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MADRAS RECORD OFFICE

Government of Madras

Public Works DEPARTMENT

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Dated	12.8.	1873.

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
12th August 1873.*

Read the following papers:—

No. 179. From G. A. BALLARD, Esq., Resident in Travancore and Cochin, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated on Circuit, Peermade, 3rd May 1873, No. 31.

ADVERTING to your letter No. 283, dated 28th January 1873, I have the honour to forward copy of a letter* from the Dewan of Travancore and its enclosure

* No. 1,434, dated 3rd ultimo.

on the subject of Railway enterprize in Travancore.

2. I entirely concur in the general views expressed, that the circumstances of Travancore are not likely to render railway communication necessary for some time to come, and that if a railway were constructed it would be financially a very losing concern.

3. The reply to my reference to the Cochin Dewan has not yet reached me; when it does I will forward it, but I have no doubt its tenor will be against the idea of expending public funds on railway extension in that State.

4. Improvement of the water communication on a well approved and comprehensive system, in communication with Malabar on the one side and Travancore on the other, would, I believe, be cordially entered on by Cochin. But on this I shall have some remarks to offer when forwarding the Dewan's reply, the submission of which I have requested may be expedited.

From A. SASHIAH SASTRI, Dewan, to G. A. BALLARD, Esq., British Resident of Travancore, etc., etc., dated Trevandrum, 3rd April 1873, No. 1,434/P.W. 385.

I HAVE the honour to reply to your communication noted in the margin, in regard to the extension of the railway into Travancore.

No. 99, dated 4th February 1873.

2. The bulk of our population, trade, and manufacture is confined to a belt of land extending only twenty miles from the coast, and industry becomes more active and population denser as we approach the seaboard. A railway, then, to be at all utilized, must tap this region at a short distance from the sea.

3. But we have already a system of backwaters and canals unbroken from the capital to our northern boundary, save at one point where the interruption is now being overcome, and rivers and roads meeting this line of water transit at convenient points form easy communication with the chief centres of population in the interior.

4. The country south of Trevandrum, though it has not as yet through water communication, is traversed by a trunk road from end to end, and is furnished with a well arranged net work of feeders to this main line. To provide for the out-going trade there is the rising port of Colachel within easy distance of the main road and not very far from the southern range of hills, where important coffee interests have rapidly sprung up of late years.

5. Thus situated, Travancore is scarcely in need of a railway; at any rate it will be a long time before it becomes absolutely necessary.

6. I enclose extract from our Chief Engineer's letter on the subject, which contains interesting particulars.

EXTRACT.

By the letter from the Secretary to the Madras Government (Railway, No. 33, dated 9th November 1872,) it is apparent that there is no present intention of constructing the proposed branch from the Madras Railway at Shoranoor even to Cochin; indeed, the Madras Government

of opinion that improved water communication at the moderate outlay of one lac of rupees would answer all the purposes of present traffic southward, and in this opinion I quite concur.

2. His Highness' Government is aware, no doubt, that the extension of the Great Southern of India Railway from Trichinopoly to Tuticorin is now in course of construction. The nearest station upon it to the Travancore frontier will be some miles from Tinnevely, and over 50 miles from the Aramboli or southern pass. The country between Tinnevely and Aramboli is all British territory, is but sparsely populated, poorly cultivated, and certainly at present contains in itself no inducement for the construction of a railway.

3. Before, therefore, any serious discussion of the subject of introducing railways into Travancore can be entertained, it appears to me the railways to the north and east of it must approach nearer to the frontier of Travancore.

4. Based upon estimates which I have only very recently examined, I am sure that no railway could be constructed between Cochin and Trevandrum for less than Rupees 80,000 a mile, or, say, 100 lacs for the total distance of 130 miles; between Trevandrum and Aramboli for less than 60,000 per mile, or 30 lacs for the 52 miles, or on a railway from end to end of Travancore of 130 lacs of rupees.

5. As far as my knowledge of Travancore extends and my judgment serves me—

With continuous and improved inland water communication from Trevandrum northward to the railway at Tiroor.

With the existing good road from Trevandrum southward through the Aramboli pass;

With the new central outlet from Trevandrum and Quilon through the Arienkao Pass to Madura and Tinnevely; and,

With the regularly established line of steamers which touch at Colachel in the southern division, and Alleppy in the northern division, the external trade and communication of, and with Travancore, will be well enough provided for, for many years to come, without the expenditure by the State of some 130 lacs of rupees, in addition to its normal expenditure of 10 lacs per annum for public works of general utility required throughout the country.

6. This view of the matter is based, I confess, upon the supposition that the question is whether the Travancore Government is inclined to advocate the introduction of railways as a State work. I would not venture to suggest what His Highness' Government might judiciously yield in the shape of concessions of land, or of guarantees, supposing any private Railway Company offered to construct a railway with its own funds, and accepting all the risks and responsibilities of its paying or otherwise.

No. 180. From G. A. BALLARD, Esq., Resident in Travancore and Cochin, to Colonel G. W. WALKER, R.E., Secretary to Government, Public Works Department, dated Trevandrum, 10th July 1873, No. 59.

ADVERTING to your letter No. 283, of 28th January last, I have the honour to

* No. 302, dated 29th May 1873, with its enclosures in original, which I request may be returned when no longer required. forward copy of a letter* from the Dewan of Cochin regarding the extension of Railway enterprise in that State.

2. The Cochin Dewan mentions a few of the obvious positive advantages of having the Madras Railway extended to British Cochin, and states that the Sirkar will be prepared to afford every assistance in its power to the undertaking. He recapitulates the terms which were proposed in 1862 and 1864, when railway extension was discussed, as those the Sirkar would require to be the basis of arrangement.

3. The terms are, briefly, that Cochin would give over the Shoranoor bridge and land required for railway purposes, and the State become a shareholder to the amount of the charges incurred by it on the bridge and purchase of land. The railway not to interfere with the principal pagodas, or Trichoor houses. The railway employes to be amenable to the laws and administration of Cochin, Civil and Criminal.

The State is prepared to make a farther money contribution, if necessary, provided its total contribution (including cost of bridge, etc.,) does not exceed 7 lacs of rupees, or about one-seventh of the estimated capital, receiving, of course, its proportionate share of net profits.

In other words, the State would be a shareholder to the amount of 7 lacs, the Shoranoor bridge and charges connected with acquisition of land being taken in account to its credit towards the amount.

4. Or the State, the Dewan says, will allow free use of the Shoranoor bridge, and make no charge for Sirkar lands, leaving charges connected with the acquisition of private lands, compensation, etc., as well as all other charges connected with the undertaking to be met by the Railway Company or British Government.

5. The Dewan proceeds to point out what he considers the advantages of the line from Shoranoor. A considerable saving of time will be effected in taking the bridge already constructed. It was built with a view to carrying the railway

and has stood over five monsoons. Shoranoor is a better situation from the traffic point of view than Puttamby, and though the intermediate country may be more difficult, it is not by any means impracticable.

The saving in cost would be considerable.

6. The Dewan does not express any decided views regarding the improvement of the water communication. In my humble opinion this is a question which should be taken up practically, and unless very different conclusion from those anticipated are arrived at, the communication between Cochin and Tiroor should be put in efficient order.

From T. SHUNGOONY MENON, Dewan, to G. A. BALLARD, Esq., British Resident of Travancore and Cochin, dated Ernacolum in Cochin 29th May 1873, No. 302.

I HAVE the honour to acknowledge the receipt of your memorandum, No. 100 of the 4th

Dated 9th November 1872, No. 2,638.
,, 28th January 1873, ,, 283.

February last, forwarding copies of two letters from the Secretary to Government, Public Works Department, one addressed to the Secretary to the Government of India, and the other to yourself, requesting an expression of the views of this Government regarding the extension of railway enterprise into this State.

2. I beg to state, in reply, that the requirements of the trade of this country will be met to a considerable extent by efficient water communication between Cochin and Tiroor, such as is contemplated in the 4th paragraph of the Secretary's letter to the Government of India. The goods will, however, be carried to and from Tiroor much more slowly by water than by rail, and a part of the goods traffic, and probably the whole of the passenger traffic will, as at present, take

*Proceedings of the Madras Government, Public Works Department,
12th August 1873.*

the direction, *via* Shoranoor and Trichoor, or Shoranoor and Curroopadum. The Madras Railway will, moreover, be deprived of the best ocean terminus available, neither Calicut nor Cannanore having the natural advantages possessed by Cochin, supplemented as it is by the monsoon port of Narrakal. Considerable advantages will also be derived by His Highness' subjects from the expenditure of a large sum of money in the territories belonging to this Government. Should the railway be brought down to Cochin, this Government may also expect an increase to its revenue from the increased customs receipts of British Cochin, to the moiety of which it is entitled under the interportal arrangements. The Government of His Highness the Rajah will, therefore, be glad if the railway could be extended to Cochin and be prepared to afford every assistance in its power.

3. In 1862 there was a proposal to construct a railway from Shoranoor to Trichoor, and the terms which His Highness' Government then offered were as follow :—

1st.—His Highness will make over to the Company the Shoranoor bridge, and as much land as may be required for the railway and the terminus.

2nd.—His Highness to be a shareholder to the extent of the money expended by this Government in the construction of the Shoranoor bridge, and in the purchase of land required for the railway and its terminus and for any other purpose connected with the railway.

3rd.—The railway must not interfere with any of the principal pagodas on the way, and the line must be so selected as to avoid the destruction of houses in the town of Trichoor.

4th.—The Railway officials to be amenable to the laws of the country, Civil, Criminal, and Police.

4. The same terms were again offered when, in 1864, Messrs. Scott Brothers and Co. submitted a scheme for the formation of a line between Cochin and the Madras Railway. These terms will be the basis of any arrangements to be entered into hereafter.

5. The extension of the railway to Cochin is too gigantic a project for so small a State as Cochin to undertake on its own account, although it feels certain that the work will prove remunerative in the end. If the British Government, or a private Company, resolve to construct the line, His Highness' Government will be happy to render every assistance in its power. The Shoranoor bridge, and as much land as may be required for the railway and the different stations within Cochin territory, will be made over to the British Government, or to the Company, on condition that this Government is allowed an annual contribution out of the net profits proportionate to its own share of the outlay. Should the principle of our being allowed a fair share in the profits of the undertaking be agreed upon, His Highness' Government will have no objection, if necessary, to advance such a further sum as will make the total of its contribution, including the amount expended on the bridge and in the purchase of the land, equal to Rupees 7,00,000, or about one-seventh of the total amount required for the undertaking.

6. Should the British Government, or the Company, object to allow such a division of the profits as is above suggested, this Government will still be prepared to grant the free use of the Shoranoor bridge, and to forego any claims which it has on Government lands taken up for the construction of the railway or the station, the British Government or the Company in that case paying to the ryots the value of improvements made by them, and to private proprietors the price of lands belonging to them. I am, of course, unable to state at present the extent of Government and private lands which will be required for the railway. I may, however, mention that nearly one-third of the lands in the country belong to Government, the rest being owned by private proprietors.

7. Of the two routes for the extension of the railway now under consideration, the one from Shoranoor to Cochin appears to me to possess such decided advantages over that from Puttamby, that I trust I shall be excused the liberty of briefly alluding to them here. In the despatch to the Madras Government, No. 5, of the 13th May 1869, the Secretary of State for India sympathizes "with the Rajah in his disappointment that the Shoranoor bridge, built at his cost

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12th August 1873.*

for the express purpose of carrying the railway into his own territory, should, owing to a probable change of route, be likely to become useless for this object." The bridge was built expressly for the purpose of bringing the railway into Cochin, and, if in doing this the bridge be not made use of, it will certainly be a disappointment to this Government. It is, however, for the British Government, or the Company who will ultimately construct the railway, to decide which route is to be adopted, and I shall only request a careful comparison of the advantages and disadvantages pertaining to each.

8. Should the line from Shoranoor to Cochin be selected, the bridge over the Ponany river, which I conceive is the most difficult portion of the work, is already in existence, and such portions of the line as are finished may immediately be opened out for traffic. It took about seven years to complete the Shoranoor bridge. By making better arrangements a bridge at Puttamby could probably be built in a shorter period; but considering the liability to which the work is subject of being constantly interrupted by the monsoons of this coast, I do not believe that it could be finished in less than four years, and during this period the capital laid out would be entirely unproductive.

9. There can, I believe, be no doubt as to the stability of the Shoranoor bridge. The plans and estimate were prepared by Colonel J. Bean, who was then District Engineer in Malabar. The piers and abutments were built of granite on wells deeply sunk in the bed of the river, and they admit of a double line being laid if considered necessary. The iron works are of the best description, made according to specifications prepared by that eminent Engineer, Mr. John Hawkshaw. A copy of the specification is herewith submitted for your information. The bridge has, moreover, stood the brunt of more than five monsoons—a good test of its efficiency.

10. When the railway is made the trade of Cochin and Travancore, which passes over it, will be with the countries lying to the east, and not with the towns and villages on the Western Coast, which produce and consume articles exactly similar to those produced and consumed in these States. It seems therefore, in my opinion, to be a mistake to commence the branch railway from a point so far west as Puttamby, which increases the distance to be travelled by rail by about seven miles.

11. The distance from Puttamby to Trichoor appears also to be somewhat greater than that from Shoranoor to Trichoor, and as both the proposed lines will have to pass through Trichoor, the one starting from the former place will necessarily be longer than that from the latter.

12. It is true the ground over which the Shoranoor line would pass is somewhat rougher than that towards Puttamby, but the former route up to Mooloorcurry, which is the roughest portion of the whole line, was surveyed at the expense of this Government by the Railway Engineering Assistant Vedantacherry; and Mr. Collins, under whose directions the survey was made, did not think there would be any serious difficulties in the way, as will be found from the accompanying extracts from his letters to the then British Resident. I have not been able to find Vedantacherry's plans and sections. They are probably in your office. In making the bandy-road to Shoranoor the whole of the diversions he proposed have not been adopted, as they were considered unnecessary for an ordinary road for cart traffic.

13. Should the new railway start from Shoranoor, it will probably pass over a considerable portion of the existing road between the bridge and Mooloorcurry. The drains and culverts on this road have been so substantially built that little or no alteration will be required in adopting them for a railway. Mr. Maltby, in paragraph 15 of his letter to Government, No. 38, of the 26th June 1861, says that "all the drains and culverts shall be suited to a railway should one eventually be laid down," and in paragraph 7 of his memorandum of the 27th November 1861, he declares that "many substantial culverts have been constructed."

14. The most convincing argument in favour of the line from Shoranoor to Cochin is, however, contained in the correspondence received with your memorandum under acknowledgment, wherein the cost of that line is stated at Rupees 45,50,000 only, whereas the cost of a line from Puttamby to Ernacollum is calculated to amount to Rupees 63,00,000. The saving in the expendi-

*Proceedings of the Madras Government, Public Works Department,
12th August 1873.*

ture, by selecting the Shoranoor line, would be Rupees, 17,50,000 and even if the Rupees 3,00,000 spent on the Shoranoor bridge be deducted, the cost of the line from Puttamby would still exceed that from Shoranoor by Rupees 14,50,000,

No. 181. ORDER THEREON, 12th August 1873, No. 2,000.

RAILWAY, No. 22.

ORDERED that the following letter
be sent:—

(Here enter No. 2,001, dated 12th August 1873.)

(True Extract.)

Colonel, R.E.,

Secretary to Government.

PUBLIC WORKS DEPARTMENT,
OOTACAMUND, 12th August 1873.

No. 182.

No. 2,001.

FROM

COLONEL G. W. WALKER, R.E.,
*Secretary to the Government of Madras,
Public Works Department.*

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
Public Works Department.

RAILWAY, No. 23.

SIR,—WITH reference to your letter
of the 27th December 1872, No. 2,631 G,
I am directed to forward the accom-

panying letters from the Resident with enclosures, containing the views of the Travancore and Cochin Durbars on the question of the extension of Railway enterprize into those States.

2. It will be observed that the Travancore Sircar does not see that any advantage will result in extending the railway into that territory, the requirements of traffic being fully met by the existing system of backwaters, canals, and roads. On the other hand, the Cochin Sircar is in favour of railway extension into that State, and expresses its willingness to afford some aid towards the furtherance of the undertaking. The terms on which such aid is proffered, and the advantages of a line from Shoranoor in preference to one from Puttamby, are fully set forth in the papers which accompany; but in submitting these opinions the Resident considers the improvement of the water communication to be a question which should be practically taken up.

I have the honour to be,

Sir,

Your most obedient servant,

Colonel, R.E.,
Secretary to Government.

Exd. S. T. Austin.

Spare Copies.

Extract from a letter from J. Collins Esqre, Civil Engineer, to the address of F. N. Maltby Esqre British Resident No 165 dated 11th March 1861

With regard to the Survey of the Road it will be seen from the report of the Engineering Assistant that a trial line of 7 miles 37 Chains has been completed and plotted.

The Section shows a very rough and undulating line from the river to the pass at Moolocaray. The total rise from the river bank to the pass is 153 feet in a distance of 5 miles between which points there are constant ascents and descents of 1 in 13.

The line however is capable of considerable improvement by deviating and careful setting out and levelling at the pass a deviation has been levelled, which will reduce the summit level of 70 feet. I have therefore resolved to lay out a new line of road between the river and over the pass upon proper levels so as to be converted hereafter into a good Carriage Road or a Branch Railroad.

If the object is to save expense in construction it may be done by omitting

"the metalling. which is the chief expence upon
"all roads in this country. I should merely
"remark that the Madras Government has
"sanctioned Rupees 1000 per mile for the im-
"provement of a feeder Road from the Sho-
"ramoor Railway Station to the Public Road
"into the Town of Vanivellam. -

"The total length of the New Road
"from the Ponany river across the Mooloo-
"caray pass will be 5 miles and a half."

"The road crosses several nullahs
"which will require to be bridged so as to
"render the Road passable at all seasons."

(True extract)

L. H. Hunt
Lewman

Extract from a letter from J. Collins, Esqre Civil En-
-gineer, to the address of F. N. Matthey, Esqre British
Resident No 172 dated 22nd March 1861.

As regards the road to Moolocaray, the trial Section of which was completed at the date of last report, I walked over the whole line accompanied by the Engineering Assistant of the Railway and the result I find to be very promising; two most important deviations have been made from the original bandy track - one at the 2^d mile from the River, which reduces the ^{to} 60 feet, and the other mentioned in the last report at Moolocaray which reduces the Summit 70 feet and avoids the pass altogether. - I consider these deviations so important that I have directed the Engineering Assistant to proceed at once with a working survey and staking out of the line. - The question of the practicability of this route for the purpose of a Branch Locomotive Railway, I consider now settled by the trial Section, which has been made. - It now only remains to lay out the line of Road with such regular curves and straight Lines and on such levels as will be suitable to the working of a Railway or a Tramway, should such an undertaking be hereafter determined upon. -

(True Extract)

(Extract)

✓ Humphreys

N^o 31.

Residents Office, on Circuit,
Permade, 3rd May 1873.

From,

G. A. Ballard, Esquire
Resident in Travancore & Cochin.

To,

Colonel G. W. Walker, R.E.
Secretary to Government
Public Works Department
Fort St. George.

Sir,

Adverting to your letter N^o 283 dated
28th January 1873, I have the honor to forward
N^o 1434 of B. U. 6. Copy of a letter from the Diwan of Travancore
and its enclosure on the subject of railway
enterprise in Travancore.

2. Entirely Concur in the general views
expressed that the circumstances of Travancore
are not likely to render railway
communication necessary for some time
to come. and that if a railway were
constructed it would be financially a
very losing concern.

3. The reply to my reference to the
Cochin Dewan has not yet reached me.
when it does I will forward it, but I have
no

P. W. 221/73

no doubt its tenor will be against the
idea of expending public funds on
railway extension in that State.

4. Improvement of the water Com-
munication on a well approved and Com-
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Malabar on the one side and Travancore
on the other route. I believe be cordially
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mission of which I have requested may be
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I have the honor to be,
Sir,

Your most Obedient Servant,
Garnett
Resident

Ind. L.

Copy 1

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the

P. O. 1873 Depart
- from Fort St. George
No. 4220.
The Resident in

Travancore & Cochin
to The Secretary to
Government P.W.D.
Fort St. George.

D/3? In Aug 1873.
Recd: 928 - July 1/73

No. 31
Enclosure. One

No.

Stating that
the circumstances
of Travancore are such
likely to render
railway communi-
cation necessary
for some time to come
No 2000. 2001-12. Aug 6/73

Very

/Copy/

N^o 1434
P.W. 385.

Thuzoor Lutcherry,
Trevandrum 3rd April 1873.

Desp. 5 -

To

G. A. Ballard Esq
British Resident of Travancore

Sir,

I have the honor to reply
to your communication noted in the
Margin in regard to the extension
of the Railway into Travancore

2 The bulk of our population,
trade and manufacture is confined
to a belt of land extending only twenty
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A railway, then, to be at all utilised,
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tance from the sea.

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broken from the Capital to our northern
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the

No. 99 dated 4 February 1873.

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going trade there is the rising port of
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Road, and not very far from the Southern
Range of Hills, where important coffee
interests have rapidly sprung up of late
years.

5. Thus situated, Travancore
is scarcely in need of a Railway—at any
rate, it will be a long time before it be-
comes absolutely necessary.

6. Enclose extract from our Chief
Engineer's letter on the subject which
contains

contains interesting particulars.

I have &c

Signed/ A. Sashiah Sastri

Dewan.

/True copy/

Sarveswari

Resident.

/Copy/

Extract

By the letter from the Secretary to the Madras Government (Railway No 33 dated 9th November 1872) it is apparent, that there is no present intention of constructing the proposed branch from the Madras Railway at Thoranore even to Cochin, indeed the Madras Government is of opinion that, improved water communication at the moderate outlay of one lac of rupees would answer all the purposes of present traffic southward, and in this opinion I quite concur.

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Based upon Estimates which I have only very recently examined, I am sure that no railway could be constructed between Cochin and Travancore, for less than 80 thousand rupees a mile, or say 100 lacs for the total distance of 130 miles, between Travancore and Aramboli for less than 60,000 per mile, or 30 lacs for the 52 miles - or on a railway from end to end of Travancore of 130 lacs of Rupees.

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With the new Central outlet from Travancore and Quilon through the Ariankas Pass to Madras and Tinnevely and

With the regularly established line of steamers, which touch at Colachel in the Southern Division, and Allepey in the Northern Division the external trade and Communication of, and with Travancore, will be well enough provided for, for many years to come, without the expenditure by the State of some 130 lacs of rupees, in addition to its normal expenditure of 10 lacs per annum for Public Works of general utility required throughout the Country.

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a railway into its own funds and
accepting all the risks and
responsibilities of its paying or otherwise.

True Extract

of A. Sashadastri
Dewan

(True copy)

Canara
Resident.

Indt

On the subject of
Railway enterprise
in Canara.

From
the Dewan of
Canara
To
the Resident in
Travancore & Cochin

Enclosed is a letter
from the Resident in
Travancore & Cochin to
the Secretary to Govt.
dated 17th Dec. 1873.

N^o 59. Resident's Office
Travancore 10 July 1873
From
G. A. Ballard Esquire
Resident in Travancore & Cochin
To
Colonel G. W. Walker R.E.
Secretary to Government P.M.D.
Fort St George.
Cotacamund.

Sir,

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a few of the obvious positive advantages
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* N^o 302 of 29th May
1873 with its enclos-
ures in original
which I request
may be returned
when no longer
required.

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The State is prepared to make a further money contribution if necessary - provided its total contribution (including cost of bridge &c) does not exceed 7 lakhs of rupees - or about $\frac{1}{7}^{\text{th}}$ of the estimated Capital - receiving of course its proportionate share of net profits.

In other words the State would be a shareholder to the amount of 7 lakhs - the Shoranoor bridge and charges connected with acquisition of land being taken in account to its credit towards the amount.

4. On the State, the Diwan says, will allow free use of the Shoranoor bridge, and make no charge for Sirhar lands leaving charges connected with the acquisition of private lands, compensation &c as well as all other charges connected with the undertaking to be met by the Railway company or British Government.

5. The Diwan proceeds to point out

out what he considers the advantages of the line from Shoranoor. A considerable saving of time will be effected in taking the bridge already constructed - It was built with a view to carrying the Railway and has stood over 5 months - Shoranoor is a better situation from the traffic point of view than Pattamby - and though the intermediate country may be more difficult it is not by any means impracticable.

Pattamby to Ernakullam... 6,300,000
Shoranoor to Er.
Ernakullam... 4,550,000
Cost of Shoranoor bridge, say 3,000,000. 4,850,000
Balance in favor
Shoranoor line 14,50,000

The saving in cost would be considerable.

6. The Diwan does not express any decided views regarding the improvement of ^{the} water communication. In my humble opinion this is a question which should be taken up practically - and unless very different conclusions from those anticipated are arrived at, the communication between Cochin and Feroor should be put in efficient order.

Have the honor to be,
Sir,

Your most Obedient Servant,
Carnaud
Resident.

J.S.

Huyyoor Cutcherry
Ernaacollum in Cochin
29 May 1873.

N^o 302.
To

Q. A. Ballard Esquire
British Resident of Travancore and Cochin
Sir,

I have the honor to acknowledge the receipt of your Memo N^o 100 of the 4th February last, forwarding copies of two letters from the Secretary to Government Public Works Department, one addressed to the Secretary to the Government of India and the other to yourself, requesting an expression of the views of this Government regarding the extension of Railway enterprise into this State.

2. I beg to state, in reply that the requirements of the trade of this Country will be met to a considerable extent by efficient water communications between Cochin and Tirroor such as is contemplated in the 4th para of the Secretary's letter to the Government of India. The goods will however be carried to and from Tirroor much more slowly by water than by rail, and a part of the goods traffic and probably the whole of the passenger traffic will, as at present, take the direction via Shoranoor and Trichoor, or Shoranoor and

Dated 9th November 1873
" 28th January 1873

P. M. 1873 (Recd)
G. M. of Travancore
Nov 14 1873
The Resident in
Travancore & Cochin

The Secretary to Government
P. M. 20

Travancore & Cochin
P. M. 20

Dated 10th 3 July 1873
Received 28th July 1873

N^o 59.

Enclosures - 3.

To

Forwarding copy of a
letter from the Queen of
Cochin with original
enclosures regarding
the extension of Railway
enterprise in that State.
N^o 2000-2001-12th Aug 1873

28-7-73

28-7-73

and Curroopadum. The Madras Railway will moreover be deprived of the best ocean terminus available, neither Calicut nor Cannanore having the natural advantages possessed by Cochin, supplemented as it is, by the Monsoon Port of Narreekel. Considerable advantages will also be derived by His Highness's subjects from the expenditure of a large sum of money in the Territories belonging to His Government. Should the Railway be brought down to Cochin this Government may also expect an increase to its revenue from the increased customs receipts of British Cochin, to the moiety of which it is entitled under the interposed arrangements. The Government of His Highness the Raja will therefore be glad if the Railway could be extended to Cochin and he prepared to afford every assistance in its power.

3. In 1862 there was a proposal to construct a Railway from Shoranore to Tuckor and the terms which His Highness's Government then offered were as follows:

1st His Highness will make over to the Company the Shoranore Bridge, and as much land as may be required for the Railway and the Terminus.

2nd His Highness to be a Share holder to the extent of the money expended by this Government in the construction of the Shoranore bridge and in the purchase of land required for

for the Railway and its terminus ^{and} for any other purpose connected with the Railway -
3rd The Railway must not interfere with any of the principal Pagodas on the way and the line must be so selected as to avoid the destruction of houses in the Town of Tuckor.
4th The Railway Officials to be amenable to the Laws of the Country Civil, Criminal, and Police.

4. The same terms were again offered when in 1864 Messrs. Scott Brothers and Co. submitted a scheme for the formation of a line between Cochin and the Madras Railway. These terms will be the basis of any arrangements to be entered into hereafter.

5. The extension of the Railway to Cochin is too gigantic a project for so small a State as Cochin to undertake on its own account although it feels certain that the work will prove remunerative in the end. If the British Government or a private Company resolve to construct the line His Highness's Government will be happy to render every assistance in its power. The Shoranore Bridge and as much land as may be required for the Railway and the different Stations within Cochin Territory will be made over to the British Government or to the Company on

on condition that this Government is allowed
an annual contribution out of the toll profits
proportional to its own share of the outlay.
Should the principle of our being allowed a fair
share in the profits of the undertaking be
agreed upon His Highness's Government will
have no objection, if necessary, to advance such
a further sum as will make the total of
its contribution, including the amount expended
on the Bridge and in the purchase of the land,
equal to 70,000 Rupees or about one seventh of the
total amount required for the undertaking.
Should the British Government
or the Company object to allow such a division
of the profits, as is above suggested, this Government
will still be prepared to grant the free use of the
Shoranur Bridge and to forego any claims which
it has on Government lands taken up
for the construction of the Railway
or the Station, the British Government
or the Company in that case, paying
to the Rysah the value of improvements
made by them, and to private Proprietors
the price of lands belonging to them. I am
unable to state at present the extent
of Government and private lands which will
be required for the Railway. I may however
mention that

11
nearly

10-48
nearly one third of the lands in the Coun-
try belong to Government the rest being
owned by private Proprietors.

7 of the two routes for the exten-
sion of the Railway, now under considera-
tion, the one from Shoranur to Cochin
appears to me to possess such decided
advantages over that from Puttambay that
I must I shall be excused the liberty of
briefly alluding to them here. In the
dispatch to the Madras Government No. 5
of the 13. May 1869 the Secretary of State for
India sympathizes with the Rajah in his
"disappointment that the Shoranur Bridge,
"built at his cost for the express purpose of
"carrying the Railway into his own Territory,
"should, owing to a probable change of
"route, be likely to become useless for the
"object." The Bridge was built expressly for
the purpose of bringing the Railway into
Cochin, and, if in doing this the bridge
be not made use of, it will certainly be
a disappointment to this Government.
It is however for the British Govern-
ment or the Company who will ulti-
mately construct the Railway to decide
which route is to be adopted, and I shall

only

only request a careful comparison of the advantages and disadvantages pertaining to each.

8. Should the line from Shoranoor to Cochin be selected the Bridge over the Ponnany River, which I conceive is the most difficult portion of the work, is already in existence and such portions of the line as are finished may immediately be opened out for traffic. It took about 7 years to complete the Shoranoor Bridge. By making better arrangements a bridge at Puttambay could probably be built in a shorter period, but considering the liability to which the work is subject of being constantly interrupted by the monsoons of this Coast. I do not believe that it could be finished in less than 4 years, and during this period the Capital laid out would be entirely unproductive.

9. There can I believe be no doubt as to the stability of the Shoranoor Bridge. The plans & estimate were prepared by Col. J. Bean, who was then District Engineer in Malabar. The Piers & abutments were built of granite on wells deeply sunk in the bed of the River, and they admit of a

double

double line being laid if considered necessary. The Iron Works are of the best description made according to specifications prepared by that eminent Engineer Mr. John Hawkshaw. A copy of the specification is herewith submitted for your information. The Bridge has moreover stood the brunt of more than 5 Monsoons - a good test of its efficiency.

10. When the Railway is made the trade of Cochin and Travancore, which passes over it, will be with the Countries lying to the East, and not with the towns & villages on the Western Coast which produce and consume articles exactly similar to those produced and consumed in these States. It seems therefore, in my opinion, to be a mistake to commence the branch Railway from a point so far West as Puttambay, which increases the distance to be travelled by rail by about 7 miles.

11. The distance from Puttambay to Trichoor appears also to be somewhat greater than that from Shoranoor to Trichoor, and as both the proposed lines will have to pass through Trichoor the one starting from the former place will necessarily be longer than that from the latter.

It

12. It is true the ground over which the
Shoranoor line would pass is somewhat
rougher than that towards Pattamby, but
the former route up to Mooloorcuray, which
is the roughest portion of the whole line,
was surveyed at the expense of this Govern-
ment by the Railway Engineering Assistant
Vedantachary, and Mr. Collins, under
whose directions the Survey was made,
did not think there would be any serious
difficulties in the way as will be found from
the accompanying extracts from his letters to
the then British Resident. I have not been
able to find Vedantachary's plans and sections.
They are probably in your Office. In making
the bandy road to Shoranoor the whole of the
divisions he proposed have not been adopted
as they were considered unnecessary for an
ordinary road for Cart traffic.

13. Should the new Railway start from Shoranoor it will probably pass over a considerable portion of the existing road be-

between the bridge and Moorloocumay. It is not at all likely that the drains and Culverts on this road any portion have been so substantially built that any great little or no alteration will be required in adopting them for a Railway.

Mr.

Mr. Maltby, in para 15 of his letter to Government N. 38 of the 26. June 1861, says that "all the drains and Culverts shall be put to a Railway should one eventually be laid down." and in para 7 of his Memo: of the 27. November 1861 he declares that "many substantial Culverts have been constructed."

14. The most Convincing argument in favor of the line from Shoranoor to Cochin is however Contained in the Correspondence received with your Memo: under acknowledgment; wherein the Cost of that line is stated at 45,50,000 Rs. only, whereas the Cost of a line from Puttambay to Ernakollum is calculated to amount to 63,00,000 Rupees. The saving in the expenditure, by selecting the Shoranoor line, would be 17,50,000 Rupees, and even if the 30,000 Rupees spent on the Shoranoor Bridge be deducted, the Cost of the line from Puttambay would still exceed that from Shoranoor by Rs. 14,50,000.

Have, see

Right Thungoony Menon,

True copy Dewan

Ensign
Resident

7.1

In a letter ¹⁸⁷³ ^{Sept} from the
Resident in Travancore
Cochin, to the
Chief Secretary to
Government, F.F.S.L.,
Dated 10. July 1873 -
No. 59.

From
The Dewan of
Cochin
To
The Resident in
Travancore Cochin
D/29. May 1873.
No. 352.

P.W. 4221/73

Regarding the ex-
tension of Railway
enterprise in Cochin

N.G. 12 Aug/73
Bh: 180.

W

Bridge over the River Ponany
— at Thoranoor —

Specification,
— for —
Wrought Iron Girders &c.

With one Drawing.

Bridge over the River Ponany at
Shoranore.

Specification for
Wrought Iron Girders &c

The Work referred to in this Specification
is required for the Rajah of Cochin and
is ordered through Francis H. Maltby Esq^r
of Douglas Lodge Harrow on the Hill.

General
Description.

There is one Drawing referred to and accom-
panying this Specification.

The following is the Work that is required

No 26. Girders each 69 ft 10 in long with Bracing

No 220. Holding down Bolts.

No 2000. Bolts for fastening joints to Girders

No 500. Knees for fixing fascia Board to planking with bolts complete.

1850. Lineal feet of single line of side fencing
or railing with bolts complete

The whole of the Work being of Wrought Iron.

The Contractor is to name total sums
for which he will manufacture and deliver the
whole of the Work complete in every respect free
alongside in any Dock or on any Wharf or on any
part of the Stream in London or in Liverpool.

Also a total sum for which he will manufacture
and deliver the whole of the Work complete in every
respect at Beypoor (on the Malabar Coast in India) the
Western Terminus of the South West line of the Madras
Railway the Contractor will be required to deliver this
work

work at whichever of these ports he may be ordered.

The Contract includes the supply, testing, protecting, packing, and delivery of the whole of this wrought iron work complete in every respect.

The whole of the Iron used throughout the work is to be equal in quality to the very best ^{Materials} and ^{Northampton} Staffordshire.

The workmanship and finish throughout the whole work is to be of first class description.

The plates in the girders are to be rolled perfectly true and uniform in thickness. they are to be cut perfectly square so as to butt accurately together and the joints of all plates in the top and bottom flanges are to be planed.

The Angle irons are to be accurately rolled so as to apply exactly to the surface of the plates connected by them.

The T irons are to be cranked at either end over the vertical flanges of the angle irons and are to be accurately cut at the ends so as to fit in exactly at their Junction with the angle irons.

All joints in the upper and lower flanges are to be secured by top and bottom cover plates as shown on the Drawing.

The outside edges of all plates are to be made perfectly smooth and regular by planing or otherwise.

All cover plates are to be sheared perfectly square and are also to be made perfectly smooth and regular at the edges by planing or otherwise, joints are to occur only where shown on the Drawing.

The rivets are to be $\frac{3}{4}$ inch diameter and placed $3\frac{1}{2}$ inches apart centre and centre and disposed as shown

Materials
and
Northampton

Girders.

Testing.

shown on the Drawing. - The Rivetting is to be done in the most workmanlike neat and effective manner. - The rivet holes are to be accurately punched. - All rivets are perfectly to fill the holes and the heads are to be shaped as may be approved by the Engineer or ordered by him.

The rivet heads on the under side of the end bearing plates will be countersunk flush with the plate. - Slot holes are to be made in these bearing plates. - These slot holes must be neatly finished off to the proper shape and size.

Two girders braced together are to be placed on fixed points of support leaving clear spans of 64 feet and each pair are then to be loaded with 64 tons spread equally all over the 64 feet.

With this load the deflection is not to be more than $\frac{5}{8}$ of an inch in the centre of each Girder and after the removal of the load the girders are to recover their original condition in every respect.

The supports of the girders for the testing must be made perfectly immovable and on the same level and should any support sink in the least degree during the testing the operation will have to be done over again.

The iron from which the work is manufactured will be tested from time to time and must stand such tests as the Engineer shall consider satisfactory.

The testing is to be done in a manner that will be satisfactory to the Engineer, and he is to have power to alter any methods of testing and to test the work in any manner he may think desirable. - And the Contractor is to provide

provide all apparatus labor and assistance the Engineer or his Inspector may require for the purpose.

The testing is to be done in the presence of the Engineer or his Inspector and the Contractor must give at least one week's notice in writing to the Engineer previous to any work being ready to be tested or examined.

The girders having been proved and found satisfactory the Rivets colored Red are to be cut out and the Girder separated (at the places shown in the Drawing) for the purposes of shipment. The spare rivets together with an allowance of 10 per cent for loss and waste are to be supplied with the girders to rivet them up again when at their destination.

The Bracings are to be truly and accurately made so that they may be fixed in their proper position without any cutting or trouble, all the Rivet Holes are to be punched and the proper number of rivets sent out with the Bracings together with an allowance of 10 per cent for loss and waste.

Everything necessary for the completion and fixing of the Railing is to be supplied with it.

The whole of the girders are to receive one coat of boiled linseed oil laid on hot and are afterwards to be painted with two coats of the best oil paint the first coat red lead and the last dark bronze green or other approved color.

The railing, knees bolts nuts washers and loose rivets are to be heated, and immersed in hot boiled Linseed Oil.

Great attention is to be paid to protect all the iron work before any oxidation whatever commences.

For the purpose of shipment the half inch end bearing plates are to be separated from the girder. the ends of the girders are to be protected by bolting on

Bracing
and
Railing

Painting and
protecting

Packing

on pieces of wood and the $\frac{1}{2}$ inch end bearing plates are to accompany the girders to which they severally belong and are to be packed between the girder and the wood these pieces of wood must not project beyond the edges of the girder, so as to ensure the packages not being wider than the width of the top and bottom flanges of the girder.

The rivets for permanently fixing these bearing plates to the girder when in India are to be sent out together with an allowance of 10 per cent for loss and waste.

All knees bolts nuts washers and loose rivets are to be packed in bags covered with pitch and tar or with such composition as will render them perfectly water tight or are to be packed in extra strong air tight cases or Casks (properly secured by hoop iron) as the Engineer or Inspector may direct.

The whole of the packing is to be done in a workmanlike manner under such directions as the Inspector may give.

The letters "R. P. B." are to be permanently stamped on each part of the Railing, Bracing and on all the knees bolts and nuts and loose pieces of iron.

The whole of the marking is to be in such characters and done in such a manner as the Inspector may approve.

Contract to be
executed to the
satisfaction of
Engineer.

The entire work in the Contract is to be executed in the most approved and workmanlike manner according to the direction and to the perfect satisfaction of Mr. John Hawkshaw 33 Great George Street Westminster, the Engineer appointed to superintend the work who shall have full power to inspect and control the entire manufacture testing protecting packing &c. of the Ironwork either

either personally or by Deputy. He shall be at liberty to reject any portions of the materials which he may consider unsuitable or any part of the manufactured work he may disapprove on any grounds whatever and his decision on any points of doubt or dispute which may arise in reference to the Contract shall be final and binding on all parties.

The Contractor shall not assign or sublet this Contract or any part thereof, nor allow any portion of the work to be done other than in his own establishment.

The whole of the Iron Work is to be delivered within four months from the date of the acceptance of the Tender.

No payment will be considered or legally becoming due to the Contractor until the completion of the Contract but advances of money on account may be made to him at such times at the Engineer may recommend to an extent not exceeding 90 per cent of the value of goods delivered the balance being retained without interest until the Engineer shall have given his Certificate of the satisfactory completion of the Contract.

It is however to be expressly understood that such advances are in no wise to be considered as evidence of any particular quantity of work having been executed or of the manner of its execution being satisfactory or in any other way to relieve the Contractor from the liabilities he may sustain under the terms of his Contract.

The Tenders are to be made in the subjoined form and sent on or

or before 30th June in sealed Envelopes addressed to.

Francis N. Matthey, Esq^{re}
Douglas Lodge
Harrow on the Hill

Mr. Matthey does not bind himself to accept the lowest or any tender.

Contract not to be sublet

Time of delivery

Payment

(True copy)

Thos. Matthey
Secretary

15-
No. 2001
P.O. of the Madras Govt.

Recd. the following:-

From the Resident in Travancore (H.E. No 31 of 3rd May/73)
Hochim - [] - 59 of 10 July/73

No.

No.

Ordered that the following
letter be sent:-

No. 2001

25-
Cons Engineer
S.C. Desd 20/8/73. &c.

The Secretary to the
Government of India

Sir,

With reference to your
letter of the 27th Decr 1872.
No 2631 G., I am directed
to forward the accompanying
letters from the Resident con-
taining the views of the
Travancore & Cochin Durbar
on the question of the ex-
tensions of Railway Inter-
prise into those States.

It will be observed
that the Travancore Durbar
does not see that any advantage
will result in extending

the Railway into that Territory,
the requirements of traffic
being fully met by the
existing system of pack
mules, Canals & roads. On
the other hand the Cochise Locomotive
is in favor of Railway ex-
tension into that State,
and expresses its willingness
to afford ~~some~~ ^{some} aid ~~that~~
~~may be necessary for~~ ^{towards} the
furtherance of the undertaking.
The terms on which such
aid is proffered, and the
advantages of a line
from Phoenix in preference
to one from Pinal County are
fully set forth in the
papers which accompany;
but in submitting these
opinions the President considers

21
But the improvement of the
water communication to
be a question which should
be practically taken up.
EMM.

L

The Consulting Engineer for Railways

Decd 20/8/73
with the passing
G. C. 6 C. 1111

42204 4221

G.O. of 1873 Madras

PUBLIC WORKS.

To The Secretary to the
Govt of India

Encl. correct

Dated

Recd.

Encl. 4

G. O. 12 Aug. 1873 No 2000-2007.

No. 179 @ 18/1/82

Army Extension - Pak.

in letters from the
Genl in Transore
in containing the
of the Transore
within Durbar
extension of the
enterprise into
the.