M.R.O. 1—77,006—3-6-37.

(1) Number of pages _____

(2) Date of repair _____

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE.

Government of Madras.

Public works DEPARTMENT.

G.O. No. 755 Press Mis.

Dated 10- 3 18 [illegible]

Not to be folded or roughly handled

No. 225. Read the following letter from Major J. F. FISCHER, R. E., Acting Superintending Engineer, 1st Division, to the Secretary to Government, Public Works Department, dated Dowlaishweram, 8th January 1870, No. 3,513:—

I HAVE the honour to acknowledge receipt of your memorandum without number, dated the 7th December 1869, forwarded with G. O. of the 8th October 1869, No. 3,258, together with a letter from the Chairman of the Chamber of Commerce, Cocanada, for full report; and, in obedience thereto, I beg to submit the following preliminary remarks for the consideration of Government, together with a sketch of the locality exhibiting what I would propose to do in the event of a sufficient establishment being placed at my disposal for the necessary survey duties. It is hardly necessary to add that, until a complete and thorough examination of the whole harbour has been again made, it is impossible to submit a reliable estimate for the disposal of Government.

One sketch plan.
One statement of water on the Godavery Anicut.

2. In the first instance I would propose to close the Yanam river at the head marked A. in sketch and use every endeavour to train the river to discharge itself as much as possible, particularly during the low freshes, by the branch to the south of the Polaram Island, by clearing out or dredging its head at B. I believe myself this river is the great cause of so much silt accumulating in the harbour, for the reason that it is the first outlet for the river towards the sea and is not affected by adverse winds or currents, so that the lower freshes of the river can readily pass out in this direction, much more so than by the mouths which are further to the eastward and do come under these influences.

3. I beg to transmit herewith a copy of the analysis made by Captain Ryves of sixteen years' records of the flow of water over the anicut during the monsoon season from June to November, or for 168 days. It will be seen from this that for 101 days in this period the river stands at between two and four feet on the anicut, for thirty-one days it is between five and six feet, and for thirteen days between seven or eight feet; beyond this limit may be considered the time in which it is in heavy freshes. It is, therefore, quite apparent that, for the greater part of the season during which the Godavery is discharging its drainage, the river is unaffected by severe floods and consequently subject to the influence of adverse winds and currents at its outlets, where the velocity of its flow in these low stages can be but small. As the water, however, must pass out in some direction, it naturally takes the best available course, *i. e.*, by the Yanam river.

4. I have marked on the sketch one or two creeks, C and D, as far as I have been able to ascertain their position to the south of Hope Island Lighthouse. I think these should be examined with a view to their being opened as far as possible to the eastward, and the main branch of the river trained by groynes into them. I am not sure it would not be possible to construct a rough-stone dam across this branch just above these outlets and so force the river out by them, when it would soon clear a passage for itself. Such a work might be constructed on a platform of fascines, loaded with stone and sunk at the selected site; it should not be very expensive, as the dense jungle in the neighbourhood would supply all the materials.

required for the fascines, and the stone could be sent from Dowlaishweram or Samulcottah.

5. As regards training the river to go by the branch to the south of the Polaram Island, I do not think there can be any objection to the measure. I am aware it has at several times been proposed to irrigate this island; but, having examined this locality personally, I have very great doubts on the subject. Of course, after the construction of the Nagaram Aqueduct, there can be no doubt as to its practicability, especially as the river is only about half the width; but the Polaram Island is so low and has been so long left unprotected and would require such expensive embankments to protect it from the heavy freshes of the river, to say nothing of the subsidiary works for the distribution of the water after an aqueduct had conveyed it over to the island, that I have very little or no confidence in the project, and the more so as this branch of the river is also liable at any time to have the whole river on this side rushing into it whenever the mouths to the northward and eastward are sufficiently blocked to preclude the waters escaping by them. The aqueduct then would probably be left in the middle of the river without any connection with either bank.

6. A more serious objection no doubt exists to the closing of the Yanam river on account of its being the means of communication from the Central Delta to Cocanada, and there can be no doubt the inconvenience would be a matter for some consideration. I do not, however, see why a tidal lock should not be put into the bank canal so that boats might pass by it from the river into the Takee main drain, which is quite navigable to Coringa or Munjair, and I have already, in my letter to your address, No. 2,846, dated 30th October 1869, submitted a project for connecting the latter place with Covoor, so the communication would be maintained probably intact at no great expense, and with a vast saving in time and labour by the boats not having to go out to sea in the bay. As a place for repairing the coasting craft in, it will be just as available as before, being left quite accessible to the tides.

7. As regards the Cocanada river much cannot be said; the tendency no doubt is for the anchorage to shift further to the northward, and it is a question whether it is worth while doing much for this estuary, as the access by it to the shipping must inevitably get worse and worse. I should, however, recommend the river being embanked along the south bank from the Government Coal-shed to the south groyne, this being properly built up and backed with good clay, backing so as to create a scour over the bar. In its present state it is perfectly useless; there is a great want of proper accommodation in this river for loading and unloading boats, and, in fact, the whole appearance of the place, notwithstanding its vast importance and thriving trade, is that of great neglect even of the ordinary appliances of civilization to promote the interests and welfare of the country.

8. In order, then, to establish a better means of communicating with the shipping, I would beg to propose taking out a canal from above the lowest lock on the Samulcottah Canal (marked E.) and extending it to the north-east until it reached an existing backwater in that direction. Into this it would have to be locked, and an outlet cut out seawards. In this backwater the surplus waters of the Samulcottah Canal and the tide could be accumulated and discharged at each ebb of the tide through a narrow channel, so as to create an efficient scour through any bar which might be accumulating at its extremity. Boats would not have more than one and-a-half or two miles to go to reach the shipping instead of five or six as at present; no doubt this is counterbalanced by the fact of their having to go round by the lock at E., but the whole of this passage would be an inland navigation, not liable to the disadvantages of having to tack against headwinds with heavy squalls such as frequently prevail here in the south-west monsoon season; and it is not absolutely necessary to be obliged to go this round, for it may be found practicable to connect the proposed canal with the Cocanada river by a tidal coast canal. The only objection I know at present to this scheme is the possibility of the backwater above referred to discharging itself towards the Cocanada river; in that case it would be necessary to make the junction above the lock and not with the backwater.

9. The above is an outline of the scheme I would attempt to adopt, and it now remains to consider if we can provide funds not only for carrying out this project but any other which may meet with the approval of the Government. I understand if the port dues were increased one anna a ton as proposed by the Chamber of Commerce, some 30,000 rupees a year might be obtained from this source. We already collect some 58,700 rupees as boat license fees and the proceeds of grass sales and avenues, making with the port dues a total of Rupees 88,700, so that, if this were supplemented by a grant of Rupees 11,000 from the ordinary Public Works Budget, there would be a lac of rupees a year available for the improvement of this port. I believe it would not be necessary to continue this grant for long as the boat license fees have increased considerably this year, and will continue to increase in all probability as the wants of the delta are more systematically attended to and its means of communications within itself and with the adjacent territories are more and more completed.

10. The sources, then, from which we are to obtain the needful funds are purely local ones, and belong entirely to the district. There can, then, be no objection to sanctioning their expenditure within its limits for a public purpose, particularly as these will not only be enhanced themselves by any well-considered measures which can improve the port and extend its trade, but the general revenue raised by the State in the district must at the same time be increased, without falling as a greater burden on the people, for whatever facilitates the interchange of products in the most remunerative manner must be of the most benefit to those who are in the position to take advantage of such measures, and in this part of India, wherever land is so situated as to secure these advantages as much as possible to it, the greater will be its market value and the more able will it be to bear a heavier rate of assessment, almost, in fact, without reference to its quality.

11. To prepare the surveys, etc., it would be necessary to solicit the sanction of Government for a small grant of about Rupees 3,000 for a year, to begin with. I am not at all sure the work could be done for this amount; it is of a novel character, and would involve much exposure and some considerable danger, as we have no experienced hands available to whom the duty could be entrusted. With all these delta projects on my hands besides other schemes, I find myself as busy as I can

well be, so that I am unable to afford any great assistance in this matter; but what time I can devote to it shall be readily given, and, in the event of any sanction being acceded to any part of the scheme being put in hand, I would only solicit a company of Sappers being sent to me to assist in preparing the fascine and galicon work which will be required, and also in supervising the general progress of the works and the surveys.

No. 226. From Major J. F. FISCHER, R. E., Acting Superintending Engineer, 1st Division, to the Secretary to Government. Public Works Department, dated Dowlaishweram, 22nd January 1870, No. 3,722:—

One original letter, dated 26th October 1869, from the Chairman of the Chamber of Commerce at Cocanada.

I HAVE the honour to forward the papers called for in your Memorandum, No. 52, dated the 17th instant.

From the Chairman of the Cocanada Chamber of Commerce, to the Chief Secretary to Government, Fort Saint George, dated Cocanada, 26th October 1869.

THE Chamber of Commerce of this place have learnt with surprise and regret from a recent order of Government that the consideration of the question of the silting up of this river is to be deferred for the present.

2. By desire of the Chamber I have the honour to request that you will be good enough to urge on Government an early re-consideration of the subject, reminding them that it is now nearly three years ago that it was first brought under their serious notice, and that, if not soon taken in hand, there is every reason to believe that Cocanada will share the fate of Coringa and ere long lose its trade. As showing the shipping trade of the port, I may just add that, from the 1st January 1869, seventy-four European vessels, aggregating 33,000 tons, have loaded here. Six steamers anchor here regularly each month, and there is in addition a very extensive trade by native crafts.

3. The facts bearing on the case have so recently been set forth by the Acting Master Attendant of Madras that it is unnecessary here to recapitulate them, nor need I remind you of the opinion expressed by the Superintending Engineer that, out of the total expenditure of Rupees 45,000, 20,000 may be recovered by sale of reclaimed land.

4. But I desire to point out that, failing other immediate sources for meeting the present question, the necessary means might be found locally, if Government would be prepared to sanction an increase of the port dues from 3 to 4 annas a ton; such increase to go towards paying a moderate interest and a gradual discharge of the debt. This plan would meet with the cordial approval of the shipping and mercantile communities, and I now beg to commend it to the early consideration of Government.

No. 2,685.

REFERRED to the Department Public Works for report on the proposed scheme for meeting the cost of the Cocanada Harbour Works.

(By order.)

FORT SAINT GEORGE,
12th November 1869.

(Signed) H. E. STOKES,
Under-Secy. to Government.

No. 227. ORDER THEREON, 10th March 1870, No. 755.

CIVIL WORKS, No. 23.

THE Government, in their Proceedings in the Marine Department under date the 27th September 1869, No. 244, having ordered that the consideration of a proposal to carry out certain improvements to the Cocanada Harbour at an estimated cost of Rupees 45,000, according to plans prepared by the Executive Engineer, Mr. G. S. Sage, should be deferred in consequence of the low state of the Port Funds the Chamber of Commerce of that place, in their letter at the head of these Proceedings, call attention to the importance of the port, and urge the necessity of early measures being taken to arrest its deterioration and to effect the contemplated improvements. The Chamber point out that, of the total estimated cost of the improvements in question, Rupees 20,000 are likely to be recovered by the sale of the land to be reclaimed, and, with respect to the financial difficulty, it suggests that the means of gradually liquidating any expenditure that may be necessary could be obtained, with the cordial concurrence of the shipping and mercantile community, by an augmentation of the Port dues from 3 annas to 4 annas a ton.

2. Being desirous of having the advantage of the fullest professional opinions on the present state of the Cocanada river and of the works proposed for its improvement, the letter of the Chamber of Commerce was referred for report to the Superintending Engineer of the 1st Division. That report, or what is called by Major Fischer a preliminary report, is now before the Government; but His Excellency the Governor in Council observes that little direct allusion is made in it to the improvement of the river by such works as Mr. Sage recommended, which formed the subject specially dwelt upon by the Chamber of Commerce, and which was referred to Major Fischer for an expression of his opinion.

3. Contenting himself with a very cursory notice of the imperfection of the existing means of communication between the port and the shipping in the roads, and recommending the partial embanking of the river to increase the effect of scour on the bar, Major Fischer turns to the large and difficult question of devising measures for checking the gradual extension of the coast of the delta to the northward. He adopts the idea of effecting this by diverting the northernmost arm of the Godavery sufficiently to the southward and eastward to ensure the silt periodically swept down to the ocean in the floods being deposited in those directions, and clear of the bay which forms the present anchorage of the port of Cocanada.

4. A project of this nature, but based upon carefully conducted surveys and accompanied by plans and estimates, was before the Government some years ago, and, in their Proceedings, No. 3,313, of the 14th November 1863, they recorded their want of confidence in it on the ground of Cocanada being so unfavourably situated near the mouth of a great river as to make the maintenance of a harbour at that place an impossibility under any reasonable outlay. So long as the Godavery continues to carry down, year after year while in flood, vast quantities of silt, that silt, in whatever direction it may be discharged into the sea, will be liable to be largely swept to the northward by the strong current from the southward that prevails along the coast throughout the months the river is in fresh. Carried by

that current into the bay forming the roadstead of Cocanada, the silt must of necessity be there deposited, gradually diminishing the depth of water and forcing the anchorage to the northward farther and farther from the entrance of the river, which at the same time is being made more shallow.

5. The progress of the injurious change thus irresistibly going on might perhaps be delayed by the diversion of the arm of the Godavery which now flows into the bay and doubtless carries large volumes of silt directly into it; but such an operation as changing the course of a great stream is not of easy accomplishment, is sure to be uncertain in its effects, and cannot, if attempted, fail to involve a vast outlay of money. Looking to the powerful natural agencies at work in the bay and harbour of Cocanada, and to the extreme difficulty of controlling them by artificial means, the Government do not feel themselves justified in supporting any proposition of this kind without having in its favour the very best engineering advice, such as can be given by the practical Marine Engineer who, it is expected, will be deputed from England to examine and report on the harbours of this Presidency.

6. There is no reason, however, that such works as are calculated to effect an improvement of the harbour of Cocanada and to facilitate the loading and unloading of boats in the river should not be carried out as speedily as possible, and the letter from the Chamber of Commerce will, therefore, be communicated to the Marine Department, with a view to its being considered in that department whether an allotment of money may not be made from Port Funds, or an increase of Port dues be sanctioned to cover the cost of the works designed by Mr. Sage at an estimated outlay of Rupees 45,000.

(True Extract.)

Colonel, R.E.,
Secretary to Government.

To the Superintending Engineer, 1st Division.
" Marine Department, with note by the Honourable R. S. Ellis.

Exd. A. S. Rodgers.

Statement showing the height of water with Godavery Anicut.

River above anicuts on crest.

	+ H.W.	Cap.	
16 feet.	50 feet	1/8	Deducting 9 days for rise in the Anicut the water is in heavy flood on an average for 14 days only in any season.
15 "	49 "	3/4	
14 "	48 "	1 1/4	
13 "	47 "	1 1/4	
12 "	46 "	1 5/8	
11 "	45 "	2 1/4	
10 "	44 "	2 3/4	
9 "	43 "	4	
8 "	42 "	5	13.
7 "	41 "	8	
6 "	40 "	12	31.
5 "	39 "	19	
4 "	38 "	27	
3 "	37 "	35	101.
2 "	36 "	19	
1 "	35 "	9	
0 "	34 "		

16th June to 30th Nov. 168.

Lui. Richardson Major R.E.
Acting Superintending Engineer 2nd Div.
Dowlaishwaram
8th January 1870.

SUPERINTENDING ENGINEER'S OFFICE, 1ST DIVISION

DOWLAISHWARAM, 8th January 1870

No. 3573

From

Capt. J. S. Price R.E.

Superintending Engineer

1st Division

To

Colonel C. Pearse R.E.

Secretary to Government D. P. W.

Madras

SIR,

I have the honor to acknowledge the receipt of your Memo. without date the 7th December 1869, forwarded with G.O. of the 8th October 1869, No. 3238, together with a letter from the Chairman of the Chamber of Commerce, Cocanada for full report, and in obedience thereto I beg to submit the following preliminary remarks, for the consideration of Government, together with a Sketch of the locality exhibiting what I would propose to do in the event of a sufficient Establishment being placed at my disposal for the necessary Survey duties; this however necessary to say that until a complete and thorough examination of the whole harbour has been again made, it is impossible to submit a reliable Estimate for the disposal of Government -

1st. In the first instance, I would propose to

to close the Tyanon River at the head marked A on Sketch, and use every endeavour to train the river to discharge itself as much as possible, particularly during the low freshes, by the branch to the South of the Tolaram island, by clearing out or dredging, the head at B. I believe in fact this River is the great cause of so much silt accumulating in the harbour, for the reason that this is first outlet for the river towards the sea, and is not affected by reverse winds or currents, so that the lower freshes of the River can readily pass out in this direction from which fact we, from the results which are further to the eastward and do come under these influences.

3 I beg to transmit herewith a Copy of the Analysis made by Captain Stokes of 16 years records of the flow of water over the Anicut during the Irrigation season from June to November - for 118 days it will be seen from this that, for 101 days in this period, the River stands at between 3 and 4 feet on the Anicut, for 31 days it is between 5 or 6 feet, and for 13 days between 7 or 8 feet, beyond this limit I may

may be considered the time in which there heavy freshes; it is therefore quite apparent that, for the greater part of the season during which the Godavery is discharging its drainage the River is un-affected by reverse flows, and consequently, subject to the influence of reverse winds and currents at its outlets where the velocity of its flow in these low stages can be but small, as the water however must pass out in some direction, it naturally takes the best available course, i.e, by the Tyanon River.

4 I have marked on the Sketch, one or two Creeks C and D as far as I am able to ascertain their position to the South of Hope island Light house, I think these should be examined with a view to their being opened as far as possible to the Eastward, and the main branch of the River, trained by Groynes into them. I am not sure it would not be possible to construct a Rough-stone dam across this branch just above these outlets and so force the River out by them when it would soon clear a passage for itself by such

such a work might be constructed on a platform of fascines, loaded with stone, and sunk at the selected site, it should not be very expensive as the dense jungle in the neighbourhood would supply all the materials required for the fascines and the stone could be sent from Dowlaiswaram or Samalcotah.

5 As regards training the river to go off the branch to the south of the Polavaram Island, I do not think there can be any objection to the measure, I am aware it has at several times been proposed to irrigate this Island, but having examined the locality personally, I have very great doubts on the subject, of course after the construction of the Sagaram Aqueduct, there can be no doubt as to its practicability especially as the river is only about half its width but the Polavaram island is so low and has been so long left unprotected and would require such expensive Embankments to protect it from the heavy freshes of the river, to say nothing of the subsiding works for the distribution of the water after an aqueduct had conveyed it over to the Island that I have

any little or no confidence in the project, and the more so as this branch of the River is also liable at any time to have the whole River on this side touching in to it whereas the mouths to the Northward and Eastward are sufficiently blocked to preclude the waters escaping by them. the Aqueduct then would probably be left in the middle of the River without any connection with either bank.

6 A more serious objection no doubt exists to the closing of the Gautami River on account of it's being the means of communication from the Central Delta to Cocanada, and there can be no doubt the inconveniences would be a matter for some consideration, I do not however see, why a tidal lock should not be put into the Bank Canal so that boats might pass by it from the River into the Lake main Drain, which is quite navigable to Cozinga or Munjeir, and I have already in my letter to your address No 2846 dated 30th October 1869, submitted a project for connecting the latter place with Cuvoor, so the communication would be maintained probably in that at no great expense, and with a vast saving in

in time and labor by the boats not having to go out to sea in the bay. As a place for repairing the coasting craft in, it will be just as available as before, being left quite accessible to the tides.

7 As regards the Cocanada River much cannot be said, the tendency no doubt is for the anchorage to shift further to the northward, and it is a question whether, it is worthwhile doing much for this estuary, as the access by it, to the shipping must inevitably get worse and worse: I should, however, recommend the River being embanked along the south bank from the Government Coaling to the south groyne, this being properly built and backed with good clay, backing so as to create a scour over the bar, in its present state it is perfectly useless; there is a great want of proper accommodation in this River for loading and unloading boats, and, in fact the whole appearance of the place notwithstanding its vast importance and thriving trade, is that of great neglect even of the ordinary appliances of Civilization to promote the interests and welfare of the Country.

8 In order then, to establish a better means of communicating with the shipping I

I would beg to propose, taking out a Canal from above the lowest Lock on the Samulcottah Canal (marked E) and extending it to the Northeast until it reaches an existing backwater in that direction, into this it would have to be locked and an outlet cut out seawards; in this backwater the surplus waters of the Samulcottah Canal, and the tide could be accumulated and discharged at each ebb of the tide thro a narrow Channel so as to create an efficient scour thro any bar which might be accumulating at its extremity. boats would not have more than 1½ or 2 miles to go to reach the shipping instead of 5 or 6 as at present, no doubt this is counterbalanced by the fact of their having to go round by the Lock at E. but the whole of this passage would be an inland navigation, not liable to the disadvantages of having to tack against head winds with heavy squalls such as frequently prevail here in the S.W. Monsoon season, and it is not absolutely necessary to be obliged to go this round for it may be found practicable to connect the proposed Canal with the Cocanada River by a tidal coast Canal, the only objection I know at present to this scheme is, the possibility of the backwater above referred to

discharging

discharging itself towards the Cocanada River, in that case, it would be necessary to make the junction above the Lock and not with the back water.

9 The above is an outline of the scheme I would attempt to adopt, and it now remains to consider, if we can provide funds, not only for carrying out this project, but any other which may meet with the approval of the Govern-ment. I understand if the Port dues were increased one anna a ton as proposed by the Chamber of Commerce, some 30,000 Rs a year might be obtained from this source. We already collect some 58,700 Rs as Boat license fees, and the proceeds of grass sales and avenues, making with the Port dues a total of Rs. 88,700. So that if this were supplemented by a grant of Rs. 11,000 from the ordinary Public Works Budget, there would be a lac of Rupees a year available for the improvement of this Port. I believe it would not be necessary to continue this grant for long as the Boat license fees have increased con-siderably this year, and will continue to increase in all probability as the wants of Delta are more systematically attended to, and its means of communications, within itself, and with the adjacent territories, are more and more

more Completed -

10 The Sources then from which we are to obtain the needful funds are purely local ones, and belong entirely to the District, there can then be no objection to sanctioning their expenditure within its limits, for a public purpose, particularly as these will not only be enhanced themselves by any well considered measures which can improve the port and extend its trade, but the general Revenue raised by the State in the District must at the same time be increased, without falling as a greater burden on the people, for whatever faci-lities the interchange of products in the most remunerative manner must be of the most benefit to those who are in the position to take advantage of such measures, and in this part of India wherever land is so situated as to secure these advantages as much as possible to it, the greater will be its market value, and the more able will it be to bear a heavier rate of assessment almost in fact without reference to its quality.

11 To prepare the surveys &c. it would be necessary to solicit the sanction of Government for

for a small grant of about Rs. 3000 for a year, to begin with. I am not afraid sure the work could be done for this amount, this is of a novel character and would involve hard exposure and some considerable danger as we have no experienced hands available to whom the duty could be entrusted. With all these Delta projects on my hands, besides other schemes, I find myself as busy as I can well be, so that, I am unable to afford any assistance in this matter, but what time I can devote to it, shall be readily given, and in the event of any sanction being accorded to any part of the scheme being put in hand, I would only solicit a company of Sappers being sent to me to assist in preparing the fascine and gabion work which will be required and also in superviseing the general progress of the works and the surveys.

I have the honor to be
Sir,
Your most obt. Servant

Wm. F. Tilton Major R.E.

A. Supt. Engineer 1st Division

Cocanada 26th October 1869

To

The Honorable H. S. Cecil C.B.
Chief Secretary to Government
Fort St. George.

Sir,

The Chamber of Commerce of this place have learnt with surprise & regret from a recent order of Government, that the consideration of the question of the silting up of the river is to be deferred for the present.

2. By desire of the Chamber, I have the honor to request that you will be good enough to urge on Government an early reconsideration of the subject, reminding them that it is now nearly three years ago that it was first brought under their serious notice, and that if not soon taken in hand, there is every reason to believe that Cocanada will share the fate of Coringa and ere long lose its trade. As shewing the shipping trade of the port, I may just add that from the 1st January 1869, 74 European Vessels aggregating 33,000 tons have loaded here. Six Steamers anchor here regularly each month, and there is in addition a very Extensive trade by Native Crafts.

3. The facts bearing on the case have

Marine Dept.
No 3513
From
The Supt. Engineer
1st Division
No 31
To
The Secretary
to Government
Madras
Dated 8th January 1870
Recd 15th

Submits for the Consideration of Government a preliminary report on the Cocanada Harbour as noted in G.O. of the 8th October 1869

No 758-10 March 1870

Cp 225
2-7 Feb 1870 R 18

[illegible] to recently been set for by the Legislature for the attendance of Members of Council necessary there to recapitulate them. It is need I remind you of the opinion expressed by the Harbour Engineer that out of the total expenditure of £45,000, 20,000 may be recovered by sale of reclaimed land.

4. Lastly I desire to bring under your notice failing other immediate sources for meeting the present question the means of raising money might be found locally. If you would be prepared to sanction an increase of the Land dues from 3 to 4 annas per cent: such increase to go towards paying a moderate interest and a gradual discharge of the debt. This plan would meet with the cordial approval of the shipping and Mercantile communities and I now beg to commend it to the early consideration of Government.

I have the honor to be

Sir,

Your most obedient & humble

Servant.

C. de Linares

Chairman, Cocanada Chamber of Commerce.

SUPERINTENDING ENGINEER'S OFFICE, 1ST DIVISION

DOWLAISHWARUM, 22d January 1870

No. 3722

From

Major A. Fischer R.E.

As Superintending Engineer

1st Division

To

Colonel C. A. Orr R.E.

Secretary to Government D. P. W.

Madras

SIR,

I have the honor to forward the papers called for in your Memo No 32 dated the 17th instant.

I have the honor to be

Sir,

Your most Obdt. Servant

Wm. A. Fischer Major R.E.

Actg Secy Engineer 1st Div.

Encl. as above.

The execution of the works entrusted to my charge.

Reports &c.

Relative to the

Alteration of Site

No. 2868 of 1869.

Despatch from the Government of Madras.

Dated 17th January 1870.

Forwarding for information and record the papers noted in the margin relative to the proposed alteration of the site of the Government Observatory.

Ordered that the Secretary do reply to the Government of Madras in the Public Works Department, acknowledging the receipt of the papers noted in the margin.

By order

J. S. Mallet

Under Secy to Govt.

No. 3868 of 1869.

Despatch from the Government of Madras.

Dated 17th January 1870.

Forwarding for information and record the papers noted in the margin relative to the proposed alteration of the site of the Government Observatory.

Ordered that the Secretary do reply to the Government of Madras in the Public Works Department, acknowledging the receipt of the papers noted in the margin.

By order

J. S. Mallet

Under Secy to Govt.

Encl. as above.

The execution of the works entrusted to my charge.

Reports &c.

Relative to the

Alteration of Site

P.R. 8.

No 753-

Proceedings of the Madras Govt. Under date the 19th March 1870 read the following:-

Memorandum for Orders.

From the Secretary P.W.D. — (R. No 3573 of 8th January 1870)

Do. ——— Do ——— (— 3722 of 22nd ——— —)

The Government in their Proceedings in the Marine Department under date the 27th Sept. 1869, No 2462, having ordered that the consideration of a proposal to carry out certain improvements to the Cocanada harbour at an estimated cost of Rs: 45,000, according to plans prepared by the Executive Engineer, Mr. G.S. Sage, should be deferred in consequence

No 2365

Rec'd 22 nd } Jan'y 1870
Rec'd 27th }

Secretary to Government
Public Works Dept.

Fort St. George
the 1st December 1869

No 3722

Sir,

I am directed to forward herewith, for the information of Government, a copy of a letter from the Executive Engineer, Cocanada, No 2365, dated 17th instant.

I have &c.

(Signed) R. Keatinge
Secretary

No 753-10 March 1870

of the low state of the Port
Funds, the Chamber of
Commerce of that place,
in their letter now
circulated, call atten-
tion to the importance of
the Port, and urge the necessity
of early measures being taken
to arrest its deterioration and
to effect the contemplated
improvements. The Chamber
point out that of the total
estimated cost of the im-
provements in question
Rs: 20,000 are likely to be
recovered by the sale of the
land to be reclaimed, and,
with respect to the finan-
cial difficulty it suggests
that the means of gradually

liqui-

liquidating any expenditure that
may be necessary could be
obtained, with the cordial con
currence of the shipping and
mercantile community, by
an augmentation of the Port
dues from 3 annas to 4 annas
a ton.

As the Government
would be desirous of having
the advantage of the fullest
professional opinions on
the present state of the
Cocanada river and of the
works proposed for its im-
provement, the letter of the
Chamber of Commerce was
referred for report to the
Supt: Engineer of the 1st Division.
That report, or what is called

by

by Major Fischer a preliminary report, is now before the Government, but it will be observed that little direct allusion is made in it to the improvement of the River by such works as Mr. Sage recommended, which formed the subject specially dwelt upon by the Chamber of Commerce, and was referred to Major Fischer for an expression of his opinion.

Contenting himself with a very cursory notice of the imperfection of the means of communication between the Port and the shipping in the roads, and recommending the partial

embanking of the River to increase the effect of scour on the bar, Major Fischer turns to the large and difficult question of devising measures for checking the gradual extension of the Coast of the Delta to the northward. He adopts the idea of effecting this by diverting the northernmost arm of the Godavery sufficiently to the southward and eastward to ensure the silt periodically swept down to the ocean on the floods being deposited in those directions and clear of the Bay which forms the present anchorage of the Port of Coconada.

A project of this nature, but based upon carefully conducted surveys and accompanied by plans and estimates, was before the Government some years ago, and in their Proceedings No. 3,313 of the 14th November 1863 they recorded their want of confidence in it on the ground of Cocanada being so unfavorably situated near the mouth of a great river as to make the maintenance of a harbour at that place an impossibility under any reasonable outlay. So long as the Godavery continues to carry down year after year while in flood such quantities of silt, that silt

silt, in whatever direction it may be discharged into the sea, will be liable to be largely swept to the northward by the strong current from the Southward that prevails along the coast throughout the months the river is in freeh. Carried by that current into the Bay forming the roadstead of Cocanada, the silt must of necessity be there deposited, gradually diminishing the depth of water, and forcing the anchorage to the northward farther and farther from the entrance of the river, which at the same time is being made more shallow.

The progress of the injurious change thus irresistibly going on might perhaps

perhaps be delayed by the diversion of the arm of the Godavery which now flows into the Bay and doubtless carries large volumes of silt directly into it, but such an operation as changing the course of a great stream is not of easy accomplishment, is sure to be uncertain in its effects, and cannot, if attempted, fail to involve a great outlay of money. The Govt. are probably therefore not more disposed now than in 1863 to entertain any proposition of this kind, and they may not perhaps it is supposed under any circumstances feel themselves justified in supporting it without having

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in its favor the very best Engineering advice, such advice can be given only by a highly experienced practical Marine Engineer such as it is expected will be deputed from England to examine and report on the harbours of this Presidency and as much gentlemans attention will be given to the subject as may be expedient to await the result.

With respect to the suggestion to form a new opening from the harbour into the Bay at some distance to the northward of Cocanada where tolerably

deep

deep water is still found not
far from the shore, it will
be observed that the idea of
forming in that direction
a new harbour accessible
to sea-going craft originated
with the Lake President and
is embodied in Para 3 of the
Proceedings of the 14th Nov. /63
above referred to. The dif-
ficulty of making, and
still more of keeping open
in the face of the ocean swell,
an entirely artificial chan-
nel where a powerful scour
is not obtainable by the
natural flow of water in
and out of a sufficiently
capacious interior basin
during the rise and fall of the
tides is well known. In the

absence

absence of any interior basin
of the kind, and with a rise
and fall of tide of only some
3½ to 4 feet, there can be
little expectation of much
being effected in keeping
clear the mouth of any channel
opening directly into the Bay
by the discharge through its
Simply
of the surplus waters of the
Artificial channels. No great
faith can, in the opinion
of the undersigned, be placed
in the feasibility of creating
a new harbour within the
foreshore by artificial
means any where on this
Coast, and the Government
are probably not
prepared to consider the

Subject

subject further with the view of a Marine Engineer in view.

There is no reason however that such works as are calculated to effect an improvement of the harbour of Toronto and to facilitate the loading and unloading of boats in the river should not be carried out as speedily as possible, and the letter from the Chamber of Commerce may therefore be communicated to the Marine Dept. with a view to its being considered in that Dept. whether an allotment of money may not be made from the Dock funds, or any increase of Port dues by Parliament

I have to direct attention to the modified proposal here made. On the general question I would state that with a view to the powerful natural agency at work in the harbour of Toronde & the calam difficulty of sanding them by artificial means the Govt are not prepared to enter upon any large expenditure without the advice of a Marine Engineer of professional capacity

M. H. N.

time, to cover the cost of the works designed by Mr Page at an estimated outlay of $ Rs: 45,000.

4/2/70

The Chief Eng may be requested to prepare a Memo: showing the allotments from the Dock funds for the ensuing year & what balance is likely to be available for this service during the year.

Memo: He should be asked to state what amount of the Dock funds he would recommend to be spent on the harbour of Toronto & what portion of the Grant of the Parliament will be required for the Port

W.H.

Corr 4776 17
4352

Govt. of 1870 Nos. 225 & 227

PUBLIC WORKS.

Superintending Engr
1st Division

10th March 1870. No. 753.

Nos. 225 & 227

Grand Trunk Railway
Papers relative to
employment of the Grand
Trunk Railway Co.