

- (1) பக்கங்களின் எண்ணிக்கை 12  
 (2) புதுக்கித் திருப்பிய நாள் செப்டீ. 1991  
 (3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் long

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

PWD துறை

156

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| அரசாணை எண்.<br>மு. கோப்புத் தாள் எண். | 1306(w) | அச்சுக்<br>பலவகை |
| நாள் : 25-4-1892                      |         | 198.             |

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மடிக்கவோ கண்டபடி கையாளவோ கூடாது

6 sheets

ஆவண, கா-1-18,006-15-6-87.

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23RD MARCH 1892, No. 96, MARINE.

GOVERNMENT OF MADRAS.  
MARINE DEPARTMENT.

READ—the following papers:—

Note by the Chief Engineer for Irrigation, dated Ootacamund, 5th January 1891. *1306*

With reference to the paragraph of G.O., No. 147, Marine, dated 17th April 1891, which requests me to give an opinion as to "the best means of remedying the unsatisfactory state of affairs" at Cocanada port—

1. In the absence of charts showing soundings at various times spreading over a considerable period, it is impossible to arrive at what is really taking place in the bay. The only chart sent has the date 1848, but apparently gives the soundings of a much later date; it certainly has entries on it of objects, *e.g.*, "Vakalapudi Light-house," which did not exist even 12 years ago. What is wanted for a proper consideration of the subject is a series of all the charts, showing soundings made since the one of 1806.

2. On my own knowledge and such information as is before me, however, I doubt if the deterioration of the bay as regards the anchorage for ships has been rapid or is alarming, and in support of this I would point out that, whilst in his report with the Proceedings of Madras Government now under notice, Captain Street says "the anchorage for deep draft vessels is now about 5 miles to the northward and eastward of Cocanada town," twenty years ago Mr. Robertson\* (an Engineer sent out by the Secretary of State to report on Indian

\* See his report, 1871.

Harbours) said "the anchorage for ships is now five or six miles to the north of where it was at the time of Warren's survey of 1806." I would also direct attention to paragraphs 3 and 4 of Colonel Sankey's "note" printed with Proceedings of Madras Government, No. 426, dated 26th August 1880. It must also be remembered that the draught of ships using the harbour has greatly increased of late years.

3. But what is, and for many years has been, the source of troubles, is the shallowness of the bay in its south-west corner, where Cocanada lies, which renders it difficult for the large cargo boats there in use (they run up to 60 and even 80 tons) to get into and out of the "river" where they load and unload.

4. This "river," which for the greater part of the year discharges no fresh water other than what may be surplused from two of the Godavari canals, might more correctly be called a "tidal creek;" it debouches on a mud flat which, for about two miles seawards, has for many years had a depth on it of only 4 feet at "low-water springs." The tidal scour out of this creek has kept in it a depth considerably greater than 4 feet at all times, but naturally the material moved by the scour has always been deposited just beyond the mouth of the creek, forming what is known as the "bar"—a mere wrinkle of some 18 inches high on the surface of the mud flat.

5. Many years ago the scouring effect of the contracted channel of the creek led to its being artificially prolonged for a short distance by what were called "groynes" but are really "training walls," and in Colonel Sankey's note above referred to, the extension of these walls was recommended and it was also strongly advocated by the Cocanada Chamber of Commerce and the mercantile community of the place. The Marine Department accordingly prepared an estimate for carrying out the walls by some 1,900 feet.†

† Paragraph 1 of notes of inspection of the Chief Engineer, Public Works Department, with Proceedings of Madras Government, No. 200, Marine, dated 13th May 1885.

6. In dealing with this estimate, I said (Letter printed with Proceedings of Madras Government, dated 12th December 1882, No. 3275 W.):—

"I wish to place on record that I consider this work, which it is proposed to carry out, to be a very advisable one, as a step in the right direction; it is, however, only a step which will not in itself appreciably improve the present state of affairs till it is followed by an advance of the training walls or groynes for about the distance named in paragraph 28 of your (Colonel Sankey's) note with Proceedings of Madras Government, No. 426, of 26th August 1880, to a point where the high-level mud flat ceases and the soundings deepen almost suddenly from 4 feet to 7 feet at low-water springs."

7. The result of the work hitherto done has been, as anticipated, that the pushing of the "bar" by so much further out has not given any relief, and, indeed, judging from the survey of the "approaches to Cocanada" which accompany this file,\* matters have been made worse by the rapid growth of the sand deposit at the back of the north wall which has now overlapped that wall and is shoaling the entrance.

8. The rapid growth of this particular deposit was not foreseen, but in paragraph 19 of Colonel Sankey's note above referred to it is laid down that the "groynes should be continued" each year so as to keep pace with the advance of the silt deposits northwards.

9. The north wall has not, it appears, been carried out to nearly the length intended, and I would advocate its extension without any delay so as to keep it ahead of the accretion to the north of it; I consider also that the original intention of curving the walls gradually northwards (Mr. Robertson in his report calls it "seawards") should be adhered to.

10. To make and keep open a cut through the so-called "bar" no doubt, recourse must be had to dredging, but it is useless trying to dredge a channel to deeper water, a distance of some two miles, through the expanse of liquid mud, which runs into a dredged channel nearly as quickly as it is scooped out.

(Signed) G. T. WALCH,  
Chief Engineer for Irrigation.

To the Ag. Secy. to Govt., P.W.D., Irrigation Branch.

No. 327-D.

Transferred to the Marine Department, with reference to G.O., No. 147, Marine, dated 17th April 1891.

OOTACAMUND,  
8th June 1891.

(Signed) G. T. WALCH,  
Ag. Secy. to Govt., P.W.D.,  
Irrigation Branch.

From Captain M. BEAN, H.M.'s I.M., Officiating Presidency Port Officer, to the Chief Secretary to Government, dated Madras, 17th September 1891, No. 1269—362 G.

With respect to Marine Department reference, dated 16th June 1891, on current No. 620, forwarding for my remarks a note by the Chief Engineer for Irrigation as to the best means for effecting certain improvements to the port of Cocanada, I have the honour to state that I have delayed replying to the above until I received charts of the bay to enable a comparison to be made as to the extension of the silting; these charts † were received on September 10th, and are now forwarded for consideration. On comparison of the charts of 1875 and 1891, it will be seen that the sand spit called Godavari Point has extended north 2.3 sea miles, and that the top of the dry spit is now in a place where there was about 43 feet of water in

† 1 Chart, 1875.

1 do. 1891.

The Marine Survey Department have not any older chart than 1875 in their possession.

1875. This extension of the spit has improved the anchorage off Vakalapudi by making the water smoother with south-east winds.

2. From the old lighthouse to the one fathom line in 1875 was 2 miles, in 1891 it was  $1\frac{1}{2}$  miles, and the soundings in the vicinity of the entrance to the creek and on a line direct to Godavari Point show that there has been an increase in the depth of the water in that part of the bay; this depth may increase if the Godavari spit goes on extending.

3. To carry the groynes out to the one fathom line would entail a great expense, the distance being 1.3 sea miles from the end of the groyne as it now is, and I question if they would have the desired effect, and would not recommend any money being spent on groynes, as it is impossible to say if the result will prove satisfactory. The length of the present extensions is 822 and 1,530 feet, respectively, which cost approximately Rs. 70,000. The extension of 1.3 miles from each end would thus cost in all about Rs. 4,82,500, and then there would be the cost of dredging out between the groynes.

4. To dredge a channel 1.3 mile long and 100 feet wide 9 feet deep would take a dredger of the powers of the *Wenlock* about 200 working days—say, 10 months allowing for stoppages and Sundays—and allowing the dredging to cost 2 annas per ton, which is a low rate, it would come to Rs. 24,940.

5. It would be necessary to work to 9 feet depth as the dredger draws 8 feet 6 inches loaded; this would necessitate a channel of 2.2 sea miles being dredged, which would cost about Rs. 41,800, and she would have to work inwards cutting a channel to float herself. If the channel was dredged to 9 feet, it would, I think, silt up about  $1\frac{1}{2}$  feet a year and would require to be dredged again in 2 years at a cost of about Rs. 20,000.

6. It will be seen from the above, that if dredging alone be resorted to, the first cost will be Rs. 41,800 with an additional outlay of Rs. 20,000 every second year to keep the channel to the required depth, and that this is only allowing the width of the channel at one half of the distance between the groynes; to widen it to 200 feet would just double the expense. If the groynes are made, there will be cost of Rs. 41,800 to add for dredging and the annual sum of Rs. 2,000 also should the groynes prove of no service. It would, I think, be necessary to maintain a separate dredger for Cocanada of the same power as the *Wenlock* but a little lighter draft of water. The two dredgers they have are quite useless for a large work of this kind. They are only fit to work about alongside wharfs and dock entrances where larger dredgers cannot go.

7. I would recommend the channel being dredged out to 9 feet and examined at the end of a year to see what change there is; we should then be able to calculate if the port is worth the expense of keeping it dredged, and if it is not, some other plan could be adopted, such as building a pier about two miles south of Vakalapudi Lighthouse with a tramway to town.

8. I attach for reference a statement showing some trade statistics of the port.

9. I return all documents received with your letter under reply.

ENCLOSURE.

PARTICULARS of Trade of Cocanada Port from 1886-87 to 1890-91.

|         | Value of trade. | Duty on trade. | Port dues. | Landing and shipping dues. |
|---------|-----------------|----------------|------------|----------------------------|
| 1886-87 | 117,76,357      | 19,155         | 15,757     | 8,188                      |
| 1887-88 | 153,20,184      | 9,732          | 21,392     | 12,895                     |
| 1888-89 | 159,55,659      | 48,483         | 16,409     | 13,562                     |
| 1889-90 | 185,33,198      | 38,743         | 16,689     | 14,830                     |
| 1890-91 | 172,70,010      | 51,177         | 21,950     | 21,269                     |
| Total   | 788,55,408      | 1,62,290       | 92,207     | 70,744                     |

Reference on the above, dated 7th October 1891.

The papers will be forwarded to the Cocanada Port Conservancy Board for remarks. The exact date when the *Wenlock* will be available cannot be stated, but it will probably not be less than 18 months hence. The question whether even then the port can afford the cost of dredging out the channel as proposed by Captain Bean and whether it can provide itself with a dredger fully suitable to the work, should be considered by the Board. The extension of the groynes is out of the question from its great cost, and it is very doubtful whether it would do any good or save expense in dredging. The cost to the trade of the port of using smaller cargo boats and providing tugs to two them might be less than either the extensive dredging proposed or the construction of a pier at Vakalapudi and a tramway or railway thence to the town, and this alternative should be also considered by the Board.

(Signed) J. F. PRICE,  
Chief Secretary.

To the Chairman, Port Conservancy Board, Cocanada.  
Copy to the Presidency Port Officer.

From C. W. SIMSON, Esq., Vice-Chairman, Godavari District Ports Conservancy Board, Cocanada, to the Chief Secretary to Government, dated Cocanada, 23rd November 1891, No. 223.

With reference to Proceedings, Nos. 980 and 985, dated 7th October 1891, I have the honour to inform you that the matter has been duly placed before the Port Conservancy Board at their meeting held of 18th instant, and that they are of opinion that efficient dredging is the best means of improving the entrance to the Cocanada river.

From A. MACNAB, Esq., Vice-Chairman, Godavari District Ports Conservancy Board, to the Chief Secretary to Government, dated Cocanada, 22nd February 1892, No. 30.

I have the honour to acknowledge having received in due course your letter, No. 1261, of 21st December 1891, referring to this office No. 223 of 23rd November, in which it was given as the opinion of the Board that dredging was the only efficient means of dealing with the bar at this port and inquiring how the Conservancy Board would propose to provide for such dredging.

2. In reply, I am to state that the Board have had under consideration plans and estimates specially prepared for the purpose by Messrs. W. Symons and Co., of Renfrew (the builders of the Dredger *Wenlock*), and forwarded herewith for reference, for a self-propelling 275-ton hopper combined bucket ladder and sand pump dredger costing £13,500 delivered fully equipped in India, which the Harbour Boards of Cocanada and Vizagapatam, in consultation together, have resolved to ask leave to acquire for the two ports, two-thirds of the cost being contributed on account of Cocanada and the remaining one-third by Vizagapatam, the services of the dredger being divided in the same proportion. With such a dredger working here for eight months of the year, it admits of no question that the channel through the Cocanada bar could be easily and certainly kept dredged to a depth of  $6\frac{1}{2}$  or 7 feet at low-water spring tides all the year round. The fairway, however, is seriously menaced by the sand-bank which has formed to the north, and, although the proposed dredger would be able to keep that down, it appears certain that if that bank could be kept from encroaching on the fairway, the annual cost of dredging at that point would be greatly reduced and the large dredger would by so much be left free to devote itself to the improvement of the harbour elsewhere. Without, therefore, abandoning the position they took up some years ago of discontinuing groyne building and substituting dredging for the reduction of the bar, the Conservancy Board favour an extension of the north groyne out to the middle buoy, strictly as an adjunct to efficient dredging,

on which alone they hold reliance can be placed, and they have considered and approved a suggestion, embodied in a memorandum by the Vice-Chairman submitted herewith, that a sea wall to the middle buoy might be constructed of iron caissons filled in the first place with clay dredgings, for which country concrete could be substituted afterwards. The Board desire to commend this suggestion to the favorable consideration of Government, and now ask sanction to carry it out if approved. In the latter case they desire to apply to have the necessary funds, Rs. 41,500, advanced to them on loan for repayment in manner proposed in the memorandum.

It is, however, as stated, on the large dredger alone that reliance can be placed for keeping the bar open. The Vizagapatam Harbour Board are ready with their one-third share of cost. But Cocanada is unfortunately not equally well placed with that port financially. This port's contribution—two-thirds—would be in round figures Rs. 1,35,000, and if interest and depreciation on that sum had to be met, the whole of the surplus revenue of the port would be swallowed up. It is true that the dredging of the bar is by far the most important measure for the improvement of the port, but there are, notwithstanding, many other directions in which money is urgently needed, and in view of the direct interest which Government have in providing their East Coast Railway with improved outlets for traffic, the Conservancy Board have confidence in appealing to Government for a special outright grant from Provincial funds for their two-thirds share of the cost of the dredger. If this should be conceded, the problem of dealing with the bar will be solved, and with the revenue thus left free for other measures of improvement the Board look forward with confidence to putting the port and harbour of Cocanada in a condition more fitting, than will otherwise be at all possible, to its position as the main seaward terminus of the East Coast Railway.

ENCLOSURES.

EXTRACT from Minutes of a Special Meeting of the Godavari District Ports Conservancy Board, Cocanada, held on the 17th February 1892.

1. Read again Proceedings of Government, dated 21st December 1891, No. 1261, asking the Conservancy Board, Cocanada, to state how they propose to provide for the dredging which they consider necessary.

Also memorandum by the Vice-Chairman suggesting the extension of north arm of the groynes by iron caissons and a memorandum of views of the Deputy Conservator of the Port on the subject.

Resolution.—Resolved that the Vice-Chairman's memorandum, which has the Board's approval, be submitted to Government, and that Government be asked—

- (1) to grant from Provincial funds the cost of the dredger required for the joint use of the ports of Cocanada and Vizagapatam;
- (2) to sanction the estimate of Rs. 41,250 for extending the northern groynes; and
- (3) to advance on loan the necessary funds to the Board for the latter purpose.

(Signed) F. H. HAMNETT,  
Chairman.

MEMORANDUM regarding removal of the Bar at the mouth of the River.

At the last two meetings of the Harbour Board, the accompanying letter, No. 1261, of 21st December 1891, from the Chief Secretary to the Madras Government, inquiring how we propose to provide for the dredging which we advocated as the only efficient means of dealing with the bar, has been brought up for disposal and has on each occasion been deferred for further consideration. It is obviously not a question which could be disposed of off-hand, and as it will have to be answered at our next meeting, the papers are circulated herewith for the consideration of members. In so circulating them, I ask leave to put before members a proposal which it seems to me may be worthy of consideration.

The inquiry we have now to meet takes its rise from a note by the Chief Engineer for Irrigation (Mr. Welch) reviewing with great conciseness and clearness the past and probable future physical history of the bar, and from a note thereon by Acting Presidency Port Officer

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(Captain Bean) setting forth the means and the cost of attacking the bar by (a) training walls and (b) dredging. In both of these notes and in the Government order thereon, it is practically accepted that the first of these expedients (*i.e.*, training walls) is too costly, tedious and uncertain for us. The Cocanada Harbour Board arrived at the same conclusion five years ago, but in the light of experience since gained I submit the time has now come to reconsider that conclusion.

Captain Bean shows that the 784 running yards of groynes (North and South) which we have built have cost Rs. 70,000, or Rs. 87 per running yard, and he calculates that it would cost a further Rs. 4,82,500 to carry out both groynes to the one fathom line which he assumes to be necessary. If that were so, there would be little room for reconsidering our former decision, but observation of the bar since we desisted from pushing out the groynes warrants these fresh conclusions—

(1) that there is no silt coming into the fairway from the southward, and, as we have equally no weather to apprehend from that quarter, there is no immediate necessity, nor is there likely to be necessity for many years to come, for extending the south groyne;

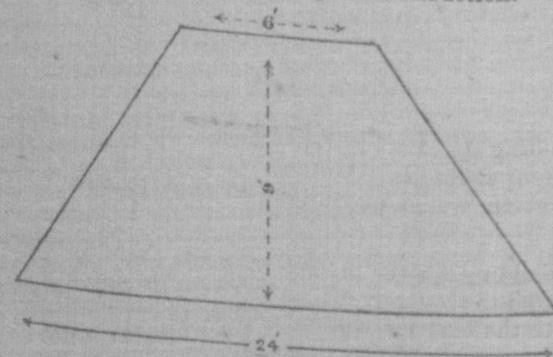
(2) our main trouble and the one standing menace to the fairway comes from the sand-bank which has formed outside and beyond the north groyne.

(3) that sand-bank shows signs of having reached the limits of its eastward, or seaward growth abreast of, or at worst slightly beyond, the middle buoy, and is now steadily growing southward or directly across our fairway, one-half of which is already blocked with sand; and

(4) the growth of this sand-bank would now give a hard, level surface along the whole line of the north groyne out to the middle buoy, the prevailing level being for the most part about one foot above low-water spring tides.

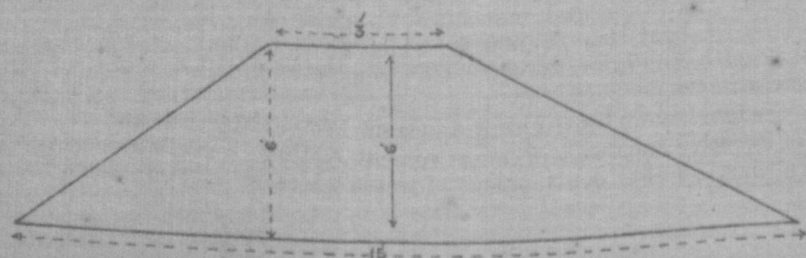
From these data it seems a fair presumption that an extension of the groyne on the north side only out to the middle buoy 550 yards would give protection from the main source of silting on the bar. There can be little doubt that the present steady southward growth of this bank is due to the flood-tide carrying into the fairway surface sand disturbed by wave action. No tidal scour exists which could clear away this hard sand-bank. While, therefore, as already intimated to Government, efficient dredging is the best means of successfully combating this obstruction, it seems clear that an extension of the north groyne on to the middle buoy is extremely desirable as an adjunct to such dredging, as, until this washing of sand into the channel is checked, our dredging power must always be more largely employed in simply neutralising this encroachment than in materially improving the approaches to the harbour.

As to the means and cost of building that extension, we have hitherto worked with rough Samalcotta stone. In initial cost this is the cheapest material we could use, but in actual working I submit that economy is more than lost—partly because of the individual stones as deposited sinking deeply into the mud bottom, but chiefly because the process of quarrying, transporting and depositing the stone is (unavoidably) so slow that, while each yard of groyne is being constructed, the rush of the ebb and flood round the end of the groyne has time to scour out a deep hole; throughout our operations we have in fact shoved in front of us a deep hole which has had to be filled in with Samalcotta stone far beneath the normal ground level of the groyne. As an indication of the money lost from this cause, we have but to compare the estimated, with the actual, expenditure on past construction. The section adopted for the groynes, which was



as per margin, give as the quantity of stone required 15 cubic yards for every running yard of groyne constructed, which at Rupees 2-8-0 per yard placed *in situ* gave Rupees 37-8-0 as the cost of construction of every running yard; whereas, as Captain Bean shews, our actual expenditure has been Rs. 87. I contend that Samalcotta stone is not a cheap material for us, and that for that reason, and also because of the years it would take to build these further 550 yards, we should do better to leave groyne-building severely alone if Samalcotta stone were the only material available to us.

I suggest for consideration, however, another expedient, namely, caissons built of  $\frac{1}{2}$ " sheet iron strongly braced with angle and T iron of the following:—



These caissons could be built on shore in 20 feet lengths, and when a sufficient number of them were ready (say, 20), they could be floated into position, and there sunk and filled with dredgings (clay and sand mixed). Each caisson when so filled would weigh about 200 tons, would be quite immovable by any sea that could ever be experienced there, and, having a base of 300 superficial feet, would not be apt to sink, while the whole 550 feet of groyne could probably (if a rivetting machine were obtained for the purpose) be constructed in one year. If properly cared for and with occasional repairs, these caissons should have a life of 7 years, and during that period they could be successively cleared of the dredgings, and filled instead with a concrete composed of rough stone and ordinary country chunam, with the result that at the end of the seven years we should have a groyne 550 yards long composed of concrete blocks each measuring 140 cubic yards, and throughout these seven years we should have all the protection which the completed groyne would give.

As to cost, I estimate that the following would cover:—

|                                                                              | LB.       |
|------------------------------------------------------------------------------|-----------|
| Constructing Caissons.—Each running foot as per section given above          |           |
| equals 32 square feet of $\frac{1}{4}$ th sheet iron weighing 5 lb. per foot | 480       |
| = 160 lb., or per running yard                                               | 90        |
| Add for angle and T iron braces and stringers                                | 24        |
| " ends of caissons                                                           | 594       |
| Total weight of metal per running yard                                       | RS. A. P. |
|                                                                              | 31 13 0   |
| Costing at Rs. 120 per ton                                                   | 7 15 0    |
| Add 25 per cent. for rivets and rivetting                                    | 39 12 0   |

Or, say, total per running yard of caisson—Rs. 40.

|                                                                     | RS.    |
|---------------------------------------------------------------------|--------|
| Giving cost of 550 yards of caisson groyne                          | 22,000 |
| Filling with Concrete.—Each running yard as per section given above |        |
| equals 7 cubic yards, giving as cost of concreting each running     | 19,250 |
| yard Rs. 35, and so cost of concreting 550 yards of caissons        | 41,250 |

Total cost of 550 yards of caissons filled with concrete

|                                                        | RS.    |
|--------------------------------------------------------|--------|
| And this expenditure might be distributed as follows:— |        |
| 1st year—Building and placing caissons                 | 22,000 |
| 2nd year—Concreting 100 yards of caissons              | 3,500  |
| 3rd " " 100 " " "                                      | 3,500  |
| 4th " " 100 " " "                                      | 3,500  |
| 5th " " 100 " " "                                      | 3,500  |
| 6th " " 50 " " "                                       | 1,750  |
| 7th " " " " "                                          |        |
| Total                                                  | 41,250 |

or if Government would advance the cost of building the caissons, repayment could be distributed over the seven years, making an annual charge of about Rs. 6,000, which would be more than counterbalanced by the saving in dredging which would be effected by thus putting a final stop to the encroachment of this sand-bank.

While thus reverting partially to groyne-building for the protection of the channel, reliance can only be placed, as we have already intimated to Government, on efficient dredging for the clearing and improvement of the approaches to the harbour, and in answer to the Chief Secretary's inquiry in letter circulated herewith, the members of the Board will probably agree with me that we cannot do better than put forward the proposal resolved upon at a recent meeting of the Board that we should join Vizagapatam in getting out a self-propelling 275-ton hopper combined bucket ladder and sand pump dredger, as per specification obtained from Messrs. W. Symons and Co., Renfrew, the ports to share in the cost and use of the dredger in the portions, two-thirds Cocanada and one-third Vizagapatam. If this should be sanctioned, our contribution would be about Rs. 1,25,000, for which we should have to ask an advance from Government, but looking to the interests which Government as proprietors of the East Coast Railway will have in providing good outlets for the traffic of that line, they might very well be asked to provide the dredger by an outright grant from Provincial funds and so leave the local Port funds available for other measures of improvement to these ports, where so much remains to be done to qualify them for that development of traffic which we may expect in the near future.

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With these remarks the whole subject is commended to the careful consideration of members, who are invited to record their views on the papers now circulated preliminary to a special meeting, which, if convenient, I should propose to call on some day during the current week.

COCANADA,  
8th February 1892.

(Signed) A. MACNAB,  
Vice-Chairman, Godavari D. P. C. Board.

ORDER—dated 23rd March 1892, No. 96, Marine.

The request for a grant of Rs. 1,35,000 from Provincial funds, to meet the Cocanada share of a dredger which it is proposed the ports of Cocanada and Vizagapatam should purchase, cannot be entertained.

2. It is observed that nothing is said in the Vice-Chairman's memorandum regarding the cost of maintenance and working of the dredger, nor is it shown that, if the Conservancy Board had it, it could provide from landing and shipping fees for its use. It is not clear why the work cannot be done by the *Wenlock*.

3. The Vice-Chairman's proposal for extending the north groyne will be referred for the remarks of the Public Works Department; and the papers will be communicated to the Presidency Port Officer for an expression of his opinion. They should have been submitted through that officer.

4. The Godavari Conservancy Board must understand that whatever is done to improve the port of Cocanada must be paid for out of the resources of the port.

5. The Chairman—not the Vice-Chairman—should have addressed Government.

(True Extract.)

*Redmick*

Chief Secretary.

- \*To the Presidency Port Officer, with papers in original to be returned.
- " Public Works Department, with file of G.Os., returned.
- " Chief Engineer for Irrigation.
- " Chairman, Godavari District Port Conservancy Board.

Exd. A. Raiff.

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Gobt. of {1892} Madras.  
MARINE.

By 3275 W 12-12-82  
"- 2392 W 15-9-82  
"- 2852 W 31-10-82  
"- 1330 W 8-6-85  
"- 1136 W 13-5-85  
"- 56 W 6-1-86  
"- 1139 W 6-5-86  
"- 2382 W 18-9-86  
"- 509 D 7-8-86  
"- 508 D 7-8-86  
"- 3275 W 11-12-86  
"- 2365 W 2-9-87  
"- 828 W 14-3-88  
"- 447 W 17-4-91 Marine

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Issued

Recd. 7.4.92

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P.W. 900

G.O., 23rd March 1892, No. 96.

MARCH.

Cocanada Port.

Declining to entertain the request for a grant of Rs. 1,35,000 from Provincial funds towards the purchase of a dredger; referring the proposal for extending the north groyne for the remarks of the Public Works Department and communicating the papers to the Presidency Port Officer for an expression of his opinion.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following

Proceedings, Marine Dept. H.E. No. 96 d/23. iii 92  
1306/6

Communicated  
to the Suptg Engineer  
I enclose for report on  
the proposal for  
extending the north  
groyne. The sufficiency  
or otherwise of the  
estimate for the  
work should also be  
examined.

1306/6

S.E. I enclose 26/4

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15.4.92

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Oct 6.

No. 1306 W of 25<sup>th</sup> April  
1899

✓ M  
SPY

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