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GOVERNMENT OF MADRAS

Revenue DEPARTMENT

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No. 40. Read the following letter from the Superintending Engineer, 7th Division, to the Secretary to Government, Public Works Department, dated Camp at Ootacamund, 3rd July 1872, No. 67 :—

WITH reference to G. O. No. 2,396 of 20th September 1871, I have the honour to report that I have inspected the whole of the existing line of inland navigation between Cochin and Mangalore, as also the general line proposed for new channels to complete the water communication between the towns above noted. For easy reference I divide the line into sections, and report consecutively on each section, giving their approximate distances, etc., a rough estimate of the probable cost of the project, and I enclose a map showing

the country through which the canal passes, etc., etc.

No. 1.—Section from Cochin to Tiroor Railway Station, *via* Ponany backwater, 77 miles.

No. 2.—From Ponany backwater to Calicut, 40 miles.

No. 3.—From Calicut to Budagherry, 33 miles.

No. 4.—From Budagherry to Cannanore, 33 miles.

No. 5.—From Cannanore to Hosdroog, 41 miles.

No. 6.—From Hosdroog to Mangalore, 41 miles.

SECTION No. 1.—Water communication between Cochin and the Tiroor Railway station has long existed, but has never apparently been systematically taken in hand and placed in an efficient state to allow of its maintenance grant maintaining it in such state; its general direction is good. From Cochin to Kodangalore fort the channel is deep and wide, and requires but little to be done to it beyond better defining its banks in a few places and concentrating the current so as to keep the channel free of the danger of silting; this portion of the channel connects the Cochin and Palliport backwaters. From Kodangalore fort to the Tiroor Railway Station, a distance of 56 miles, is sub-divided as follows :—

No. 1.—Sub-division from Kodangalore to Eddatooryty, 12 miles.

No. 2.—Eddatooryty to Chetwye, 14 miles.

No. 3.—Chetwye to Ponany, 20 miles.

No. 4.—Ponany to Kotye lock and Tiroor Railway Station, 10 miles.

No. 1 Sub-division, from Kodangalore fort to Eddatooryty, though having the appearance of being artificial the canal is simply a drainage channel widened out, and in some places attempts have been made to cut off bends and so forth; the whole of the line of canal requires deepening to 3 feet below dead low tide level. Beyond Eddatooryty, 14 miles from Kodangalore, a branch canal communicating with the town of Trichoor in the Cochin territory is maintained by that Government, and at an interview I lately had with the Dewan, that gentleman told me his Government was quite prepared to pay half the cost of the requisite work to place in proper working order so much of the main canal as runs along the

boundary of the Cochin State, *i.e.*, 35 miles between the Cochin Harbour, and the Eddatooryty canal to Trichoor.

No. 2 *Sub-division* between Eddatooryty and Chetwye. The line of navigation requires but little to be done to it, being both deep and wide enough.

No. 3 *Sub-division* from Chetwye to Ponany. The canal again is simply the drainage channel of the country, widened and straightened and deepened for navigation purposes as in the case of the first sub-division; this sub-division, however, runs through a large tract of irrigated land, the banks of the canal never having been properly formed, and passing as it does frequently through wheels of some extent, and the surface of a good deal of the adjacent land being below high tide level; at Chowghaut near Chetwye and Velliangode near Ponany earthen dams are constructed across the canal immediately that the monsoon discharge of fresh water is overcome by the tides, so as to prevent the salt water at high tides flooding the low-lying lands and injuring the soil for cultivation. Some years ago the Collector of Malabar reported that if these dams, which are a source of considerable annoyance and hindrance to navigation, were not maintained, the cultivators would claim Rupees 1,18,300 as compensation for loss, etc.; from inquiries lately made at my instigation, the ryots do not appear to care for the fresh water stored between the dams for irrigation purposes; but maintain that without the dams their fields would be destroyed, and, therefore, steadily resist their removal, the question, however, is reduced to the mere exclusion of salt water from lands liable to be flooded at high tide, the Collector of Malabar, *vide* his letter marked A attached, is now prepared to allow the dams to be removed if this is guaranteed, which may safely be done, since the construction of good, sound side embankments to the canal, already much wanted for towing paths, will effect all that is required, and will in addition form excellent roads through a portion of the country frequently impassable during the monsoon; I have entered this work in my rough estimate, which includes the cost of constructing such masonry works as are required for the monsoon discharge into the canal (the only existing drainage outlet); the details of these masonry works, and the mode of closing them with cofferdams filled with clay, etc., similar to the plan adopted at the Yennamakal and Viatil dams, will be noted in the specification accompanying the final estimate.

In No. 4 *Sub-division* it will be necessary to define the channel in the backwater in several places, and dredge to the depth fixed, namely, 3 feet below low tide, various distances aggregating about a mile and a half, and a small quay (which would be great boon to the public) requires to be constructed at the Tiroor Railway Station.

SECTION No. 2.—From the Ponany backwater to Calicut a channel already exists as far as Tanoor; at the entrance to this channel at Kotye a new lock is required, the old one being narrow and next to useless; the channel simply requires widening, deepening, and clearing the whole way from the Kotye lock to Tanoor. Three and a half miles north of Tanoor the channel turns eastwards and runs below the Railway into what was formerly called the "Venjally lake," the dam of which some years ago was destroyed, it has been determined not again to construct it, and for the mere purposes of inland navigation such is unnecessary. The channel between the head of the Tanoor canal and the bed of the Venjally lake, about a

mile in length, was excavated by the late Mr. Conolly, Collector of Malabar, in order to complete the through communication by water from Cochin to Calicut; he unfortunately came upon a quick-sand and thus never was able to satisfactorily accomplish the work; in company with Mr. MacGregor, the present Collector, I inspected the line which we were dragged through in a canoe; at first sight the work of restoring the canal here appeared so hopeless that I examined the country for a new line of canal from Venjally towards Tiroor Railway station, and though a new line was easily found, there are many objections to it, the chief being that during the monsoon boats cannot pass under the Tiroor Railway bridge; I therefore recommend the whole channel excavated by Mr. Conolly be retained. I think it may be kept tolerably free for navigation by sheet piling it on each side to, say, 3 or 4 feet below the bed of the channel; the excavation has widened so considerably that the banks now appear to have taken a natural slope, and I believe further slipping of the banks need not be feared; the quick-sand is not more than 300 to 400 yards in length, and is some distance to the east of the Railway bridge; the cost of improving the whole of this sub-division to Calicut is included in the rough estimate. A natural channel from the bed of the lake connects it with the Kuddulhondy river, passing under the Keeranaloor bridge into the Kuddulhondy, and from thence to the Beypore and on to the Kullai river near Calicut.

This line of water communication by river and backwater, though quite navigable, is very fortuous and capable of much improvement; the rough estimate provides for all that is immediately wanted.

SECTION No. 3.—From Calicut to Buddagherry. From the Kullai river to the Poodiacherry sluice and lock is by backwater, both lock and sluice at the entrance of the Conolly canal require to be rebuilt; the Conolly canal connects the Poodiacherry with the Ellatoor backwater, the canal is very narrow and shallow and requires to be deepened and widened throughout its length. From Ellatoor to Pyolly and Buddagherry the line runs along the drainage of the country which in places requires to be deepened. The Pyolly backwater is connected with the Moorat river by a canal about one mile in length, locked at one end; the difference of level between the backwater and river in flood is stated at times to be as much as 12 feet; the lock demands considerable additions and alterations, and the channel to be widened in parts and deepened. The line of navigation from Moorat lock is continued for 8 miles by the Moorat river to the Buddagherry backwater, which runs 3 miles on to Buddagherry; the channel in the backwater requires to be marked out and deepened; at Buddagherry the present inland navigation ends.

SECTION No. 4.—The line of the proposed channel to be continued to Cannanore is marked in yellow on the sketch map herewith submitted. From Buddagherry backwater to the Kartikapully river, for about 4 miles, a new channel with an average cutting of 20 feet is required, from the canal junction with the Kartikapully to the Mahe river into which it empties itself, the river for about 3 miles requires to be widened and deepened; from the point of entry of the Mahe river to the Tellicherry new proposed cutting, distance about 4 miles, this river, a tidal stream, is deep and wide enough; from the Mahe river to the Tellicherry backwater, a distance of about 5 miles, a new cut will have to be made, the

average cutting being about 28 feet, *vide* section A. From the Tellicherry river good water communication by river and backwater exists for about 8 miles towards Cannanore; from the point shown on the survey in the Durmapatam backwater, the new canal will commence, connecting it first with the Eddakad river and then the Chowa river, and from thence to the Kakut river east of Cannanore, which river falls into the Belliapatam backwater; the total length of new canal in this section being about 15 miles. This is the most difficult and expensive portion of the whole line, as it is impossible to get round the high ground through which the canal must run; the rough sections of the ground marked B and C will give an idea of its levels.

SECTION No. 5.—From the Belliapatam backwater, with the exception of about a mile of cutting known as the Sultan's canal, the whole communication to Hosdroog is by backwaters and creeks; therefrom; these creeks require straightening in places and deepening, and the Sultan's canal to be entirely re-constructed, while some cuttings are also necessary through long bends to make the navigation more easy; in the remaining portions there is both width and depth of water sufficient.

SECTION No. 6.—From Hosdroog to Mangalore. In 1860 Captain (now Colonel) F. J. Moberly submitted an estimate for constructing a canal from Hosdroog to Mangalore, his letter No. 138, dated 31st October 1860, gives all the information required in regard to this section; I therefore enclose it. His estimate amounts to Rupees 9,78,500, which, in my rough estimate, I have increased by Rupees 1,21,500 for masonry drainage works and bridges which he has omitted, and to cover the current rates of the district.

The estimates I submit are rough, but at the same time I think that, for rendering the existing inland navigation a really useful work, is very nearly correct; a bottom width of 24 feet of channel with a depth of 3 feet below low tide has been provided for throughout. If Government require correct plans, surveys, and estimates, etc., etc., to be submitted for the project, it will be necessary that a separate temporary establishment, as noted in the estimate attached, be sanctioned by Government to prepare them.

In conclusion, not being called upon to give any opinion in regard to the proposed extension of inland navigation on the West Coast, I merely advocate that early attention be paid to that which already exists, which for under two lakhs of Rupees can be put into thorough working order; much of this line runs through a densely-populated and wealthy country, and is a great railway feeder both north and south of the Madras Railway. Having no statistics of the traffic on the coast, the question of revenue likely to accrue from the canal is one I can only touch upon in reference to the mode of collection; tolls are expensive to maintain and cannot always be levied, frequently local traffic between the toll bars would exist and pass free; it therefore appears to be a better plan to tax every boat on the line according to tonnage.

It will be observed by reference to the rough estimate that the greatest outlay to complete a through canal occurs in the sections between Tellicherry and Belliapatam backwater and the section from Hosdroog to Mangalore, and that for the aggregate sum of Rupees 5,46,847. Through communication from Cochin to within

8 miles of Cannanore, in addition to placing the existing line beyond Cannanore in thorough order, can be accomplished. From Durmapatam to Cannanore and Belliapatam backwater, a first-class road already exists, and a new and excellent line of road has been traced from Cannanore to Mangalore (marked in dotted double lines on the sketch map); I have urged the necessity of completing this line to the Local Fund Board, as I deem it one of the most important works in the district. North of the Belliapatam backwater (where there is an excellent ferry with good approaches, etc.) there are but three bridges of any importance to be constructed, namely, that over the Toarty river at Poodoor, Cassergode river at Bevinja, and the Nettrawatty at Panemangalore, the construction of the last-named bridge would complete the through communication with Coorg *via* the Sumpagee ghaut, and would be of great service also to the traffic with Mysore *via* the Munzerabad ghaut; the cost of these bridges would probably amount to Rupees 2,00,000. Further, I beg to note that an excellent road already is open for traffic from the head of the navigation at Hosdroog to Mangalore. During the south-west monsoon, comparatively speaking but little inland traffic to the coast takes place, simply owing to man and beast not being able to stand exposure to the terrific rain that falls at this season throughout Canara, and not to the fact of the roads and the coast being closed; I therefore believe that, except in very rare cases, even if a coast canal existed, it would be as little used as the sea at this season.

From the Collector of Malabar, to the Acting Superintending Engineer, 7th Division, dated Palghat, 8th June 1872, No. 1,058-A.

In reply to your letter of the 5th April 1872, No. 2, I have the honour to inform you that I have communicated with the Deputy Collector on the subject. I annex copies of my communication to him and of his reply.

2. You will observe that the ryots are not willing to assent to the removal of the dams, not being satisfied as to the efficacy of the measures proposed for ensuring the exclusion of salt water from the adjoining lands.

3. This, of course, is a matter of professional knowledge and experience, and I think that, in considering the future of this navigation line, it may be safely presumed that, on the banks being brought into thorough repair, the dams may be dispensed with.

4. The loss of irrigation is, I think, so small a matter that it need not be considered in the calculation. It is from excess of water in the places that losses chiefly occur.

Memorandum from the Collector, to the Deputy Collector, Ponany, dated Calicut, 11th April 1872, No. 648.

With reference to the letter of Colonel Farewell, copy of which is forwarded, the Deputy Collector is requested to make careful inquiries from the proprietors adjoining the canal, as to whether they would be satisfied, provided the banks are so repaired as to prevent any salt water from passing into fields.

2. Depositions should be taken. If this is the case, the bands might then, it seems, be altogether dispensed with.

*Proceedings of the Madras Government, Public Works Department,
4th November 1872.*

From the Deputy Collector, to the Collector of Malabar, dated Ponany, 3rd June 1872, No. 84.

I HAVE the honour to acknowledge the receipt of your memorandum No. 648 of 11th April last, together with its enclosure regarding the removal of the dams on the Conolly canal.

2. On my recent tour to Chavagat, I fully explained, on the spot, Colonel Farewell's proposal as personally explained to me to several of the proprietors of lands adjoining the canal, all of whom expressed extreme reluctance to do away with the bunds.

3. They are not confident that, by raising the banks and providing them with masonry monsoon drainage outlet works, their cultivation, especially on low-lying lands, will be protected from the intrusion of salt water. They are under the strong conviction that the presence of salt water in the canal will prove injurious to cultivation.

4. As, however, the Department Public Works have already started with laying side walls, the result of the proposed measure would become soon evident to the ryots who could then be easily persuaded to consent to the removal of the dams.

5. I would here observe that the cultivators had the use of fresh water in a lake lying at about the 10th mile post, through which the canal was opened for their cultivation from time immemorial, as already stated in my letter dated 12th August 1870, No. 125, paragraph 2, and embodied with Government Order No. 944 of 29th May 1871. In its stead therefore something will, I think, have to be provided for them.

No. 41. ORDER THEREON, 4th November 1872, No. 2,585.

CIVIL WORKS, No. 3.

His Excellency the Governor in Council is glad to receive this very satisfactory report regarding the present condition of the water communication between Cochin and Mangalore and the measures necessary for its improvement.

2. The officer in charge of the West Coast Canal will be instructed to concentrate his attention on the 3rd section of the Southern Canal between Chetwye and Ponany, and to prepare complete surveys, plans, and estimates for opening that section throughout to a minimum depth of 3 feet below low water-mark and a minimum bottom width of 7 yards with side embankments where required to keep the salt water out of the cultivation. A sum of Rupees 43,000 will be provisionally included in the Provincial Budget of 1873-74 for carrying out the work. The remaining portion of the Southern Canal and the whole of the Northern Canal should be planned and estimated for in succession.

(True Extract.)

H. F. Baker Major, R.E.,
Acting Joint Secretary to Government.

To the Superintending Engineer, 7th Division.
„ Consulting Engineer for Railways.
„ Revenue Department.
„ Controller of Public Works Accounts.

Exd. E. C. Shunker.

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PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

7TH DIVISION.

&c., &c., &c.

Dated November 4th.

Recd.

Encl.

G. O., 4th November 1872, No. 2,585.

NOVEMBER.

Nos. 40-41

Water communication between Cochin and Mangalore.—Passing orders on letter from the Superintending Engineer of the 7th Division reporting on the subject.

N^o 65
Communicated to the Secy of Rev.

13 Nov 72

13 Copies to the Secy of Rev. 1872