures, that the proposed road would be in every respect a most advantageous and desirable one, but it appeared to us, after a careful examination of the plans and surveys, and considering the difficult nature of the country, and the consequent heavy expense, that it would be advisable to restrict the road to a second class one, which would probably suffice for all the traffic and thoroughfare

fare in that part of the country. We therefore requested the Board to report on this point, and to submit at the same time a statement of the traffic on the road, and state whether the metalling might not be dispensed with in some parts with reference to the suggestions of the late superintendent of roads. In their letters of the 22d April and 6 May last, the Board supplied the required information, but we were still of opinion that instead of the large outlay proposed for a first class metalled road, a second class one at a moderate expense would be ample for all the purposes required, and we desire that an estimate for such a road, and for maintaining it in repair, might be called for and laid before us, for submission to the Government of India.

12. At our Consultation, noted in the margin, the Board of Revenue recommended for our sanction an estimate for the formation of a road between Porto Novo and the Madras and Tanjore road, near Chellumbrum, in South Arcot, amounting to Rs. 3,230. 13; but as we were not prepared to authorise the civil engineer of the division undertaking any work until the bridge over the Coleroon was completed, we resolved to defer the estimate for future consideration.

Proposed Road between Porto Novo and the Madras and Tanjore Roads.

Cons. 23 December 1851, Nos. 10, 11.

13. We transmit a communication from the Board of Revenue, reporting upon the near completion of the Cauvery Bridge at Bowany, and the large saving of about 14,000 rupees expected to be effected on the estimate for its construction, and recommending that the sum of 700 rupees, for which allowance was made in the estimate, on account of the extra pay to the Marahmut superintendent, should be distributed in certain proportions amongst overseers Reid and Loosemore, and the Marahmut superintendent Veerasawmy Moodelly.

Cauvery Bridge at Bowany. Cons. 16 Dec. 1851. Nos. 1, 2.

14. We remarked on the difference between the estimate and what the work on completion was calculated to cost, more particularly with regard to one item, namely, brick in chunam work, with coping, for which the estimate allowed, 24,936 rupee, while the actual expenditure has been only 14,658 rupees, and desired that the particulars of the bills, when before the Board, should be well examined, with the view of its being ascertained whether any saving has really been effected, or whether the difference has arisen from over-calculation of the dimensions or of materials, or has occurred in the rates.

15. In regard to the proposed donations to the overseers and maistry, we observe that the system advocated by the Board of Revenue was objectionable on general principles, and that we would not for the future sanction such donations, except under special and very peculiar circumstances. As in the present instance there appeared to have been more than ordinary exertions and arrangements displayed by the subordinate servants of the department, we authorised the distribution recommended by the Board.

16. We expressed our satisfaction at the favourable mention made of the services of Lieutenant Wilkeson, assistant civil engineer of the division, and particularly of assistant-overseer Reid, to whose vigilance was attributed the efficient and economical manner in which the work of the Bowany Koodul Bridge was reported to have been executed. We also approved of the proposition of the Board of Revenue to call upon the civil engineer of the Third Division for a plan and estimate of the cost of constructing a chuttrum at Bowany.

17. With reference to paragraph 23 of our despatch in this department, dated 20 December 1849 (No. 10), we transmit a communication from the Board of Revenue, reporting the unsuccessful result of the experiments made in boring for water at Tutacoreen, for which an outlay of 1,490 rupees, was last authorised by us on the 5th September 1849, from the Tripany funds. In sanctioning the actual disbursement, we desired that no further expense might be incurred on this account.

Experiment of boring for water at Tutacoreen. Cons. 16 Dec. 1851, Nos. 3 and 4.

18. The superintendent of roads having submitted for our orders a communication from Lieutenant Furlong, respecting the disposal of certain valuable property discovered by some Coolies employed under his orders, we desired that Lieutenant Furlong might be referred to Regulation XI. of 1832, which points out the course to be pursued by parties finding hidden treasure.

Lieut. Furlong's application respecting certain property discovered by him. Cons. 25 Nov. 1851, Nos. 16, 17.

19. We have accorded our sanction to the expenditure of the following sums for the repair and construction of civil buildings* in the under-mentioned districts:—

<i>Rs.</i>	<i>a.</i>	<i>p.</i>	
3,457	5	2	For the repair of certain buildings in the districts of Vizagapatam, Masulipatam, Tanjore, Coimbatore, and Malabar.
9,123	14	10	For the construction of talook cutcherries in the districts of Guntoor, Nellore, and Malabar.
4,115	11	-	For the construction of a new custom-house at Coompta, in the district of Canara, and for the formation of a new road between the town and the coast.
2,500	14	11	For building a bungalow as additional accommodation to the Government House at Cuddalore, used by the Collector as a private residence, and for repairing the main building.
1,456	-	-	For building a wall, 12 feet high, around the gaol at Guntoor.
425	13	11	For making certain repairs to the buildings occupied as the Revenue Board Office, in the department of Public Works.
478	10	5	For repairing the roof of the land custom-house building at Madras.
8,675	7	-	For the construction of three talook cutcherries at Shenkernma, Coil, Nangoonaing, and Ootapadarum, in the district of Tinnevely.
1,500	-	-	For constructing a talook cutcherry at Atcoor, in the district of Kurnool.
3,604	7	5	for the repair and construction of civil buildings in the districts of Masulipatam, Bellary, South Arcot, Coimbatore, and Malabar.
374	8	-	For the repair, &c., of the bungalows at Nedduwuttan and Pycaree, on the Goodaloor Pass, between Malabar and the Neilgherries.
2,056	3	-	For the construction, improvement, and repair of sundry civil buildings in the district of Canara.
580	4	11	For repairing and improving civil buildings in the districts of Cuddapah, Nellore, Chingleput, and Tanjore.

20. From the correspondence noted in the margin, your Honourable Court will learn that considerable injury had been sustained by the bridge under construction across the Bimlipatam River, near the junction of trunk road No. 6, with that between Vizagapatam and Vizianagrum, and that we have, under the circumstances represented by the superintendent of roads, in his letter of the 23d March 1852, sanctioned the addition of a masonry apron to the bridge, and also an estimate for a bridge of three arches on the embankment forming the approach to the large one, amounting to Rs. 3,688. 3. 9.

21. Under

* Repair and construction of Civil Buildings:

Cons.	18 November 1851, Nos. 5, 6.
"	25 November 1851, Nos. 4, 5, 14, 15.
"	2 December 1851, Nos. 1, 2.
"	16 December 1851, Nos. 17, 18.
"	6 January - 1852, Nos. 9, 10, 11, 12.
"	16 January - 1852, Nos. 1, 2, 3, 4, 9, 10.
"	23 January - 1852, Nos. 12, 13, and 26, 27.
"	10 February 1852, Nos. 20, 21.

21. Under the circumstances represented by Mr. Bourdillon, Collector of North Arcot, in his letters of the 13th November and 24th December 1851, we applied to the Government of India, and obtained their sanction for the grant of an allowance of 250 rupees per month, in compensation for the extra expense to which he has been subjected, during his employment on special duty as member of the commission charged to inquire into and report upon the system of public works, and also the department of accounts.

Extra Allowance, Mr. Bourdillon, member of the Marmut Commission.

Cons. 23 December 1851, Nos. 1, 2.
 " 23 January - 1852, Nos. 20, 21.
 " 23 March - 1852, Nos. 27, 28.

22. On the representation of the Collector of Malabar, supported by the recommendation of the Board of Revenue, we solicited and obtained the sanction of the Government of India to an outlay of Rs. 13,773. 7. 2. for the substantial repair and bridging of the road between Cotaparumba and Mutanoor, connecting the seaport of Tellierry with the Periambaddy Ghaut road, which had lately been completed at a cost of 2,00,376 rupees, sanctioned by your Honourable Court in 1847.

Formation of a Road between Cotaparumba and Mutanoor, in Malabar.

Cons. 16 December 1851, Nos. 19, 20.
 " 9 March - 1852, No. 10 to 12.
 " 4 May - 1852, Nos. 11, 12.

23. In their letter of the 24th January 1852, the Military Board recommended for our sanction an estimate amounting to Rs. 665. 2. 5. for supplying and fixing 10 pairs of glazed shutters to the east and west sides of the Land Custom-house at Madras, in order to preserve the records of that office from injury during the monsoon. Considering this estimate to be excessive, we desired that tenders might be called for from the native community, and from cabinet-makers, for the performance of the work by contract. The Military Board subsequently submitted the tender of one Venaiga Maistry for executing the work at a cost of Rs. 596. 10. 9., but we considered this tender to be still very high, and we resolved therefore to forward the estimate to the Collector of Madras, with instructions to have the work executed, with the aid of his office surveyor, on the most moderate terms.

Estimate for glazed shutters to the Madras Land Custom-house.

Cons. 10 February 1852, Nos. 24, 25.
 " 4 May - 1852, Nos. 9, 10.

24. On an application from the Board of Revenue, requesting that the tentage of a sub-assistant surveyor might be allowed for eight months to three assistant overseers in the Civil Engineer's Department (6th Division), to enable them to keep up a marching equipment, with a view to their employment on the general duty of inspection of works, in consequence of a scarcity of surveyors, we resolved, under the explanation submitted in their letter of the 18th March 1852, as well as under the circumstances represented by the civil engineer of the 6th Division, to authorise the disbursement recommended by the Board, amounting to 588 rupees, in anticipation of the sanction of the Government of India, which we subsequently obtained.

Tentage for three Overseers in the Civil Engineer's Department.

Cons. 17 February 1852, Nos. 7, 8.
 " 27 April - 1852, No. 5 to 8.
 " 23 June - 1852, No. 5 to 8.
 " 29 June - 1853, No. 7 to 8.

25. We submit, for the information of your Honourable Court, copy of a correspondence which has passed on the subject of the proposition recommended by the Commissioners for inquiring into the system of Public Works, and supported by the Board of Revenue, of replacing the trunk road under the Board's charge. Being of opinion that there were serious objections to this measure, we resolved to defer the consideration of it until the final report of the Commissioners on the Department of Public Works generally, was laid before us.

Proposition for replacing the Trunk Roads under the charge of the Board of Public Works, and application for an Assistant Secretary to the Board.

Cons. 16 December 1851, Nos. 21, 22.
 " 6 April - 1852, No. 3 to 7.
 " 18 May - 1852, Nos. 7, 8.

26. In regard, however, to the recommendation for the appointment of an assistant to the Secretary to the Board of Revenue in the Department of Public Works, we were satisfied, on the representation of the Commissioners, that that officer needed additional aid to enable him efficiently to discharge his duties, and we have accordingly recommended to the Government of India the proposed appointment, at a charge of 350 rupees per mensem.

27. Referring to our orders of the 24th April 1851, entered in the collection to para. 17 of our despatch dated 14 April 1852, No. 6, we transmit copy of a correspondence from the Board of Revenue, affording further explanation in regard to the failure of the ferry-boat, constructed in 1849, for the Cauvery at Moghenoor, in the Salem district. In sanctioning the charge incurred on this account, amounting to Rs. 459. 15, we desired that, as proposed by the Board, the boat might be sold, and the proceeds carried to the credit of Government.

Explanation respecting the failure of the Moghanoor Ferry Boat.
Cons. 4 November 1851, Nos. 11, 12.
" 23 January - 1852. Nos. 18, 19.

We have, &c.
(signed) Henry Pottinger.
R. Armstrong.
J. F. Thomas.

Fort St. George, 13 November 1852:

(True copies.)

(signed) T. L. Peacock,
Examiner of India Correspondence.

East India House, 4 August 1853:

EAST INDIA.

COPY of INSTRUCTIONS from the Court of Directors to the Government of India, 30th January 1850, on Public Works; of Major Wille's Letter, of the 21st December 1850, respecting Public Works; and Letter from the Madras Government to the Court of Directors, 13th November 1852, No. 11.

(Mr. Hume)

Ordered, by The House of Commons, to be Printed,
5 August 1853.

884.

Under 3 oz.