M.R. O. 1—30,000—16-10-29.

MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No.	2937	Press ~~Mis.~~
412-13 Dated	24-11- 19 1868.	

Not to be folded or roughly handled

Proceedings of the Madras Government, Revenue Department,
24th November 1868.

No. 412. Read the following Proceedings of the Madras Government in the Public Works Department :—

Communicating to the Officer concerned, with certain observations, Proceedings of the Board of Revenue, submitting, with remarks, the report of the Collector of South Canara on the progress of public works during 1867-68. } (Here enter 18th November 1868, No. 3,597.)

No. 413. ORDER THEREON, 24th November 1868, No. 2,937.

Miscellaneous. Ordered to be recorded.

(True Extract.)

(Signed) F. BRANDT,
Under Secretary to Government.

Exd. F. R. Bantleman.

Govt. of {1868} Madras.

REVENUE.

To

Dated November, 24th.

Read.

Encl.

G. O., 24th November 1868, *No.* 2,937.

NOVEMBER.

Nos. 412-413.

Public works in South Canara.—Order communicating Board's Proceedings on the Progress Report for 1867-68 to Officer concerned, recorded.

Proceedings of the Madras Government, Public Works Department,
18*th November* 1868.

No. 339. Read the following Proceedings of the Board of Revenue, dated 16th October 1868, No. 7,426.

Read the following letters:—

From the Acting Collector of South Canara, to the Acting Secretary to the Board of Revenue, dated Mangalore, 31st July 1868, No. 711.

1. I have the honor to submit my report on the operations of the Public Works Department, for the past official year 1867-68.

2. The funds available for expenditure amounted to Rupees 76,119, as shown below:—

	Rs.
Original Works	31,115
Repairs	44,970
	76,085
Tools and Plant	1,500
	77,585
Deduct subsequent net reductions	1,466
Available allotment	76,119

3. The subjoined statement shows the expenditure of the year under report, amounting to Rupees 69,609. Under the head of "*New Works,*" a sum of Rupees 33,060 was expended almost entirely on communications, and under that of "*Repairs*" the outlay, which amounted to Rupees 35,184, was also confined to communications, except a sum of Rupees 1,008 which was spent on buildings. The allotment of the year was supplemented by a grant from the late Income Tax, amounting to Rupees 1,158:—

	Expenditure of 1866-67.	Expenditure of 1867-68.	Comparison. Increase.	Comparison. Decrease.	Estimate of 1868-69.
	Rs.	Rs.	Rs.	Rs.	Rs.
IMPERIAL.					
New Works.					
Communications	29,928	32,144	2,216	...	29,000
Buildings	8,484	916	...	7,568	...
	38,412	33,060	...	Net 5,352	29,000
Repairs.					
Communications	27,806	34,176	6,370	...	37,650
Buildings	3,274	1,008	...	2,266	5,300
	31,080	35,184	Net 4,104	...	42,950
Total, New Works and Repairs ...	69,492	68,244	...	1,248	71,950
Tools and Plant	1,050	1,365*	315	...	1,500
Total, Imperial ...	70,542	69,609	...	933	73,450
Add Income Tax expenditure	2,852	1,158	...	1,694	...
Total ...	73,394	70,767	...	2,627	73,450

* Excluding Cundapur Range, the expenditure of which is not known.

4. I shall now proceed to detail the nature and extent of works done in each Range during the year, and the condition in which I found them.

MANGALORE RANGE.

5. The total outlay in this Range amounted to Rupees 14,575, of which Rupees 4,022 were spent on *new works*, and Rupees 10,553 on *repairs*.

I. NEW WORKS.—Very little or nothing was done in this Range under the head of "New Buildings." Rupees 175 were expended on providing an addition to the Military gun-shed; Rupees 46 on an alteration in the Engineer's Office at Mangalore, and Rupees 374 for the rebuilding of the fallen portion of the Sub-Magistrate's Cutcherry at Beltangadi.

Under the head of "*Communications*" a sum of Rupees 3,427 was spent on the construction of certain bridges on the Bantwal and Charmady road.

On this line the Poonjalkatta bridge, for which an estimate of Rupees 3,950 was sanctioned, has been completed for Rupees 4,037, of which Rupees 1,858 were expended during the year under report. On the approaches to this bridge, Rupees 500 were expended. The expenditure on certain minor bridges below the Kodekal Ghaut amounted to Rupees 748.

II. REPAIRS.—The repairs to both Military and Civil Buildings in this Range cost Rupees 783, and were of the most ordinary nature. Under the head of "*Repairs to Communications*" there was an outlay of Rupees 9,770; of which Rupees 3,290 were spent on the repairs to the Mangalore and Karkal portion of the Military road from Mangalore to Hurryhur *via* the Agoomby Ghaut;

Rupees 4,164 on the maintenance of the Bantwal and Charmady road;

Rupees 1,638 on the portion of Trunk Road No. II. from Mangalore to Bantwal falling in this Range; and

Rupees 678 on the repairs to one of the bridges (at Mundage) on the Bantwal and Charmady road.

The first-mentioned road was in excellent order throughout; the second was generally good, but considerably out of repair in parts; the third was for the most part much worn and deep in dust. The reason is obvious; the second carries more traffic than the first; the third much more than the second, and the maintenance allowance on this last would seem to require increasing. The traffic is annually increasing. Long strings of coffee and salt carts pass to and fro the port of Mangalore, together with other traffic converging at Bantwal from the Charmady, Munzerabad, and Mercara Ghauts, as well as from the interior of the district. If the maintenance allowances on the second and third lines were increased to Rupees 120 and Rupees 150 a mile, respectively, the Range Officer might be in a position to do them better justice.

III. *Educational Fund.*—Out of this fund there was a grant of Rupees 9,000 for this Range, intended exclusively for the building of the Provincial School-house at Mangalore. The Progress Report of the Range shows that of this sum, no more than Rupees 2,926 were spent during the year, and this merely in the collection of materials. The previous expenditure amounts to Rupees 8,507, so that there has been a total outlay on materials and foundations of Rupees 11,433. But the foundations of the former year have not since risen an inch. The result is lamentable. Not only has education been thereby sadly hindered, but so much discouragement

has been caused, that on every proposal for voluntary contributions for different objects it is thrown in my teeth. "Look at the school," they say, "we have subscribed Rupees 60,000, and for three years what good have we got by it." The following extract from my general Administration Report will serve to show how urgently an adequate building is required. The present one is oppressively overcrowded, though many applications for admission have been refused:—

"Though the people of the district came forward with singular liberality in "the cause of education, that cause has been as singularly retarded.

* * *

"Mr. W. E. Ormsby, B.A. and L.L.B. has arrived and taken charge of the "Institution, and the immediate result has been that applications for admission "poured in in such numbers that every room, ante-room, passage, and out-houses "being filled to overcrowding, further admission had to be reluctantly denied. "Such being the appreciation of learning, and such the confidence immediately "inspired by the presence of an officer of superior attainments and kindly bearing, "it is very much to be regretted that his usefulness is hampered by want of space, "for the school is still held in a hired dwelling-house which is much too small and "very ill-adapted to the purpose, as the school-building, which was planned and "commenced two years ago by the Public Works Department, has, for some inscru-"table reason, advanced very little beyond the laying of foundation. The build-"ing being finished, the future of the Provincial School is bright, being in good "hands."

POOTOOR RANGE.

6. I. NEW WORKS.—*Buildings.*—No more than a trifling sum of Rupees 164 was spent under this head on completed works during the year under report.

On *Communications* there was a tolerably large outlay, Rupees 17,393 having been spent on bridge-work on two important lines of road, *viz.*, the new Military road to connect Cannanore and Mangalore, and the Munzerabad Ghaut road, Trunk Road No. III.

On the former line the following bridge-work, &c., was executed:—

Reconstruction of Woketoor Bridge with Timber-platform.—Rupees 3,260 were sanctioned for this work, but its completion has cost Rupees 3,902, of which Rupees 3,210 were spent in previous years, and 692 in the year under report.

Kadar Bridge.—Sanction Rupees 8,000. Of this Rupees 4,830 were spent in previous years, and Rupees 2,638 during the year under report. The bridge was not fully completed at the end of the year, and the timber-platform was being put up.

Timber Bridge of five spans over Adkatalla river.—This bridge has been fully completed for Rupees 8,474, the sanction being Rupees 8,410.

Yedneer Bridge.—On this Rupees 3,073 were spent during the year, in addition to Rupees 1,578 laid out in 1866-67; but before the bridge could come into use, one of the arches gave way. The reconstruction of this bridge, which was sanctioned by Government on a special report of the Superintending Engineer, has cost Rupees 1,930. The work was fully completed at the end of the year, except the plastering of the parapet-walls.

Polloor Bridge.—Sanction Rupees 3,470. Rupees 542 were spent during the year in addition to Rupees 66 expended in 1866-67, in the collection of materials and laying of foundations.

Bridge over Neckraje river.—Sanction Rupees 2,920: of this sum Rupees 831 were laid out in foundations for the piers, and in the collection of materials. Besides the above, a small bridge at Yedneer costing Rupees 515, and two drains costing Rupees 698 and 650, respectively, were completed on the same line, and a sum of Rupees 648 was also laid out on other completed works.

As the bridges advance the traffic has advanced, and this line is already availed of as far as it is bridged. The road itself is admirably laid out by a very competent and zealous Officer. He accompanied me over the road, and great and minute must be the attention he has given it. Mr. V. M. Fernandez has clearly enough written his name on the district. His footsteps may be recognised in the different ranges by many of the best traces. When it is remembered how unusually difficult is the wooded and hilly country to be worked through in this district, and how much more permanently economical in maintenance as well as advantageous for traffic is a thoroughly well-laid road, I think it will be admitted that I am not over-estimating the value to the district of a Range Officer of such efficieney and energy. I trust he may be so encouraged in it as never to desire to leave it.

The Chandragherry river has to be crossed at Bevinja on this line; it is broad and sandy-bottomed, and iron screw piles suggest themselves; at the same time it is sincerely to be hoped that the superstructure will not be the ever recurring timber-platform of this district, for it should be remembered that it is a Military communication, and the bridge should be calculated, I presume, to bear laden elephants as well as artillery. Now that the iron girder question has been conceded,* and arrangements are being made for their supply, I would venture to suggest their use on iron screw piles at this river.

*Endorsement of Secy. to Govt., P. W. D., 10th January 1868, on Supg. Engr.'s letter to his address, 31st Dec. 1867, No. 160, printed in G. O., 20th Jan. 1868, No. 152, R. D.

On the Mauzerabad Ghaut line, the construction of several minor bridges below the ghaut was undertaken with an allotment of Rupees 2,307, while the sanction was Rupees 4,015.

The state of these bridges was as follows at the end of the year:—

	Estimate.	Outlay.	
Bridge No. 3, 30th mile-stone	700	857	Arch-work completed; wing-walls 10 feet high.
,, ,, 1, 31st do.	600	485	Completed.
,, ,, 4, 30th do.	395	818	do.
,, ,, 2, across Punjah Nullah, 30th mile-stone	900	158	Materials under collection.
,, ,, 7, 40th mile-stone	485	345	Arches completed, and wing-walls five feet.
,, ,, 13, 47th do.	425	13	Materials.
,, ,, 17, 53rd do.	510	490	Completed.

Out of the Income Tax grant, Rupees 483 were spent on Bridge No. 14 at the 50th mile-stone, as also Rupees 675 on minor bridges and culverts.

Proceedings of the Madras Government, Public Works Department,
18*th November* 1868.

I travelled along this line to within some three or four miles of the Mysore boundary. Money had been well laid out in improving the gradients and widening and straightening the difficult turns and repairing slips. This and the repair of those thriftless structures, the timber-bridges, had apparently absorbed so much of the maintenance that there was a deficiency of metalling, and the road was in many parts deeply worn and heavy with crumbled dust in the dry weather and mire in the rain. But it is scarcely to be expected that a ghaut can be maintained in good repair, as well as permanently improved on an allowance of Rupees 99 a mile.

II. Repairs.—In repairs only Rupees 181 were laid out on certain completed buildings; but under the head of "Communications" the outlay was large, and amounted to Rupees 15,840. This was spent on the maintenance and improvement of the following lines of road:—

	Rs.
Military road to connect Mangalore and Cannanore	4,787
Trunk Road No. III. and continuation from Mani on Trunk Road No. II. to the foot of Manzerabad Ghaut	4,362
Trunk Road No. II., from Mangalore to the foot of the Mercara Ghaut	4,939
Two Timber-bridges at Kadamballa and Kajekar on the Manzerabad road	1,752
	15,840

The road from Mangalore to the foot of Mercara Ghaut was in much the same state as the Manzerabad and Bantwal roads, apparently well-cared for, but much worn by traffic. I do not know how long it is since the maintenance allowance on these lines was fixed; but considering that the traffic on them has increased of late years, the time would appear to have arrived for a reconsideration of the relative proportion of the traffic and the means of repairing its effects. Laterite makes a very good driving road, but it powders sadly under heavy traffic, and Rupees 99 a mile will not go far in metal.

KUNDAPUR RANGE.

7. II. Original Works.—Under "Civil Buildings," a sum of Rupees 71 was spent on certain alterations made to the Kundapur Range Office, and Rupees 86 for improving the ventilation of the Prison Cell at Udipi.

Under the head of "Communications," the expenditure aggregates Rupees 11,294, and was confined to the erection of the following bridges on the Coolloor and Haladi road circuits, namely,—

Colloor Road Circuit.

	Estimate. Rs.	Previous expenditure Rs.	Expenditure in 1867-68. Rs.
A Timber Platform-bridge of two spans over the Maraghaut Nullah on the road from Wandsay to Bennatty	4,230	2,022	2,465
Do. over Gurtiholla on do.	3,430	1,249	1,785
Reconstructing Timber Platform-bridge over Colloor Nullah...	2,150	394	1,375
Kaladi Road Circuit.			
Timber Platform-bridge over Kelkal Nullah with an additional vent of 20 feet span ...	7,170	1,890	2,615
Do. over Bachappah Nullah	5,280	1,925	3,054
			11,294

The road from Colloor to Wandsay is in very good order. There are four bridges now in course of construction at Colloor, Dali, Maraghat, and Goorty, and it is expected that they will all be completed in the course of the year 1868-69.

There is a very bad crack in the southern abutment of the bridge built over the Jedkal river last year, and the northern abutment is also slightly cracked.

The state of the Jedkal bridge has been brought to the notice of the Superintending Engineer.

The road leading from Colloor to Byndoor I have not seen personally. The Head Assistant Collector, Mr. Sturrock, writes that "it is in very good order, but "is traversed by four small rivers and eleven small streams all unbridged."

On the portion leading from Wandsay to Kaladi, also a piece that I have not seen, Mr. Sturrock remarks, "no repairs have been made for several years. I believe it is proposed to have a new trace made." This road is not of much importance, and I have lately proposed its transfer for maintenance from the Imperial to the District Road Fund, where it will receive due consideration.

A like remark may be made of the portion between Kaladi and Someshwar. It is unmade.

II. On REPAIRS the expenditure in this Range was Rupees 8,710, the whole of which (with the exception of a sum of Rupees 44) was spent on communications, and in the usual maintenance and improvement of the Colloor and Kaladi road circuits, their respective branches and feeders.

The road from Someshwar to Karkal is always in first rate order. A bridge of three spans over the Bachappah nullah between Someshwar and Mudradi will be shortly completed, as well as one of a similar description over the Kalkal nullah between Mudradi and Waranga.

The only river of importance remaining unbridged is that of Yennehalay. This however, is a very large river, and bandies may cross it by means of a Jangar.

8. With the exception of the road from Wandsay *via* Kaladi to Someshwar, it may be generally remarked of all the Imperial roads north of Mangalore that they are in better repair than those to the east and south-east of it, because they are much less used; on some of them I saw scarcely a cart-track but our own. This is the natural consequence of a want of bridges over several streams.

Some of these streams, though fordable in the dry weather, are utterly impassable for carts in the floods. When money can be made available, they should be bridged; meanwhile something might, I should think, be done for the fords, at a trifling cost, out of the present maintenance allowances in the way of making them shallower, by widening them at the fords, and removing obstacles to the water getting away below. The communication should be kept open in the monsoon time also by means of the peculiarly raised single plank or rough log-bridge of this district with rattan-creeper rail. This suffices as a make-shift for foot-passengers and bearers of burdens. They are in some places wanting, but should be kept up till replaced by proper bridges. They are far better than nothing, and are very cheap.

9. Rotten and rotting timber-bridges are still the rule. My horse put his foot through one as I rode over it. One of my bullocks got a leg through another, and very naturally fled for his life, delaying my luggage several hours, till he was recaptured, and to several others have I had to give a wide berth, as they were either undergoing or in need of repair. I believe I am pretty correct in stating, that about

one-quarter of a timber platform-bridge has, in this climate, to be renewed every third year, so that on an averge the whole timber work of a platform-bridge, beams as well as planks, is new every twelve years. But I am glad to see that the planking is being laid considerably thicker than heretofore, and the ends of the beams are being opened out instead of built in.

10. I proceed now to the requirements of the district.

Causeways at Panemangalore and Uppinangadi.

11. Adverting to my predecessor's remarks on the want there is of a bridge at Panemangalore, I would venture to suggest that as it is its costliness* alone that precludes the construction of a bridge, something might be undertaken in the way of a causeway. In support of the sore need there is of some means of crossing this river, I cannot do better than quote Mr. Cadell's remarks in his report for the official year 1865-66:—

* Board's Proc., 24th August 1866, No. 6,065, paragraph 6.
Endorsement of Secy. to Govt, P. W. D., 10th Jan. 1868, printed in G. O., 20th Jan. 1868, No. 152, R D.

"Paragraph 8. I would again earnestly recommend the construction of an "iron girder bridge over the river Netravati at Panemangalore, the bed of the river "is very wide and rocky, and ferrying over of loaded bandies is always attended with "very much difficulty and delay; this river is the only break on the whole line of the "Mercara road, and, considering that the heavy traffic both of the Mercara and "Manzerabad Ghauts crosses at this point, the want of a bridge is very much felt; "there can be no doubt that, if money were borrowed for the construction of such "a bridge and a small pontage levied, the collections would yield a fair return at "least for the money so invested."

12. A similar structure might be had recourse to for crossing the Kumardari, at Uppinangadi, where a bridge was suggested† by Mr. Whiteside.

† To Board, 18th May 1867, No. 87, para. 2, (vide G. O., R. D., 26th July 1867, No. 1,708.)

On this subject I have addressed the Superintending Engineer some four months ago; but he has apparently not had time to consider my proposals as he has not replied. I enclose a copy of my letter‡ to him that the Board may see the proposals in detail, and be in a better position to judge whether or not they are worthy of their support.

Enclosure I.
‡ No. 321, 21st March 1868, (vide paras. 7 to 11.)

13. I am unable to concur with Colonel Walker that Uppinangadi can properly be made a turning § point for the traffic of the district; neither can I find that any Collector from Mr. Maltby's time could ever be induced to think with him on this point. He proposes to spend Rupees 50,000 on a loopline from Uppinangadi *via* Sarpadi to Bantwal, while the line *via* Mani, originally preferred by Mr. Maltby already exists; forgetting apparently that the Mercara and Hosdroog lines both converge at Panemangalore, and must still remain as clamorous as ever for a bridge at that point.

§ Vide para. 2 of his letter to Govt., recorded in G. O., 30th Oct. 1866, No 3,447, P. W. D.

14. I cannot, therefore, but agree with Mr. Cadell that Panemangalore is the point at which a bridge is most urgently required for the now three converging

lines from Manzerabad, Mercara, and Hosdroog; and as a bridge is too expensive, I do not hesitate to urge that a causeway be constructed at this point. I believe causeways could be constructed at Panemangalore and Uppinangadi at a much less cost than the Rs. 50,000 which the Sarpadi loopline has been estimated to require, and certainly the money would be laid out to much greater advantage in this way.

The Port.

15. But beyond all comparison the great want of the district is an improved port. Canara has of old been always a grain-exporting district, and not only do its own products take advantage of improved communications increasingly to seek the coast, but the ghaut roads of later years have connected Mysore with the sea on the Western Coast, and made Mangalore its natural outlet, especially for the coffee grown on its Western Ghauts. The West Coast of India would seem to have an advantage over the East in being so much nearer to Europe in point of time of realising, and cost of carriage. With reference to coffee and similar products this is specially the case. The advance of the Railway to Bangalore has, however, aided the competition of the East Coast as regards the products of Mysore. Several of the Coffee Planters, who had formerly shipped their coffee from Mangalore last year, tried the experiment of sending it by rail to Madras. The reason why they forsook the port of Mangalore is reported to be that the quantity of coffee sea-damaged in shipment was found to be so great that the under-writers at home doubled the rate of insurance on all coffee from this port. Some portion of the damage may be attributable to the employment of bad boats, which matter I have taken in hand, ordering a careful examination of all boats, and a thorough repair of the leaky ones on pain of loss of license to ply. But the main source of evil seems to be the mouth of the harbour, which is fluctuating and shallow, with a sand bank at its entrance, and it is in crossing this bar that water is shipped in the boats. For several months in the year, also, this bar is quite impassable, so that though the Coast Steamers lie in the roads, boats are unable to communicate with them.

16. In 1863 action was apparently contemplated* by Government, and a special report was submitted by the late Colonel Ouchterlony proposing to close the northern mouth by an outlay of Rupees 6,650; but the proposal was entirely laid aside as useless; and with reference thereto the present Superintending Engineer wrote† that he "could not add "another word to all he had already "written on the subject in former years," and advocated the deputing of an intelligent Officer to take exact surveys and soundings. The Government were unable to supply an extra Officer, and thus the matter dropped.

* Procs. of Govt., P. W. D., 3rd June 1863, No. 1,414.

† Procs. of Govt., P. W. D., 7th March 1865, No. 627.

17. In his Public Works Report* for 1864-65, Mr. Cadell sought the services of a Harbour Engineer, and in ignorance of the above quoted correspondence which has not been supplied to my office, I, with the same view as Mr. Cadell, asked the Executive Engineer if he could survey for me the mouths of the Netravaty and Gurpur rivers, and make arrangements for changes being registered on the plan every six months. This he kindly undertook, and at his request I

* Para. 26.

obtained sanction from the Superintendent of Marine for the erection of certain pillars as substantial landmarks. The survey was apparently completed; but there would seem to have been objections to this Officer's time being thus employed, and so the matter was again dropped, and there it has stood for the last twelve months.

18. The question now seems to be whether or not the regular staff of the district, as recently strengthened, is able to undertake the required survey, or whether an extra Officer is still required. On this subject I have addressed the Superintending Engineer, and would wait his reply, but that I am reminded that this report is already overdue.

19. Looking at the variety of opinions entertained by the different Officers concerned in proposals connected with this harbour, it would seem that it must be a matter of considerable difficulty requiring the attention of an Engineer who has made harbours his special study. What were the opinions of Major-Generals F. C. Cotton and Pears I have not the means of seeing, but it is on record that Captain F. Moberly and Colonel Walker were "at marked variance;" that Colonel Ouchterlony differed from them both, and that Colonel Walker subsequently agreed with Colonel Ouchterlony. It also appears that Colonel Ouchterlony's report contemplated nothing more than closing the northern mouth, of which Government again disapproved, and then trusting to the counteracting forces of the two rivers to keep the mouth from shifting. An old Map, however, dated 1807, shows† that the northern and southern mouths were then virtually one, and were far south of the present southern mouth, and yet the mouths have separated themselves widely and have advanced northwards. Perhaps I may be allowed to add that I have myself observed that during one part of the year the main influence seems to be exerted by the sea, and at another time by the river in flood. The sea currents too seem to be different at different seasons. These considerations do not seem to have been taken into account. I would venture to suggest that such periodical surveys should be taken as would define these several changes, and place a special Harbour Engineer in a position to decide how best to counteract or utilise the several influences at work. I think it no disparagement to an otherwise able Engineer to urge a preference for some one who has made harbours his speciality, and I see that this principle was admitted in the Bombay Presidency with reference to the Kurrachee harbour difficulties, which appear to be in many points very similar to our own.

Enclosure II.
† Copy of Map enclosed.

20. To show how rapid are the changes taking place, I may mention that the then Commandant of the Station, who had formerly been a Public Works Officer, accompanied me to the mouth of the harbour, and with an instrument in his possession took accurate observations on two occasions from which we found that ten yards of the northern side of the mouth of the harbour had been washed away in eleven days; thus the mouth was at that season advancing northward at nearly the rate of a yard a day.

21. From this one observation it may be judged that the change effected in the course of a year must be considerable; and I much regret that I am not in the position I had hoped to be, of laying it well-defined before the Board, and am obliged to substitute rough and less satisfactory conjectures.

22. Similarly the enclosed rough sketch * made by eye is all I have to show how much worn the sand-bank is in one place marked A., and what a natural tendency the river has there to force a new mouth for itself. I have observed that several estuaries on this coast have all the same tendency to throw up a strip of sand between themselves and the sea, and to go on working this strip further and further north till such a head is made that they are compelled to burst out again in the old place to the south. The Mangalore sand-bank has advanced† about two-and-a-half miles to the north of its old mouth, and my own impression is that it is not likely to advance much further before it reverts to its ancient mouth to the south.

* Vide enclosed Sketch No. I.

† Vide enclosed Sketch No. II.

23. With such an eventuality in view, I think we should be in a state of preparedness to take advantage of the change, and fix the mouth where it will have the best scour; and if that were done I see no reason why ships of considerable burden should not be able to run into Mangalore in all weathers, secure thorough protection inside the sand-bank, and load from the side of a jetty which could be run into deep water, for where there is a good scour, there is twenty feet of water inside the sand-bank.

24. Considering how important an advantage an improved port would be, not only to the district itself, but to the Mysore trade and to the Imperial revenues in Customs dues as well as salt; as all the Mysore coffee carts take back salt, I think the harbour is entitled to aid from other than Port Funds. I think District ‡ Funds, Imperial Funds, and Mysore might be called upon to contribute with Port Funds. The Mysore funds I would propose to obtain by laying a toll on each of the roads leading from Mysore to the coast, appropriating half of the proceeds of those tolls for the improvement of the communications between Mysore and its port, and the other half for the improvement of the port to which they conducted her surplus wealth. With three sources § of revenue, namely, Port Funds, a share of Mysore tolls, and an equal share of District Road Cess Funds annually funded, we should be steadily advancing towards the accumulation of a sum adequate to our purpose, and to these local accumulations an equal sum being then added out of Imperial Funds, the project might be undertaken at no indefinite date. But the advantages to be derived might be much accelerated if the Madras Government could see their way to treat this port as liberally as Bombay is treating Carwar‖ (better known to us as Sedashigur.) Carwar, it should be remembered, can never be a dangerous rival to Mangalore: it must ever remain quite distinct, draining a different interior.

‡ Procs. of Govt., 9th Feb. 1867, No. 338, R. D.

§ Annual receipts estimated at Port Fund surplus	Rs.
Half Mysore Tolls	2,000
Road Cess	2,000
	2,000
In one year	6,000
Two years	12,000
Similar grant from Imperial Funds	12,000
Total	24,000

‖ Over eleven lacs.

Proceedings of the Madras Government, Public Works Department,
13th November 1868.

Canal.

25. A canal north and south is one of the schemes that has been projected for this district. A glance at the map will suffice to show how largely the peculiar formation of many of the back-waters would facilitate such a project. I understand that it was carefully considered in detail by an Engineer, and proposed to Government many years ago. But the outlay would be heavy, and the advisability of it is, I think, very questionable.

Making rivers navigable.

26. The rivers of the district are many and large. Up to certain points they are greatly used in bringing grain from the interior, and taking back salt in boats as well as floating down timber. But beyond these points boats meet with obstacles, and timber is jarred and damaged. Eventually these might be removed by slightly deepening or narrowing the most favorable runs so as to make them passable to small boats in the dry weather. There are parts that would repay a slight outlay; there are also obstacles far too serious to be contended with. A selection would have to be made.

Roads required.

27. I think a road connecting Subramani with Beltangadi *via* Dharmasthala would be an advantage.

28. Also a line from Subramani *via* Bellary to join the Mercara line.

29. I hear Coffee Planters are pressing in Mysore for a ghaut down to Subramani, in the line of the old Bisli Ghaut, and so on to the coast. From Subramani one of the above two lines would serve them.

30. From Subramani again, a line might be continued along the base of the hills southward to Kadamakal, to which point native Coffee Planters tell me they have already brought a road from their coffee estates, and wish it connected with the Mercara road to the coast. Such a line would also open out that part of the country.

31. Mr. Maltby proposed a better line from Mangalore *via* Jeppu to Manjeshwar, and opened a very good line, but it requires bridging.

32. He also proposed a more inland line from Mangalore to Mulki, and going over it I found traces of an old survey. This should be opened when money is available in substitution of the sandy sea-shore track which is impassable to carts. It could be continued fit for carts as far as Udipi, and such, I understand, was Mr. Maltby's original intention.

33. Many bridges are wanted both on Imperial and Local lines.

34. Of the requirements I have mentioned, some* are ulterior, and for the present out of the question, though others† are urgently required. Others‡ again will find their place when funds are available in Local Fund Budget propositions. I have, however, alluded to them here, as I thought it was so desired in Board's Proceedings, dated 13th September 1864, No. 5,991, and 10th October 1865, No. 6,390, paragraph 3.

* Those mentioned in paragraphs 27 and 28.
† Paragraphs 11 to 14, 15 to 21.
‡ Paragraphs 29, 30, 31, and 32.

From the Acting Collector of South Canara, to the Officiating Superintending Engineer, 7th Division, dated Mangalore, 21st March 1868, No. 321.

1. I am much obliged by your extract from Lieutenant Thompson's diary, dated the 29th January last, and shall always be glad to receive in like manner, and give full consideration to the suggestions of Range Officers interested in developing their charge.

2 In the present instance, however, the suggestion is not new, the same views having been advanced by Colonel Walker in the days of Mr. Maltby, and repeated from time to time; they had, therefore, already attracted my attention, and with a view to consider them fairly, I had sent a Sub-Magistrate along the road to remove the obstructions and encroachments which cultivators had made on the road, and thus to open it at least to pack cattle, and enable me to pass along it myself as soon as I conveniently could.

3. From what little I have seen of the old road some four months ago, though I have not yet been able to go all over it, it seemed to me that old line would in any case have to be abandoned, and an altogether fresh trace run, and the number of streams to be crossed would make it a very expensive line.

4. Moreover, Mr. Maltby, the then Collector, who knew the district well, strenuously opposed the opening of this road, preferring to it the line which was followed by Mani and Panemangalore, and none of his successors seem to have differed from him. Attaching to their views, therefore, the weight I was bound to give them, I naturally hesitated to conclude with Colonel Walker till I had been at Uppinangadi, where the two roads diverge, and seen the two rivers in question.

5. From the inquiries I made at Uppinangadi, I am convinced that Lieutenant Thompson is mistaken in concluding that the cartmen's reason for preferring the more circuitous Beltangadi road, is that they obtain fodder more easily on that side of the river. Their real objection to the Mani road is the ferry, at which there is only one platform-boat: consequently not more than two carts can cross at a time, and thus a long string of some thirty or forty carts of, say, coffee or salt, all belonging to one merchant, and travelling with him, or his agent in company, take at least two or three days to cross, and have to wait for each other the while; this delay it is that costs them more in fodder than crossing the ford of the other side the Netravaty and going by Beltangady. They have a natural objection also to paying the ferry fees, and ferry fees and delay both together, but especially the delay turn the scale against the Mani line since the Beltangady road has been opened.

6. After an inspection of the locality, and a careful consideration of both lines, and bearing in mind that the subject was entitled to be thoroughly reconsidered *de novo*, because on account of the introduction of the Road Cess, I have more money at command, and the Government have more saved for Imperial lines than formerly; still I am unable to come to any other conclusion than that arrived at by my predecessors. I do not see that much is gained in directness by the proposed route, which, after all, would be only a loopline to the existing Mani road, and as to the objection about bridges, which is the only one of any real force, Panemangalore must in any case have a bridge sooner or later on account of the two* Imperial lines that already meet at that point. It is not, therefore, a question of two bridges or one, but a selection between the Comardari and the Netravaty, and I have no hesitation in concurring with my predecessors that the Comardari is the one to be first crossed.

* Road from Mercara to Mangalore via Panemangalore. Military road from Cannanore via Hosdroog and Vitla to Mangalore via Panemangalore.

7. In accordance with the proposal of the last of my predecessors, who argued the necessity of bridging the Comardari, Colonel Walker prepared an estimate for an iron girder bridge, and Government regretted that its cost, Rupees 70,000, precluded its being sanctioned for the present.

8. It has suggested itself that the Comardari might be crossed at Uppinangadi at a much less cost by means of a causeway or Irish bridge of substantial materials, something like that constructed across the Vygay at Madura, so that it would be passable to carts during the whole fair season, when the river is low and when it is that there is most traffic. This, I fancy, might be done, say, for Rupees 4,000 or 5,000, and there is, I see, a convenient fordable place. It will not escape you that a way will have to be left, as in the Godavery, for boats and floated timber to pass in the dry weather.

Proceedings of the Madras Government, Public Works Department,
18th November 1868.

9. In the wet weather, when the rivers are in flood, the current of the Comardari is very strong, and might apparently be availed of as is that of the Rhine at Mayence, if I remember rightly, in itself driving ferry-boats across by means of a taut wire rope and a false keel set at an incline. But I have no idea what it would cost, and shall be much obliged if you could kindly tell me. But perhaps a second rope and wind-lap would be simpler or safer in the hands of ignorant ferrymen. The public servants who have to cross daily to and fro their homes and the Cutcherry, lose many hours in the ferry-boat, which has to be taken nearly a quarter of a mile up the stream before the crossing either way can be attempted.

10. If such a causeway and ferry can be constructed, at a cost within the means of Government, we shall have the river readily crossed, and the line open as far as Panemangalore, in all weathers; and if the same or at least a causeway were made at Panemangalore, all three Imperial lines would be open throughout the year.

11. I shall be glad to be favored at your leisure with your opinion on both these proposals for the fair and wet weather.

12. But in the meantime, carts will go on crossing the Netravaty ford and going round by Beltangady, and it is a great pity that road, which is so well-traced in all other parts, should have one steep forbidding tug up from the river to the cutting at the top of the hill: especially as it is quite capable of being very easily rendered as gentle an incline as the rest. If instead of being brought through the cutting and straight down the hill, the present direction of the road just before coming to the cutting were continued, and the line taken round the hill, and over a convenient low saddle, which is the nearest saddle, the road would commence falling at a much lower level, and would have more length in which to fall gradually.

13. The part of the road which I object to looked like a part of the old road which had not been improved by the Officer who has improved the rest of the old road so well. Looking at the rest of the road I can only conclude that it was want of means, or want of time, that precluded his completing this part. I shall be glad if it can be now done as it appears from your enclosure, and I observed myself that it is much used, and if you can give me an idea what money will be required, I will arrange that it is provided after 1st April 1868. I have only suggested the line that struck me in case it should be approved of, and consequently save any time in looking for a line.

Enclosures Nos. 2 and 3.—Sketches.

From the Acting Collector of South Canara, to the Acting Secretary to the Board of Revenue, dated Mangalore, 13th August 1868, No. 752.

In continuation of my letter, No. 711, dated 31st July last, paragraph 18, I have the honor to submit copy of a letter* since received from the Superintending Engineer, from which it will appear that if it is thought desirable, the present Establishment is sufficient to undertake the surveys I propose.

* Dated 6th August 1868, No. 24.

From the Superintending Engineer, 7th Division, to the Collector of South Canara, Mangalore, dated Coonoor, 6th August 1868, No. 24.

I have the honor to inform you, with reference to your letter, No. 676, of 17th July, that it is my opinion that the Mangalore Range Officer could, with the means at present at his disposal, undertake such preliminary inquiries as might be necessitated by any move by Government towards improving the Mangalore back-water. But that in the absence of such call, nay more, as the subject when last mooted was unmistakeably dropped by them, I do not feel myself authorised to initiate any action in the matter.

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1. Ordered that the foregoing papers be submitted to Government.

2. The Board request the attention of Government to Mr. Thomas's remarks (paragraphs 15 *et seq.*) on the port or roadstead of Mangalore, and (Clause

3rd, paragraph 5) on the delay in the construction of the Provincial School-house at that station.

3. The Acting Collector's recommendation, at the conclusion of Clause 2nd of paragraph 5, that the maintenance allowance on the Bantwall and Charmady road, and on that leading from Mangalore to Bantwall falling within the Mangalore Range, should be increased to Rupees 120 and 150, respectively, in order that these roads may be kept in better repair, in consequence of the large amount of traffic passing over them; and also his suggestions in the latter part of paragraph 8 for improving the fords in certain streams, appear deserving of attention.

4. The report throughout is interesting, and furnishes a good idea of the wants of the district in roads and bridges. The insufficiency of a maintenance allowance of 99 Rupees a mile for the Manzerabad Ghaut is very clearly shown in Mr. Thomas's remarks, written after personally inspecting the ghaut.

5. The second communication recorded above refers to a proposed survey of the mouths of the Netravaty and Gurpur rivers, in connection with Mr. Thomas's remarks on the port of Mangalore adverted to in paragraph 1 above. Mr. Thomas in paragraph 18 states that he had written to the Superintending Engineer on the subject, and would address the Board again on the proposed survey, which he has accordingly done.

No. 340. ORDER THEREON, 18th November 1868, No. 3,597.

ESTABLISHMENT, No. 37.

1. Communicated to the Superintending Engineer of the 7th Division.

2. The Government observe that the delay in the erection of the School-house at Mangalore is attributable to the necessity that has arisen for revising the plan and estimate for the work, and that Colonel Walker has been instructed to adopt effective measures for ensuring the early completion of the building.

(True Extract.)

Colonel, R. E.,
Secretary to Government.

To the Superintending Engineer, 7th Division.
,, Revenue Department.
,, Board of Revenue.

Exd. F. R. Bantleman.

Revenue Dept.
No. 3642.

Govt. of {1868} Madras.

PUBLIC WORKS.

To

THE SUPERINTENDING ENGINEER,

7th Division.

&c., &c., &c.

Dated November, 18th

Encl. 20 Encl.

G. O., 18th November 1868, No. 3,597.

NOVEMBER.

No. 339-340

96

Progress of Public Works.—Proceedings of the Board of Revenue, submitting, with remarks, the report of the Collector of South Canara on the Progress of Public Works during 1867-68, communicated to the Officer concerned with certain observations.

No. 2937.

RECEIVED.

24th Nov 1868