

(1) Number of pages 15

(2) Date of repair Dec 1986

(3) Initials of the Referencer 19/

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Public Works DEPARTMENT

G.O. No.	2690 W.	Press.
B.P. No.		Mis.
Dated	23-11-1980	19/

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2690 W

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

23rd November 1880, No. 2,690 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 100. From Major-General J. S. TREVOR, R.E., Deputy Secretary to the Government of India, Public Works Department, (Railway Construction), to the Joint Secretary to the Government of Madras, Public Works Department, Railway Branch, dated Simla, 16th October 1880, No. 754 R.C.

I AM directed to forward, for the information of His Excellency the Governor in Council, copy of a minute, dated the 6th May 1880, recorded by General A. Fraser, R.E., whilst Public Works Member of the Executive Council of the Government of India on the programme that should be followed in the construction of Public Works, Railways, Irrigation and Telegraphs during the next four or five years, and to inquire whether any projects in requisite detail for railway works to be carried out from Loan funds on the usual conditions, viz., that the traffic to be expected on the construction of the lines will yield a moderate return on the cost, and that the local Government will meet interest on all expenditure at $4\frac{1}{2}$ per cent. per annum, are now under preparation.

2. You have already been furnished with copy of despatch, No. 134, Railway, of the 28th September 1880, to the address of the Secretary of State on the subject of the Marmagao Bay railway project, from which you will have seen that all needful action has been taken in respect to the railways projected for tapping the South Mahratta country from the Madras side.

3. I am at the same time directed to inform you that there is very little prospect of any money being placed at the disposal of the Government of Madras for expenditure of Productive Public Works till 1883-84 or 1884-85, unless the Secretary of State agrees to an increase in the grant for India in general, and that in any case, in preparing plans and estimates, no expenditure whatever should be incurred in getting up projects that would cost more than 60 or 70 lakhs in all, as it will be impossible for the Government of India to allot more than 20 or 25 lakhs in any one year, and no benefit would be derived in working out in detail projects that cannot be completed within three or four years of the date on which they are sanctioned.

No. 101. ORDER THEREON, 23rd November 1880, No. 2,690 W.

COMMUNICATED to the Consulting Engineer for Railways and the Chief Engineer for Irrigation, who will, at early convenience, submit the information called for by the Government of India, giving as far as possible a concise but complete list of works which they consider may fairly be classed under the respective heads "Productive" and "Protective" with the present condition of the projects in each case, probable estimate, &c.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Consulting Engineer for Railways, } with copies of Notes by His Grace the Governor.
" Chief Engineer for Irrigation, }

Exd. E. C. Shunker.
Spare Copies

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1880) Madras.
PUBLIC WORKS.

To

THE CONSULTING ENGINEER
FOR RAILWAYS,
&c., &c., &c.

Dated November, 23rd.

Issued

Recd.

Encl.

G. O., 23rd November 1880, No. 2,600 W.

NOVEMBER.

Nos. 100-102.

Minute by General A. Fraser, R.E., on the programme that should be followed in the construction of Public Works, Railways, Irrigation and Telegraph.—Letter from the Government of India forwarding the — communicated to the Consulting Engineer for Railways and the Chief Engineer for Irrigation with remarks.

P.W.D.

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MINUTE.

1. In the Viceroy's Minute of the 12th March 1878, His Excellency laid down the principles which would guide the Government of India and Local Governments in the prosecution of Public Works.

2. In accordance with those views, several of the Local Governments and Administrations submitted proposals for the construction of cheap local lines of railway to be carried out on provincial responsibility.

3. These proposals were not complete in detail, but the general outline of operations was marked out, and a programme of operations extending over 5 or 10 years was sketched.

4. Surveys were required to bring the projects into a condition fit for submission to the Secretary of State, but the outburst of the war with Afghanistan, combined with pressure from Home to reduce expenditure, put an end for the time being to the survey work which had been taken in hand.

5. Some of these surveys are, however, finished, and we have materials, collected at other times for other purposes, on which to base proposals for the development of the cheap system of local railways, and I now submit, in accordance with the Viceroy's wishes as expressed in His Excellency's speech of the 2nd instant, a definite programme "for an extended scheme of cheap Railway communication," so that Local Governments may be ready to carry it into execution "whenever we are in a position to undertake it with the sanction of the Secretary of State." If this programme meet with approval, definite orders might issue to Local Governments for the preparation and collection of detailed estimates of cost, and returns of anticipated traffic, in order that we may obtain the sanction of the Secretary of State to the construction, as funds become available, of those lines which are found to fulfil all necessary conditions, either as Imperial, Productive or Protective Public Works.

6. Commencing in the South-eastern portion of the Empire, we have completed the railway of 169 miles from Rangoon to Prome, and we have surveys and estimates for an extension from Prome to Allen Myo on our frontier, a distance of 42 miles, and from Rangoon to Tongoo, a distance of 164 miles.

BURMA.

Metre Gauge—	Miles.	Cost.
Rangoon to Prome	169	1254 lakhs.
Prome to Allen Myo	42	873 "
Rangoon to Tongoo	164	117 "

7. No other railways are required in Burma at present, and the two above-named, though they will largely tend to the development of this very rich province, are wanted in a great degree for military purposes. This is specially the case in respect of the line from Rangoon to Tongoo, one which it would be well to commence at the earliest date that funds can be spared for the purpose, but there is no prospect of the line fulfilling the conditions prescribed for Productive Public Works. It will, however, in the end, be highly remunerative, as it opens out a tract of country which, though fertile, is at present but sparsely inhabited, and where the immigrants that now flock into British Burma will find a large field for the profitable exercise of their labour. Indeed so assured is the Chief Commissioner of the ultimate success of the line that he has not hesitated to undertake the responsibility of the interest on its cost.

8. In Assam it was in contemplation, in the beginning of 1878, to extend the Rungpur Branch of the Northern Bengal Railway up to the banks of the Brahmaputra at Dúbreë, and to establish a steamer service from that point up the river to Debroogurh.

9. On careful examination of the country it has been found that to take the line over the Teesta, 10 miles from Rungpur, will involve great expenditure on account of the unstable character of the rivers. Communication, therefore, has been now established between the terminus of the Railway at the Teesta and Dúbreë by means of road and dák gharries. This will make a reduction in the time of transit to Assam of some 48 hours.

10. In Upper Assam a Company has been organized to construct a light Railway between Debroogurh and Sadya with a branch to the coal mines at Makum. Total length of line 87 miles. The Local Administration has guaranteed a minimum dividend of 5 per cent. for five years from the date of the completion of the works, provided it does not involve a larger payment in any one year than Rs. 1,00,000. The Company has been started in London under highly respectable auspices, and, with the slight change lately made in the terms of the concessions, will, no doubt, be received with favour by the investing public. The line would be most useful to the rapidly spreading tea gardens near Sadya, and the supply of coal will be of great service to the maintenance of the steam communication.

Sadya to Debroogurh with a branch to coal mines ... Miles. 57

BENGAL.

	Miles.
Northern Bengal ...	228
Patna-Gya ...	58
Tirhoot ...	80
Calcutta and South-Eastern ...	27
Nulhatti ...	27
Porada Branch ...	15
Total ...	435

	Miles.
Darjeeling tramway ...	50

Metre Gauge—	Miles.
Extension of Tirhoot ...	102

Broad Gauge—	Miles.	Cost.
Memari on East Indian Railway to Ranaghat on Eastern Bengal Railway ...	34	42 lakhs.

11. In Bengal we have already 435 miles of railway for which the Provincial Government has undertaken financial responsibility. One of these, the Patna-Gya, only just opened to traffic and hardly complete, is bringing in such returns, that there is every hope of its paying 6 or 7 per cent. on its capital cost. On another, the Northern Bengal, the goods traffic in 1879 is double the quantity carried in 1878, while the passenger traffic shows an augmentation of 50 per cent. This line (the Northern Bengal) is being extended by means of a steam tramway, on a gauge of two feet, up to the Darjeeling sanatorium by a private Company to which the Bengal Government has guaranteed a maximum gross earning of two lakhs of rupees per annum. The Company has been engaged in laying rails for some time back, and expects to have an engine or two out before long.

12. The Secretary of State has been, or will immediately be, asked to sanction an extension of the two branches of the Tirhoot railway for a further distance of 102 miles at a cost of about 45 lakhs of rupees. These extensions run through one of the most populous districts of Behar, and there is but little doubt of their bringing in a very handsome return on their very moderate mileage cost.

13. Another work to which great importance is attached is the connection of the Eastern Bengal and East Indian Railways by a bridge over the Hooghly. This can be effected by two alternative schemes, either by a branch from Ranaghat on the Eastern Bengal to Memari on the East Indian Railway, a distance of 34 miles, estimated to cost 42 lakhs, or by a bridge at Hooghly station on the East Indian Railway, 4 miles from the Eastern Bengal Railway, estimated to cost 19 lakhs.

The latter alternative has been adopted, and the work ought to be regarded as a component part of the Imperial, not of the Provincial, Railway system of Bengal. This, and the line referred to in para. 12, would be constructed as Productive Works; the latter as an Imperial Work, and the former under the financial responsibility of the Government of Bengal.

14. The Lieutenant Governor of Bengal is very anxious to make a branch from the Calcutta and South-Eastern railway to Diamond Harbour, a distance of 29 miles, at a cost of 22 lakhs, on the broad gauge; but personally I should prefer to under-

take another project on His Honor's list, namely, the construction of a railway on the metre gauge from opposite Goalundo on the Eastern Bengal to Dacca and Naraingunge on the Megna, with an extension to Mymensing on the Brahmaputra. The total length of this line would be about 128 miles, and its cost about 128 lakhs. This line is rather expensive on account of a large bridge which has to be built near Goalundo; but it is believed that the construction of the bridge may for the present be deferred, while the value of the line as a means of communication, which may eventually be extended along the left bank of the Brahmaputra into Assam, cannot be disputed. The Native Press constantly urge the importance of this project on the attention of Government, and it is probably safe, from the wealth of the country, to pay a good return on its capital cost. This would be constructed as a Productive Work, provided that on full further investigation the necessary conditions are found to be fulfilled.

15. There is another system of Railways in Bengal which it is proposed to build on the broad gauge. It consists of a line running from Kulna on the South, *via* Jessore and Ranaghat, up to Bugwangola on the North. This line runs across the Eastern Bengal Railway, and is intended to have connection with Calcutta through Dum-Dum and Bongong. The total length of the line is 241 miles.

16. The lines proposed in Bengal, for all of which we have detailed plans and estimates, measure 503 miles in length, and are estimated to cost 435 lakhs. I do not think there is any probability of our being able to expend all this money under 8 or 10 years. It seems to me that, if we take the link connecting the East Indian and Eastern Bengal Railway off Bengal's hands, there is no necessity for us to apply for sanction for any lines beyond the extension of the Tirhoot system already gone home, and, subject to the further inquiry that will be necessary, the Dacca group.

17. In the North-West and Oudh the only line open to traffic is the Muttra-Hatras, 29 miles metro gauge; but the Provincial Government expects to open within the next six months 87 miles between Cawnpur and Farakabad, also metro gauge, and a broad gauge branch from the East Indian Railway, 12½ miles, to the banks of the Ganges opposite Ghazipur at a cost of 6½ lakhs. Besides these the Secretary of State has sanctioned the connection of Muttra with the Rajputana

Metre Gauge—		Miles.	Cost.
Goalundo to Mymensing <i>via</i> Dacca and Naraingunge ...	...	128	128 lakhs.

Broad Gauge—		Miles.	Cost.
Central Bengal system ...	...	241	220 lakhs.

NORTH WESTERN PROVINCES AND OUDH.

	Miles.	Cost.
Muttra-Hatras ...	29	12½ lakhs.
Cawnpur-Farakabad ...	87	32½ "
Dildarungur Branch ...	12	6½ "
Muttra-Achnegra ...	21	9 "

railway by a line 24 miles in length at a cost of 9 lakhs. This work was partially built during the famine of 1877-78, and it ought to be opened for traffic by the close of next official year.

18. The North Western Provinces and Oudh Government elaborated, on His Excellency's Minute of the 12th March 1878, a large scheme for the construction of light railways, extending over no less than 1,125 miles in addition to the lines which are in hand as above. We cannot, of course, take the whole of this system, which will cost close on six millions sterling, at once in hand, nor is it probable that the whole of the works could, under the existing rules, be constructed as Productive Works. It seems to me that if we undertake, as a Protective Work, to join the Cawnpur-Farakabad Railway with the Muttra-Hatras, 90 miles, and if we make, as a Productive Work, one of the two lines, about 150 miles in length, which are intended to open out the isolated districts of Bundelkhand, the Government will commit itself to as large an expenditure as it is likely to be able to meet in the North-West Provinces for some years. These lines will require the Provincial Government to bridge the Jumna at two points, Muttra and Calpi, and we can hardly hope to complete these railways much under 1½ millions sterling.

19. A private Company, with Indian domicile, is about to take up the construction of a railway to Ranibagh, at the foot of the hills below Naini Tal, on the metre gauge, under a local guarantee that will commit the Government to no further expenditure than it has already to incur for the repairs of roads, &c. I trust, if this line prove successful, that the Company will be encouraged to make branches which will cover some of the ground which the North-Western Provinces' Government propose to occupy with Provincial light railways.

20. The Military Commission on Army organization have urged the Government of India to complete the line between Moradabad and Saharanpore. The importance of this line has been admitted in a despatch to the Secretary of State, and the only question in regard to it which remains unsettled is the date on which it should be taken in hand; but considering the many urgent demands there are for the improvement of Military communications, it is not probable that funds will be available for a line which simply serves as an alternative, to a railway equally good, through road between Bengal and the Punjab.

	Miles.	Cost.
Farakabad to Hatras Railway Station on East Indian Railway, with Bridge over Jumna ...	90	50 lakhs.
Bundelkhand lines ...	150	100 "

Metre Gauge—		Miles.
Bareilly to Ranibagh ...	...	60

Broad Gauge—		Miles.	Cost.
Moradabad to Saharanpore ...	...	115	135 lakhs.

PUNJAB.

21. In the Punjab the only local lines which have been under discussion have been branches from the Sindh, Punjab and Delhi railway from Umbala and Amritsur to Kalka and Pathankôt, 40 and 60 miles respectively. Both these should possibly be on the broad gauge, and both will probably prove remunerative. They will besides have a military value, as they improve the approaches to the Hill stations Simla, Kussowlee, Dugshai, Subathoo, and Dalhousie.

22. But the Punjab will be very poorly supplied, in comparison with its area and population, with cheap lines of rail, if more development than is at present proposed is not given to the system. What I should like to see is an extension of the Rajputana railway metre gauge North-westward from near Delhi towards Ferozepore, about 300 miles. I am sure these lines will prove reproductive, and they will open out a district which is and will be watered by two of our largest irrigation canals, the Western Jumna and Sirhind.

23. The Army Commission has recorded its opinion in favor of the retention of Ferozepore as the arsenal for our frontier line of defence, and therefore the short railway from Raiwind to Ferozepore, which has been long under consideration, should be built without much further loss of time. This should be constructed as an ordinary Military charge, though it will probably prove remunerative by diverting the grain trade on the Sutlej River to the Sindh, Punjab and Delhi railway.

24. The Punjab is served by the Punjab Northern, the Sindh, Punjab, and the Indus Valley, and Salt Branch railways. If to these be added the lines above mentioned, and the salt branch be prolonged a few miles towards Dehra Ismail Khan, I think the province will be well supplied with railway communication, and the Government will have strengthened very considerably our means of gathering, on our frontier posts of Peshawur, Kohat, Dehra Ismail Khan and Mooltan, large armies at short notice; with their supplies of ammunition and grain, &c., from the districts through which pass the East Indian, the Sindh, Punjab and Delhi, the Oudh and Rohilkhand railways, and the metre gauge lines of Rajputana, Malwa, and the North West.

25. I do not allude in the body of this minute to the proposed extensions of our Frontier railways beyond Peshawur and Kohat, because their construction is dependent on political relations quite apart from those under review.

	Miles.	Cost.
Delhi-Ferozepore, with branches...	300	120 lakhs.

Broad Gauge—	Miles.	Cost.
Raiwind to Ferozepore ...	24	12½ lakhs.

PESHIN VALLEY.

SINDH.

BOMBAY.

Broad Gauge—	Miles.	Cost.
Dakore branch extension ...	17	15 lakhs.
Branch from Dond and Manmad ...	40	30 "
Metre Gauge—		
Húdtgi to Gadag ...	170	136 "
Karwar or Marmagaoa to Bellary ...	250	260 "

26. Our newly assigned territory of Sibi and the Peshin Valley will be traversed through its whole breadth by the Kandahar railway now under construction.

27. Nothing further is needed in that direction, nor do I think that, after the completion of the Bridge over the Indus at Sukkur, we want, for the present, any more large Railway works in Sindh. The Indus Valley Railway runs through the richest part of that country, and the connection of that railway with the Bombay system, passing as it would do through an uninhabited and waterless country, may safely be deferred either till there is danger of losing our perfect control over our sea route to Karachi, or until our funds are more superabundant than at present.

28. In Bombay the lines which have been suggested for construction, outside those being built in Native States with the money of their Princes, are (1), an extension of the Dakore branch of the Baroda railway across the Mhye river into the Panch Mahal, a distance of 17 miles, on the broad gauge; (2), a branch 40 miles in length off the Dhond and Manmad railway to Toka and Pyton on the borders of His Highness the Nizam's dominions near Aurungabad; (3), a line from Húdtgi 10 miles south of Sholapur, on the Great Indian Peninsula railway, down to Gadag or Hubli, about 170 miles, of metre gauge; and, lastly, (4), a line from either Karwar or Marmagaoa Bay to Bellary.

29. The first of these lines can be classed as a Productive Work, and with the guarantee promised by the Bombay Government might, I think, be handed over to the Baroda Company to be made under their guarantee. It opens out a district which we took over in 1857 from the Maharajah Scindia, and which is cut off from our other possessions by the territory of His Highness the Gackwar and other Native Chiefs.

30. The second, a branch of the Dhond and Manmad, runs through a fertile piece of country bordering the Godavari, and would add considerably to the revenues of the Dhond and Manmad, though in itself it would not yield a fair return on its capital cost.

31. The third line, Húdtgi to Gadag or Hubli, is urgently wanted as a protective work during seasons of scarcity. It has already been commenced as a famine work, and, from the nature of the country which periodically suffers from drought, it ought to be completed at the earliest

opportunity when funds can be made available for the construction of this class of work.

32. The last, Bellary to Karwar or Marmagao, has been long under discussion, and is now about to be made the subject of a joint stock enterprise under the auspices of the Duke of Sutherland and other well known gentlemen, aided by a promised guarantee from the Portuguese Government. Nothing can be done towards the construction of this line by the Government until the promoters of the Company have had an opportunity of deciding whether they will carry out the enterprise after the completion of the examination of the country by an officer sent out by them. If dropped by them, it will have to be taken in hand by us, as a Protective Work, after the completion of the Hudgi-Hoobli Railway.

33. Madras has been singularly lucky in the extent of railway it has had constructed under a guarantee. The southern part of the Presidency is covered with a network of lines, while in the north, railway construction is most difficult on account of the large rivers which pour into the sea on that part of the coast, and on account of the barrier of hills that run parallel with the shore at a short distance inland.

34. The lines which have been suggested are a second connecting link from Dindigul on the South Indian to Pothanoor on the Madras railway. A branch to Kurnul from Gundakul or Adoni and an extension of the Mysore railway through the Wynaad to Beypore.

35. None of these lines are urgently wanted, nor has the Government of Madras shown any disposition to press forward their construction.

36. Something will have to be done towards opening out that great block of country which lies between the Madras, Great Indian Peninsula, and East Indian railways, and the Bay of Bengal; but for railways in this area we must look to the action being taken in the Central Provinces which Administration should place itself in communication with Bengal with the object of laying out a plan of operations for continuous extension in the territories under the jurisdiction of that Government.

37. The Central Provinces' Administration is constructing a railway in extension of the Nagpur branch of the Great Indian Peninsula to Dongurghar, a distance of 125

MADRAS.

Metre Gauge—	Miles.
Dindigul to Pothanoor ...	80
Broad Gauge—	
Kurnul Branch ...	50
Metre Gauge—	
Mysore to Beypore and through Wynaad ...	150

CENTRAL PROVINCES.

Metre Gauge—	Miles	Cms
Nagpur to Dongurghar ...	125	50 miles

miles, on the metre gauge. It is proposed to extend this line a further distance of about 135 miles to Bilaspur, as well as to make a branch from it northwards on to the highlands of Balaghat and down to Jabulpore. The land is rich in coal and minerals, part of it is the granary of Central India, but the line is flanked on the south by the wildest country and densest forests in India. It ought, however, to be built at an early date, and it should be extended both to the north and south in order to bring the Central Provinces into direct communication with the East Indian Railway system, and with the sea coast of the Northern Circars either at Vizagapatam, or Cuttack and False Point. It would seem desirable to have these ports carefully examined by engineers and marine surveyor with a view of taking their capabilities into consideration when the railway surveys are made.

38. There is another line which ought to be built in the Central Provinces, from Gadawara to Saugor and Gwalior picking up the metre gauge lines into Bundelkhand from the North Western Provinces. These lines will not, I am afraid, come into the category of Productive Public Works; but the famines of Orissa have taught us the danger of leaving provinces entirely destitute of all means of access either by rail or water; and I think it is essential that we should run no risk of a repetition of either a similar disaster in the same province or in provinces equally cut off, like Bundelkhand, from other parts of India. Personally I should be inclined to make the line between Agra and Gadawara an extension of the broad-gauge from Gwalior passing through Jhansi as well as Saugor. It will be the connecting link between the East Indian at Agra and the Great Indian Peninsula at Gadawara, and should possibly be on the same gauge, and looking to the great development of trade which may be expected with the construction of cheap local Railways, we should be prepared to open up this new country, thereby providing at the same time for any excess traffic on the Rajputana lines towards Bombay. I should prefer taking up this line to prolonging the Oudh and Rohilkhand Railway as proposed in paragraph 20, and as it would be in connection with the narrow gauge system through Bundelkhand, we should have alternative estimates for the cost on each gauge. These railways with those suggested in the two previous paragraphs will open out the two great

areas of country which remain unsupplied with railway communication, and indeed with much communication of any kind. But as these lines would be expensive, and not probably come under the category of Productive Public Works, their construction is a work of the future.

39. My review of what we are doing and what we propose to do towards opening out India would not be complete without a notice of what is being done in the territories of our feudatories.

40. The great railway now approaching completion which we have made through Rajputana into Malwa and the Bombay Presidency has ensured the part of the country immediately contiguous to it from the worst effects of famine; but our work will not have fulfilled its purpose until branches are made from it into the large areas of country that lie between it and our other railways. Her Highness the Begum of Bhopal has set a good example by offering to construct at her own sole cost a branch from the Great Indian Peninsula near Hoshungabad to Bhopal and Schore. I hope her example will be imitated by other Princes, and that we will not have long to wait for the complete intersection of Rajputana and Malwa by cheap lines made at the cost of the sovereigns of that part of the country.

41. Although outside the intention of this minute, I take the opportunity of saying a few words on the subject of the frontier railways.

42. It was only in September last (the 15th) that the Viceroy laid down the programme which His Excellency expected the Public Works Department to carry out in regard to these works. That Department and its Officers have well responded to the call of the Head of the Government for energetic action, for at this date there is every prospect of the works being completed in all respects as was desired.

43. The manner in which the first section of the Kandahar line has been executed by Col. Lindsay R. E., and his officers under the orders of His Excellency Sir Richard Temple, has already been made the subject of favourable notice by the Government of India in its Resolution

No. 679-680 R.C., dated 6th February 1880.

44. The still more difficult work—the extension of the Punjab Northern from Lahore to Rawalpindi, and its prolongation to Peshawur, and the extension of the Lahore and Peshawur lines on the left bank of the Ravi—has been completed.

with equal energy and success, through a most difficult country involving heavy rock cuttings of some 60 feet in depth, and over viaducts close upon 100 feet high.

45. For the extraordinary progress of these works the Government is, in the first place, indebted to the ability and foresight of the Director General of Railways, Major-Genl. J. S. Trevor, R. E.; to Mr. Molesworth, the Consulting Engineer to the Government of India for State Railways; and to Lieut.-Col. Pemberton, R. E., the Director of Stores. By their ceaseless attention to the immediate wants of the Executive Officers, these—Mr. Lambert, the Engineer-in-Chief of the most difficult portion between Jhelum and Rawul Pindee, Mr. O'Callaghan, on the line between Rawul Pindi and Peshawur, and Captain Gracey, R. E., in charge of the line from the junction beyond Rawul Pindee to Kooshalghar,—have, with that vigour for which they were already distinguished, been able to carry on these important lines of communication, so that the Government may hope that trains will run through to Rawul Pindee by the end of May, to Attock and Kooshalghar in August, and to Peshawur early in the winter of this year. By that season, saving the bridge over the Indus at Attock, which is however in hand, the communication by rail will be complete between Calcutta, Madras, Bombay, Kurrachee and Peshawur.

46. I am quite satisfied that no Government in the world could be better served by its civil and military engineers, and subordinates, than has been the Government of India by the vigorous and able officers who have conducted these operations, which promise to complete, in good time, the plans the Viceroy had only so short a time previously laid down; and the carrying out of which has been, and still is, surrounded with difficulties.

47. To sum up my conclusions:—We shall have built, by the end of this official year, under guarantee, 6,065 miles, of which all but 633 are on the broad gauge. We shall have finished through Imperial State agency 1,860 miles, of which 773 miles will be on the metre gauge. We shall have completed 633 miles through Provincial agency, of which all but 127 miles are on the metre gauge; and we have got 166 miles of rail carried out at the sole cost of our allies.

48. The only new work we shall be building in 1880-81 besides a short branch to the South of India Railway through the agency of Guaranteed Companies is the Benares

bridge. But through State agency we shall have in hand 1,186 miles under our own Officers, of which 302 are being carried out with funds provided by Native States, and we shall have 253 miles under construction on provincial responsibility.

49. This will give us at the end of 1879-80 about 8,721 miles of railway open for traffic, which I trust to see augmented by 938 more miles before the end of 1880-81, leaving by the end of 1881-82 about 474 miles for us to finish of a total of 10,186 miles.

50. What I now propose,* with a view to proceed on a proper basis when funds become available is that we should arrange to commence the following lines :—

• (See Map).

Proposed Lines and Provinces.	Gauge.	Length in miles.	Cost in Lakhs.	Class of Public Works.
BERHAR.				
1. Rangona and Tonghoo	Metro	164	117	Military.
BENGAL.				
1. Tirhoot railway extensions	Metro	102	45	Productive.
2. Dacca, Mymensing and Goalundo lines	Broad	128	128	"
3. Hooghly Bridge	Broad	4	19	"
NORTH WESTERN PROVINCES and OUDH.				
1. Farakabad and Hathras Road junction and Mathra bridge.	Metro	80	50	Productive.
2. Bundelkhand extension from Cawnpur on the East Indian railway.	"	150	100	Protective.
PUNJAB.				
1. Kalka branch	Broad	40	24	Military.
2. Pathankot branch	"	60	36	Productive.
3. Extension of Raptana railway from Delhi towards Ferozepur, with branches.	Metro	300	120	"
4. Ferozepur to Raiwind	Broad	24	123	Military.
SIND.				
1. Indus Bridge at Sukkur	Broad	14	30	Productive.
BOMBAY.				
1. Railway from Hadgi to Gadak or Hubli	Metro	170	136	Protective.
2. Branch from Dhond and Marnad railway	Broad	40	30	Productive.
3. Marwar or Karwar and Bellary railway to be constructed by the Stafford House Committee.	Metro	250	200	Private Enterprise or Protective.
4. Extension of Baroda railway into Panchmahal	Broad	17	15	Productive.
MADRAS.				
1. Kurnool branch	Broad	50	50	Protective.
2. Dindigul to Pothanoor	Metro	80	60	"
or Mysore via Wynmad to Berypur*	"	150	150	"
CENTRAL PROVINCES.				
1. Extension of Nagpur-Chattisgarh line towards Chota-Nagpur.	Metro	135	80	Productive.
Total		1,805½	1,242½	

* This alternative line is left out in the totals.

Abstract of above proposals.

Gauge.	MILITARY.		PRODUCTIVE.		PROTECTIVE.		TOTALS.	
	Miles.	Lakhs.	Miles.	Lakhs.	Miles.	Lakhs.	Miles.	Lakhs.
Broad	64	36½	122½	130	50	50	236½	216½
Metro	164	117	755	423	650	486	1,569	1,026
Total Broad and Metro	228	153½	877½	553	700	536	1,805½	1,242½

51. I do not refer to our proposed contribution towards the railway to be built by Her Highness of Bhopal, because our expenditure will be trifling and will probably be met before 1881-82; nor do I propose to lay out any money in making railways in Native States. I think we have done a fair amount of work already in that direction, and we should confine our further assistance to making any small patches of line which may fall within our own territory and which the Chiefs may require to connect their lines with our railway systems.

IRRIGATION.

52. Turning now to our irrigation schemes I find that during the current and previous official years the aggregate outlay on Productive Irrigation works has amounted to £1,592,054. This has been expended on projects all of which were in progress in previous years; no new work has been put in hand.

53. The estimated outlay in 1880-81, amounting to £630,000, will also be expended on these projects, and at the close of the year, the balance required to complete them, so far as they have been sanctioned, is estimated at £2,841,113.

54. Commencing* from the eastward, the projects in Bengal still under construction are, the Orissa, Midnapoor and Soane irrigation systems.

55. The outlay on the Orissa project is chiefly on the completion of the navigable communication from Cuttack to False Point harbour, and on distributaries. The remaining portions of the work, so far as they have been sanctioned, are expected to be complete in 1880-81. The financial prospects of this project have been more hopeful since 1878-79, when the cultivators for the first time generally began to take irrigation from the canals wherever distributaries were provided, and their lands protected by

	£
1878-79	794,654
1879-80	797,400
	1,592,054

• (See Map).

embankments from the river inundation. This points to the necessity for adding as soon as possible to the extent of the distributary system from the existing canals, a large proportion of which it was considered advisable to hold in abeyance, until it could be seen how far they were likely to be utilized. Detailed estimates are awaited for the additional distributary channels now considered necessary.

56. Estimates aggregating £341,374 for a navigable canal along the coast to connect the existing Tidal canal with the estuaries of the Mahanuddoo river and the Orissa system of canals have been received, and are under consideration. The projected canal is 93 miles in length, and when completed there will be an uninterrupted navigable communication from Calcutta to the Dhamrah, an estuary of the Mahanuddoo River. From the latter to the river Daula near Pooree the tidal creeks are being improved for navigation, the expenditure being defrayed from provincial funds. This may form the first portion of a continuous inland navigable line along the coast projected to connect Orissa ultimately with the canals of the Godavery and Kistna deltas which again have been lately connected with the city of Madras by the Buckingham canal. From the Dhamrah to Vizagapatam, where a new harbour has been suggested, the direct distance is 330 miles, or 400 miles to the junction with the Godavery channels. If it be decided after completion of the surveys to bring the Central Provinces railway to Cuttack, it may be sufficient to stop the canal at the river Dhamrah, but if Vizagapatam be the southern terminus of the railway, then it may be desirable to extend the canal to Vizagapatam.

57. The outlay on the Midnapoor canals has been chiefly on the completion of the distributary system. Here also, as in Orissa, the cultivators have lately begun to irrigate to a large extent, and if the demand continues to increase, storage works may be found necessary to supplement the supply of water in the river Cossye in the dry season. Steam navigation has been commenced along the canal from Midnapoor to Calcutta.

58. The outlay on the Soane project has been mainly on the Buxar branch and the distributary system. The Buxar branch will, it is expected, be practically complete by the close of 1880-81, as well as some of its distributary channels. Irrigation is being developed at a fair rate of

extension on the Arrah and Patna branches, and on both steam navigation has been commenced.

59. In North Behar two small projects have been carried out which deserve a passing notice, as they are the first in those localities, to the construction of which the cultivators interested have given pecuniary aid. The Sarun project on the right bank of the Gunduck river has been carried out with Provincial funds, and interest on the outlay at $4\frac{1}{2}$ per cent. has been guaranteed by the planters who will benefit by the scheme. In the second case, the Teer project in Chumparun, on the left bank of the Gunduck, has been completed at a cost of £7,854, of which £7,100 was contributed by the landholder, Baboo Doorga Prosad Singh.

60. In the North Western Provinces a small outlay was incurred on the Agra canal in completing distributary and drainage channels, but the greater portion of the expenditure was on the completion works of the old Ganges canal and on the new Lower Ganges canal. The latter was opened in November 1878, and irrigation was commenced from it for the spring crop of that year. The main channel and portions of the branches and distributaries are now complete, and irrigation is being taken from them. The completion works of the old Ganges canal are being pushed on as rapidly as the supply of funds and the necessity of maintaining the existing irrigation will admit. Irrigation has commenced from portions of the new branches. A comprehensive scheme of drainage channels for the tracts affected by the canals between the rivers Ganges and Jumna has been sketched out, and the works are being gradually carried out as rapidly as the supply of funds will permit. Designs and estimates for two projects to supply irrigation in Bundelcund have been submitted, but owing to the uncertainty as to the probable financial results, it has been considered advisable to hold them in abeyance for the present, till some conclusion is arrived at about the appropriation of surplus balances for construction of Protective Works.

61. In the Punjab the largest portion of the outlay has been on the new Sirhind canal, in which the Native States of Puthala, Jheend and Nabha are co-proprietors with the British Government, and on the improvements to the old Western Jumna canal. The works on the former have been and are being vigorously proceeded with. Engineering difficulties in the con-

struction of some of the large works in the valley of the Sutlej near the head, which at one time threatened seriously to delay the opening of the Sirhind canal, have at last been overcome by the ingenuity and continued exertions of the Superintendent Engineer, Colonel R. Home, R. E., under the orders of the Lieutenant Governor of the Punjab and the direction of General Gulliver, R. E., the Chief Engineer, and his officers, and there is now little doubt of the canal being ready for the admission of water within two years from this date. The weir across the river Sutlej at the head of the canal will, it is expected, be practically complete before the monsoon of the present year. Good progress has been made on the branch channels, so that irrigation may be commenced as soon as the works at the head of the canal are sufficiently advanced to allow of water being admitted. On the new channels for the Western Jumna canal the progress has been more rapid than was expected—more than half the work sanctioned has been completed.

62. Progress on the Swat canal in the Peshawur valley was retarded during the past year by the demand for labor on the works in the Khyber pass, to supply which a considerable number of the laborers on the canal were taken away.

63. In Madras the outlay during the last two years was distributed among five projects, the Godavery, Kistna, Pennair, Cauvery and Srivaikuntham. The last three are practically complete, estimates are still awaited for the completion of the Godavery Delta system of works. For the completion of the Kistna works, the consideration of Government, but the receipt from the Madras Government of information as to the estimated returns which has been called for.

64. The works on which Productive Public Works funds have been expended in Bombay (excluding Sind) are all, with the exception of the Mutha project, small. Of the total number of seven, two are complete, the remainder will be finished at the close of 1880-81.

65. In Sind two projects, the Eastern Narra and Begarree canals, have been under construction for some years as Productive Public Works; the expenditure on the Narra has ceased; the only work in the category remaining to be completed

at the end of 1880-81 will be the Begarree canal. Designs and estimates for two projects, the Neera canal and Mhuswad tank, estimated at £ 397,735 and £ 181,577, respectively, have been under consideration. The expected financial results, however are not sufficiently favorable to allow of their admission into the category of Productive Public Works, but as protective public works to be constructed from ordinary funds, they may again be taken into consideration. Besides the irrigation projects classed as Productive Public Works, those constructed from the ordinary revenues yield large returns in the various provinces.

66. The aggregate area irrigated in the year 1878-79, the latest for which returns are available, in the three provinces of Bengal, North-West, and Punjab was 5,545 square miles, of which 1,678½ square miles, or about one-third were irrigated by the ordinary irrigation works. In Sind alone the area of irrigation in the year 1877-78 was 2,166 square miles, of which only 279 square miles were watered by the two projects classed as Productive Public Works. The total area in the whole of India under irrigation, as recorded up to the end of 1878-79, was 15,341 square miles, which may increase to 16,000 square miles by the end of 1880-81. If the works in hand are completed, the estimated increase will bring the above area up to 22,000 square miles.

67. In Ajmir, an extensive series of tanks, old and new, irrigates 20,000 acres besides maintaining a supply of water in the wells from which it is drawn for irrigation. Without these tanks the district would be almost a desert.

68. Of works constructed from ordinary funds, for purposes of protection, the embankments in Burmah and Sindh are worthy of notice.

69. The Burmah embankments are carried along the Irrawaddy river, and two of its effluents for the protection of cultivable land from the overflow of the rivers. These embankments are now 175½ miles in length, and have cost £ 285,060, protecting about 1,100 square miles of the valley. The question of the extension of these embankments has been much discussed, and with reference thereto, elaborate investigations have been made, the report of which has lately been received, and is now under consideration.

70. In Sind the right bank of the river Indus is embanked from the boundary of the Punjab to the range of hills which

abuts on the river at Sehwan. The upper portion, 17 miles in length, was first constructed in 1874-75 to protect the cantonment of Jacobabad and the collectorate of Shikarpur, and is now of still greater importance with reference to the railway from Sukkur to Jacobabad. Since the monsoon of 1878 when it was seriously injured by the floods, the embankment has been strengthened, and during the monsoon of last year remained uninjured though put to a severe test from the height of the floods.

71. A proposal has come up from the Agent to the Governor General in Beluchistan for bunding the Nari River with a view to the irrigation of the Kachi desert which should have early consideration.

72. As the Productive Public Works now in progress cannot be completed at the present rate of expenditure in less than five years, I have not considered it necessary to make a forecast of outlay on new projects, pending the receipt of the recommendations of the Famine Commission.

TELEGRAPHS.

73. Finally, I may review the operations of the Indian Telegraph Department. The inland telegraph system has now been extended to embrace nearly all the large towns lying on or near the main lines of communication throughout the country. It extends through Burma to Amherst in the Tenasserim division to Silchar on the eastern frontier; to Dibrugarh in upper Assam; to Darjiling, Bettia, Almorah, Landour, Chakrata, Simla, Dalhousie, and Sialkot on the northern frontier; to Abbottabad, and the whole of the frontier posts on the north-west border, and to all the principal towns on the sea coast from Karachi to Cape Comorin and from Cape Comorin to Calcutta.

74. The eastern portion of the Central Provinces, and all the country from the line of the East Indian railway southwards to the Kistna, is the most backward in telegraph development, as it is in communications generally.

75. The further extension of the inland telegraph system must, as the funds are limited, be chiefly shaped according to the further extension of the railway system, and in the provision of lines as circumstances may require on political or military grounds. But the importance of connecting with the main lines of communications new commercial centres which may arise as the trade and industries of the country develop should be steadily kept in view.

(See Map.)

76. At the close of 1878-79 the system embraced 17,971 miles of line carrying 43,891 miles of wire. During the year 1879-80, 1,137 miles of new line will have been completed, and 3,344 lines of wire erected, raising the totals to 19,103 miles of line, and 47,235 miles of wire. Temporary lines have been run up in Assam as far as Kohima to assist operations against the Nagas. The line from Rawal Pindi to Peshawur has been doubled to provide for the sudden development of traffic on the north western frontier. The line from Peshawur to Dhaka has been made permanent, and doubled as far as Lundi Kotah, and the line from Dhaka to Cabul has been reconstructed, while the permanent reconstruction of the line through the Kurram valley has been partially completed. An extra wire has been hung between Poona and Sattara; and a portion of the lines from Umritsar to Dalhousie and Dhumsala was erected.

77. But by far the larger proportion of the work done was in connection with railways. An extra wire has been hung between Ajmir and Jeypoor on the Rajpootana State railway. The reconstruction of the telegraph along the line of the Cawnpur-Furruckabad light railway, the construction of the telegraph along the Rukh-Sibi railway, the Villapuram-Gingee Section of the South Indian railway, and the Rutlam-Neemuch section of the Neemuch and Nasirabad State railway have been completed. And the lines for the Muttra-Hatras light railway, the Rawal Pindi-Peshawur railway, the Kattia-war State railway, the Bangalore-Mysore State railway, the Nagpur-Chattisgarh State railway, and the Beawur-Pahlunpur Section of the Rajpootana State railway have been partially completed.

78. Provision has been made for expenditure during 1880-81 on completing the following railway lines of telegraph:—

Hatras-Muttra.

Rawal Pindi-Peshawur.

Kushalgarh.

Sibi-Kandahar.

Dubhoi-Baroda.

Tembi Junction-Dhoraji.

Bangalore-Mysore.

Madras-Tanjore.

Trichinopoly-Tuticorin.

Etarsi-Bhopal.

Neemuch-Nasirabad.

Pahlunpoor-Beawar.

and for proceeding with the line for the Nagpur-Chattisgarh State railway.

79. Provision is also made for the construction of a branch line from Pathankot to Madhopur at the head of the Bari Doab canal; for a permanent line from Dera Ismail Khan to Tonk; for an extra wire from Limri to Dundooka in Kattiawar; and another between Sattara and Kolhapur; for constructing a new line from Kolhapur to Rutnagiri with branches to Chiploon and Rajapur; for a new line from Kamari on the Rajpootana State railway to Abu to re-connect the latter place with the telegraph system; and for an extra wire between Madras and Bellary.

80. A lakh of rupees has also been allotted for possible future extensions in Afghanistan.

81. Proposals have been under consideration for extending the telegraph from Moulmein to Tavoy and Mergui in Tenasserim on administrative grounds, and also for connecting Port Blair with the telegraph system by a cable, but neither of these projects are of sufficient importance at the present moment to justify the heavy expenditure that would be entailed with slender prospects of returns. Besides these there are no other proposals of importance for extending the inland system.

82. The connection of the British Indian system with that of neighbouring States has made progress. Negotiations have been undertaken for the connection of the British system with that of Siam by a line from Tavoy to the frontier. The connection of the line from Mandalay in Independent Burmah had been previously completed; and by the end of the current year an extension will have been completed from Sialkot to the frontier for the purpose of connecting with the Kashmir system.

83. The telegraphs of Ceylon have been for many years managed by the Indian Telegraph Department under an agreement. Arrangements have now been concluded for the resumption by Ceylon of the working of its own telegraphs from the 1st July 1880. These are in direct connection by cable with the Indian system.

84. With the exception of the railway, military and political lines, which are obligatory, the further extension of the telegraph system must depend on the growth of commercial demands on the one hand, and on the cheapness and efficiency of the management on the other. The

subject of cheap local extensions is now under consideration.

85. The Department has at length, by careful management, commenced to yield revenue, and it is possible that the telegraphs may yet develop into a valuable property commercially as well as administratively.

86. A proposal for the introduction of a word tariff at a cheaper rate than the six word tariff now in force has been considered, but abandoned for the present, as the financial position is not yet strong enough for the measure, but the desirability of this reform should not be lost sight of, and there is room to hope that it may be possible to introduce it before long.

87. In the meantime, the double charge for telegrams sent at night, and on Sundays and holidays, has been abolished; the rate on messages between India and Burmah has been assimilated to that between stations in India by the abolition of the fifty per cent. extra charge; the charge for Press telegrams sent at night has been reduced by 33 per cent; the permissible length of ordinary telegrams has been increased; and the cost of telegraphic remittances has been largely reduced.

88. The construction of private lines has increased considerably of late years, and is becoming an important branch of the business.

GENERAL.

89. In drawing up this minute of what has been done in the past, and the forecast of what is proposed in the future, I have been assisted by those able officers of Government, Major-General J. Crofton, R. E., Inspector General of Irrigation, Major-General J. S. Trevor, R. E., Director General of Railways, and Colonel R. Murray, Director General of Telegraphs; and these officers concur with me in the propriety of the proposals for the future, so far as funds, available within the next 6 or 7 years, will permit the works to be carried out.

90. I may add that it will be well to have the programme above set forth considered in the Financial Department of the Government of India. None know better than I do how necessary it is to be in full agreement with that Department as to the expenditure of money on Public Works. A sudden accession of funds for the purpose of stimulating their progress is little less uneconomical than a sudden

withdrawal of such funds. In the one case we have not the establishment to supervise the expenditure, which leads to great difficulty in meeting promptly the requirements of Government; while on the other we are left with an establishment which we cannot employ, which leads to its demoralization and to useless expenditure. The Public Works Department has, I am glad to think, always been able to meet any emergencies with which it has had to deal, and no better proof of this can be adduced than that which is indicated in the records of the year now coming to a close, but it is quite certain that the more regular the development of work and the supply of funds, the easier it will be to administer the Department economically and satisfactorily. The arrangement lately sanctioned by the Secretary of State, under which the unexpended portion of the grants for Productive Public Works of one year is added to the assignment for the following, will enable us to distribute our expenditure with greater freedom over the year. Hitherto, in consequence of never being able to forecast with accuracy our liabilities at Home, we have, as the year came to a close, found large balances that we had either to give up, or to lay out in picking up in this country articles which we could have got both better and cheaper, could we have paid for them in the following year. This specially applies to Railways on which the expenditure at Home is very large.

91. I look however with great regret on the late orders of the Secretary of State whereby all sums, whether raised by local debentures or taken from provincial balances, which it is proposed to expend on Productive Public Works, are to be constituted part of the 2½ millions which have been set aside for the total annual outlay on works of this class in India.

92. Provincial balances have only been laid out in cases where the Local Governments have been anxious to secure greater progress than is possible out of their share of the total Productive Public Works grant for the Empire. If no benefit is to accrue to them for thus devoting provincial funds to productive instead of ordinary Public Works, the Local Governments will cease to use those funds for the former purpose, and the only end achieved by the enforcement of the orders of the Secretary of State will be that available money will be laid out, not on the works which are regarded as most im-

portant and most urgent, but on those on which expenditure will not involve the loss of a corresponding sum from the Productive Public Works assignment.

93. Local loans are, I think, most useful when applied to carrying out purely local objects. Many of the large towns of the country are situated at some distance from the main lines of Railway which moreover often run far (as locally considered) from populous and wealthy local centres. The connections of such towns or centres with the Railways are undertakings that might, in most instances, be left with advantage to the local residents to carry out with funds raised among themselves. Again it happens, especially in Bengal, that a wealthy Zemindar is anxious to develop his estate and is willing to advance money, to be laid out for that purpose, either on Railway or Irrigation schemes, if assured by Government against the total loss of his investment. I do not touch on the political advantage of enlisting, in support of the administration, the wealth of the country, nor do I dwell on the value of money expended on works of utility instead of being squandered in sensuality or pomp, or hidden in pots buried beneath the floors of dwellings. These are points which do not legitimately fall within the field of schemes for the extension of Railways, Irrigation, or Telegraphs. All I urge is that we should aim, so far as lies in our power, at giving natives of the country some objects on which the investment of their money will bring home to them, not only interest in cash, but a material improvement of their circumstances and conditions of life.

94. It may be argued that there is no bar to the raising of funds for local improvements, and that all that is proposed is to treat such sums as part of the capital borrowed for Productive Public Works. But it is obvious that if we are really to improve as a whole the communications of so vast a country as India, we must study general provincial benefit rather than local convenience. It is the distinction between these two objects wherein lies the differences in the application of a general and a local fund; and it is because the enforcement of the orders of the Secretary of State will lead to the destruction of this distinction, and to the disappointment of people who may have an intelligent anxiety to employ their wealth in the directions I have named, that I regret His Lordship should have thought it desirable to instruct us to treat the Imperial and Local loans or advances as one common fund.

(24)

95. With these observations, I beg to submit this minute with maps illustrating the programme for the orders of His Excellency the Viceroy.

SIMLA,
6th May 1880. } ALEX. FRASER.

P.W.D.

2200150

No. 11-80

15.
26.00

11
26.00

Handwritten notes in the center of the page, mostly illegible.

Handwritten notes in the lower center of the page, mostly illegible.

GOVT. } 188 . } P. W.
OF MADRAS. } DEPT.

SECRETARY.

Chepauk, 27th June 1881.

OFFICE NOTE.

To

R.

We want a copy
of your note on
Gen. Bruce's minute
regarding productive
& protective works, the
original having apparently
been sent to E.I. and
not returned.

Can you let us have
a copy of the original
draft for reference.

S. B.

R. W.

I will speak
to you about this
in office today
and meanwhile
an Colonel Stewart
Stewart's reply on
Gen. Bruce's minute
is not at this moment
forthcoming (possibly
it went on to and
has not been returned
by Colonel Mullins)
You might peruse
the original draft or
copy the same & R.
Wice

27.1.81

No. 754 R. 2690
MENT OF INDIA.
WORKS DEPARTMENT.
Highway Construction.

ANDUM.

For Reg. No. 777 1/10

der-mentioned papers:-

agreed by General A. Stewart
via letter of 754 R 607
sent with G.O. No. 2690 R
to the Genl.

The Genl. Stewart

has been

has sent to R after made
1/10 R

of the Government
the programme that
allowed in the construction
of Railways, Irrigation
and

CAN

A reference was made re. Lufkin to Colonel Mullins with regard to a minute by General Frow on the subject of Productive and Protective irrigation works.

— Please send up this afternoon any papers we may be in the Office on the note the date the reference was

referred to Co
a
and

19
8690

No. 754 R. 26900
GOVERNMENT OF INDIA.
WORKS DEPARTMENT.
Railway Construction.

MEMORANDUM.

For Lg. No. 777 12/10

Under-mentioned papers:—

20
8690

12/10/10 by General A. S. ...
Previous letter No. 754 R. 2690
dated with L. C. R. 2690 12/10

2690

The Hon. Mr. ...

Manager

See
was sent to R afterwards
14/12

Work the member of the
Council of the Government
the programme that
allowed in the construction
of Railways, Irrigation
and

G.O. No 1172 R. 25-11-78
 " 1173 R. " " "
 Mis. 615 R. 12-19-10-80. out
 G.O. 416 R. 21-7-80 } by between
 " 417 R. " " " } between
 " 181 R. 11-3-80 } by between
 " 275-6 R. 8-5-80 } Shoravur
 " 323-4 R. 11-9-80 } Colliery
 Mis. 2827 R. 10-11-79 } by between
 " 74 W. 27-1-80 } by between
 " 478 W. 1-3-80 } by between
 " 15-24 W. 30-6-80. out } by between
 " 948 R. 3-10-78 } by between
 " 822 R. 29-5-78 } by between
 G.O. 143-4 R. 25-2-80 } between
 " 253-4 R. 23-4-80 } between
 " 339 R. 11-6-80 } between
 Mis. 366 R. 24-6-80 } between
 G.O. 718 R. 28-11-77 } between
 " 753 R. 8-8-78 } between
 " 348 R. 31-3-79. - Khandra + Khandra
 " 155 R. 3-7-80 } by between
 Mis. 119/14 + 15 W. 19-5-80 } by between

No. 754 R. 2690
 GOVERNMENT OF INDIA.
 PUBLIC WORKS DEPARTMENT.
 Railway Construction.

[E. I. Form No. 31]

MEMORANDUM.

For Reg. No. 777 P/10

REQUESTED for reference the under-mentioned papers :-

Copy of a Minute of 6 May 1880 by General A. S. ...
 referred to in Govt. of India's letter No. 754 R. 607
 16 October 1880 forwarded with G.O. No. 2690 R.
 of 23 November 1880. with Chair.

Sapers are with the Department. The Govt. of India
 C. P. was sent to the Govt. of India.

OFFICE OF THE CHIEF ENGINEER
 FOR IRRIGATION,
 1880

To The Registrar of the

Manager
 has sent to R afterwards
 4/12

G.O. No 1172 R. 25-11-78
 " " 1173 R. " " "
 Mis. " 615 R. 12-19-10-80. on
 G.O. " 416 R. 21-7-80 }
 " " 417 R. " " " }
 " " 181 R. 11-3-80 }
 " " 275-6 R. 3-5-80 }
 " " 523-4 R. 11-9-80 }
 Mis. " 2827 R. 10-11-79
 " " 74 W. 27-1-80
 " " 438 W. " " "

No. 754 R. 26/10/80
 GOVERNMENT OF INDIA.
 PUBLIC WORKS DEPARTMENT.
 Railway Construction.

To Mr. [unclear]
 Please see by [unclear]
 reply. The papers
 seems to be with you.
 They did not come
 back to the office.

R. S.
 25/10

at of Madras
 (Railway)

16th October 1880

forward for
 Excellency
 copy of a
 May 1880, re-

by General A. Fraser R. E.
 Public Works Member of the
 Council of the Government
 on the programme that
 be followed in the construction
 of the Railways, Irrigation
 and

G.O. No 1172 R.
 " " 1173 R.
 Mis. " 615 R.
 G.O. " 416 R.
 " " 417 R.
 " " 181 R.
 " " 275-6 R.
 " " 523-4 R.
 Mis. " 2827 R.

By R. ...
 These papers
 were sent to you at
 your special request.
 Please say if they
 are still with you.

R.S.
 25/11

As they are not with
 me - I must send them
 & send them on at
 once BN - S P.

No. 754 R. B. 1880
 GOVERNMENT OF INDIA.
 PUBLIC WORKS DEPARTMENT.
 Railway Construction.

C.A.W.

22/11/80

City of Madras
 (Railway)

Let me know as soon
 as possible Col. Stans
 Elliott's reply to the
 call made in 50 of
 23rd Nov. /80 No 2690 W
 be a complete list of
 Production & Protection
 works in Madras Pres.
 I think there was also

10th October 1880

Forward for
 Excellency
 copy of a
 May 1880, re-

by General H. Fraser R.E.
 Public Works Member of the
 Council of the Government
 on the programme that
 be followed in the construction
 of Works, Railways, Irrigation
 and

G.O. No 1
 " " 1
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an addendum to the
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 in Council

Att
 25/1/81

All communications
 should be addressed
 to the Secretary.

No. 754 R. 16. 10. 1880
 GOVERNMENT OF INDIA.
 PUBLIC WORKS DEPARTMENT.
 Railway Construction.

Soon

Shri Kapur Singh
 to the Govt. of Madras
 P. department (Railway)

Simla, 10th October 1880

Sent

7/12

to forward for
 of His Excellency
 Council copy of a
 the 6th May 1880, re-
 val A. Fraser R. C.

whilst Public Works Member of the
 Executive Council of the Government
 of India, on the programme that
 should be followed in the construction
 of Public Works, Railways, Irrigation
 and

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25/1/80

All communications
 should be addressed
 to the Secretary.

No. 754 N. B. 1880
 GOVERNMENT OF INDIA.
 PUBLIC WORKS DEPARTMENT.
 Railway Construction.

To
 The Secretary to the Govt. of Madras
 Public Works Department (Railway)

Simla, 10th October 1880

Sir,

I am directed to forward for
 the information of His Excellency
 the Governor in Council copy of a
 Minute dated the 6th May 1880, re-
 corded by General A. Fraser R. E.
 whilst Public Works Member of the
 Executive Council of the Government
 of India, on the programme that
 should be followed in the construction
 of Public Works, Railways, Irrigation.

and telegraphs during the next 4 or 5 years and to enquire whether any projects in requisite detail for railway works to be carried out from loan funds on the usual conditions, viz: that the traffic to be expected on the construction of the lines will yield a moderate return on the cost, and that the Local Government will meet interest on all expenditure at $4\frac{1}{2}$ per cent per annum, are now under preparation.

2. You have already been furnished with copy of Despatch No. 134 Railway of the 28th September 1880 to the address of the Secretary of State on the subject of the Mormagoa Bay Railway project, from which you will have seen that all needful action has been taken in respect to the Railways.

25th Nov 1880
Railways projected for tapping the south maharatta country from the Madras side.

3. I am at the same time directed to inform you that there is very little prospect of any money being placed at the disposal of the Government of Madras for expenditure of Productive Public Works till 1883-84 or 1884-85 unless the Secretary of State agrees to an increase in the grant for India in general and that in any case, in preparing plans and estimates, no expenditure whatever should be incurred in getting up projects that would cost more than 60 or 70 lakhs in all, as it will be impossible for the Government of India to allot more than

than 20 or 25 lakhs in any one year and no benefit would be derived in working out in detail projects that cannot be completed within 3 or 4 years of the date on which they are sanctioned.

P.W.D.
220380
No 6608

Shree the honorble

Sir,

Your most obedt servant

J. S. Meun

Major Genl. R.

Deputy Secretary

Document accompanying
Minute by General Fraser R.E.
of 6 May 1880 above referred to.

Cir 17.11.80. M. 22.11.80.
J-25-10-80 again 2.11.80.

No 2690 W 26/11/80

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 23rd 11/80

Read the following:—

From the Govt of India (H.E. No 75, R.C. d/16 Oct/80)

For the Govt of India
to the Govt of Madras
for the Govt of Madras

In accordance with
the instructions of the
Government of India

for the purpose of
the Madras Railway
S.D. and S.D.

for the purpose of
the Madras Railway
S.D. and S.D.

for the purpose of
the Madras Railway
S.D. and S.D.

Communicated to
the Consulting Engineer
for Railways and the
Chief Engineer for Irriga-
tion who will, at early
convenience, submit the
information called for
by the Govt of India,
giving as far as possible
a concise but complete
list of works which they
consider may fairly be
classified under the res-
pective heads "Productive"
and "Protective" with
the present condition of
the projects in each case,
probable estimate &c.

C. E. for Rys with Copies
to Govt of India by + sent to
Govt of India from Madras
1-12-80
sc D. 1-12-80
Govt of India

15/11/80
1-12-80
74-11-80

Expenditure
to the

22
1890

James M.
and family

22-11

Oct 17-11-80

6698. *AK*

Govt. of India

PUBLIC WORKS.

To

Dated

Issued

Recd.

Encl.

G. O. 23rd Nov 1907 No. 28700.

Res.

Minute by Genl. A. F. ...
On the programme
that should be followed
in the construction of Public
works, Railways,
Irrigation & Telegraph.
Letter for ...
for the ...
to the Chief Secy of the
Chief Secy of the
... ..

59
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