GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

27th April 1880, No. 158.

S.S. "Albuquerque."

Read the following papers :—

No. 29. *From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated 9th April* 1880, *No.* 2701.

Administrative Department.

I have the honor to report, for the information of Government, that the S.S. *Albuquerque's* bottom is reported to be very foul, and that she much needs a thorough overhauling. She arrived in 1876 from England, and this is the first time it is proposed to have her docked. I solicit the early sanction of Government for her removal to Bombay for that purpose.

2. She will require about 100 tons coal, the greater portion of which she can take in at Tuticorin, and 20 tons will have to be sent from Tuticorin to Paumben to enable her to steam to the former port. As she burns coal more economically when used together with wood, I request permission to put a good supply on board, and propose to obtain the coal from the South Indian Railway Company.

3. I request that I may also be authorized to make such arrangements regarding crew as may be found expedient, and thus avoid the correspondence which has occurred in connection with former cases where vessels have been shifted, or crews engaged at one port for service at another.

4. The Government may rely on my using my best endeavours to keep expenditure as low as possible.

No. 30. *From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated 23rd April* 1880, *No.* 3205.

Administrative Department.

In reply to official memorandum, Marine, No. 884, of 21st, regarding the despatch of the dredge *Albuquerque* from Paumben to Bombay, I have the honor to state that the vessel's bottom has not been sighted since she left England at the latter end of 1875, and she requires to be docked and her bottom thoroughly cleaned and painted to preserve the hull from deterioration. Moreover, after so long a period constantly afloat, it is desirable that the hull below the water line should be carefully examined. It is only lately that the S.S. *Asia* was discovered most unexpectedly to have a defective plate in a position which, had she been deeply loaded, might in all probability have led to a similar disaster to that of the *Vingorla*.

2. The season of bad weather on the Western Coast is fast approaching, and if it is determined that the vessel shall go to Bombay, I respectfully request that early orders may be issued by wire, as coals have to be sent from Tuticorin to Paumben, and the balance required for the passage will have to be shipped at Tuticorin. A crew also must be sent from Negapatam to Paumben, and if the vessel does not leave by the 10th proximo, it is just possible she may experience bad weather on the voyage.

3. This should be avoided if possible.

No. 31. ORDER THEREON, 27th April 1880, No. 158.

Under the circumstances mentioned in the second of the letters above recorded, His Grace the Governor in Council approves of the S.S. *Albuquerque* being sent to Bombay for repair, and authorizes the Master Attendant to arrange for the provision of 100 tons of coal and the crew required for taking the vessel there.

2. The following telegram will be despatched to the Master Attendant :—

"Your letters 2701 and 3205. Arrange despatch *Albuquerque* to Bombay. Provide coal and crew required."

(True Extract.)

R. DAVIDSON,
Chief Secretary.

To the Master Attendant, Madras.
" Accountant-General.

Exd. J. Wright.

Copy of (1880) Madras.

MARINE.

To

THE MASTER ATTENDANT,
Madras,
&c., &c., &c.

Dated April, 27*th*.
Issued
Recd.
Encl.

G.O., 27*th April* 1880, *No.* 158.

APRIL.
Nos. 29—31.

S.S. Albuquerque being taken to Bombay for repairs, approved, and the Master Attendant, Madras, to arrange for providing her with 100 tons of coal and a crew.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

21st May 1880, No. 201.

S.S. Albuquerque.

Read the following paper :—

No. 38. *From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated* 12*th May* 1880, *No.* 3726.

Administrative Department.

Referring to Proceedings of Government, Marine Department, No. 158, of 27th April last, I have the honor to report that the Steam Dredge *Albuquerque* is now on her way to Bombay, (100) one hundred tons of coal having been supplied by the South Indian Railway Company and a supply of wood to burn in conjunction with coal having been put on board at Pámban.

2. As there was but little time to engage a fresh crew, I directed the Port Officer of Tuticorin to detail the crew of the *Margaret Northcote* to take the *Albuquerque* from Pámban to Bombay on condition that they should be sent back to Tuticorin by first British India Steam Navigation Steamer. The cost by this route by contract steamer is Rs. (24) twenty-four as against Rs. (21-13-0) twenty-one and Annas thirteen by railway, but by the former the men are kept altogether and *diet* is included, thus simplifying matters, which is an advantage, as there is always considerable correspondence with the Accountant-General in matters connected with travelling allowances both of officers and men, as there appears to be no clearly-defined rates under this head.

3. The *Margaret Northcote's* crew have been promised a gratuity for the additional work imposed on them, and I would respectfully suggest that Rs. (10) ten per man be sanctioned for the firemen and crew, and Rs. (20) twenty for the tindal, as this would be an inducement for them to go out of their way on a similar emergency in future.

4. As the vessel will be in Bombay in the course of a few days, it will be necessary for Government to communicate by wire with the Government there advising them of the departure of the vessel and asking that she may be docked, cleaned, painted and overhauled on arrival, and that the *Margaret Northcote's* crew may be sent back to Tuticorin by first British India Steam Navigation Steamer.

No. 39. ORDER THEREON, 21st May 1880, No. 201.

His Grace the Governor in Council approves and sanctions the return of the crew of the *Margaret Northcote* from Bombay by the first British India Steam Navigation Steamer at a charge of Rs. 24 each.

	RS.
* Tindal	20
Firemen and crew, each	10

2. The payment, if promised, of the gratuities* to the tindal, firemen, and crew is also sanctioned, but the amount is considerable.

3. The telegram, as per margin, was despatched to the Government of Bombay on the 17th instant, but the Master Attendant should have earlier represented the necessity of communicating with that Government, as they could then have been addressed by letter instead of by telegram, involving needless expense.

"Steam Dredge *Albuquerque* on her way to Bombay. Please arrange, with permission Government, to have the vessel docked, cleaned, painted, and overhauled on arrival, and send back crew to Tuticorin by first British India Steamer."

(Signed) R. DAVIDSON,
Chief Secretary.

No. 40. *To the Secretary to the Government of Bombay, dated Ootacamund, 21st May* 1880, *No.* 202.

I am directed to annex copy of the telegram sent to your address on the 17th instant :—

"Steam Dredge *Albuquerque* on her way to Bombay. Please arrange, with permission Government, to have the vessel docked, cleaned, painted, and overhauled on arrival, and send back crew to Tuticorin by first British India Steamer."

(Signed) R. DAVIDSON,
Chief Secretary.

To the Master Attendant, Madras.
" Accountant-General.

Exd. J. W. Fischer.

Rr2077/81

Govt. of {1880} Madras.

MARINE.

To

THE MASTER ATTENDANT,
Madras,
&c., &c., &c.

Dated May, 21*st.*

Issued

Recd.

Encl.

G.O., 21*st May* 1880, *No.* 201.

MAY.
Nos. 38–40.

S.S. Alburquerque.—The return of the crew of the *Margaret Northcote* from Bombay by the first British India Steam Navigation Company's Steamer at a charge of Rs. 24 each, sanctioned. The payment of gratuities to the tindal, &c., sanctioned with remarks.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

7th June 1880, No. 238.

S.S. "Alburquerque."

Read the following paper :—

No. 6. *From Colonel A. JOHNSON, Secretary to the Government of India, Marine Department, to the Secretary to the Government of Bombay, Marine Department, dated Simla, 25th May* 1880, *No.* 1246-*S.*

Ships—Repairs.

With reference to your telegram of the 17th May 1880, I am directed to state that in this office message of the 22nd idem the Government of India sanctioned the execution in the Bombay Dockyard of any necessary repairs to the steam dredge *Albuquerque* employed on harbour duties under the Government of Madras. No orders were conveyed about the crew, as it was thought that any instructions concerning them would be given by the Madras Government alone.

2. I am to observe that it is not clear why the telegraphic reference under reply was made to Calcutta instead of to Simla, and to beg that this office may be always addressed in these matters in future.

No. 1247-S.

Copy of the foregoing forwarded to the Chief Secretary to the Government of Madras for the information of His Excellency the Governor in Council.

(By order.)

(Signed) G. L. K. HEWETT, Major,
Offg. Asst. Secy. to the Govt. of India.

No. 7. ORDER THEREON, 7th June 1880, No. 238.

Communicated to the Master Attendant, Madras.

(True Extract.)

Chief Secretary.

To the Master Attendant, Madras.

Exd. J. W. Fischer.

Govt. of {1880} Madras,

MARINE.

To

THE MASTER ATTENDANT,

Madras,

&c., &c.,

Dated June, 7th.

Issued

Recd.

Encl.

G.O., *7th June* 1880, No. 238.

JUNE.
Nos. 6-7.

S.S. "Albuquerque".—Communicating letter from the Government of India forwarding, for information, copy of one from the Bombay Government regarding the execution, in the Bombay Dockyard of any necessary repairs to the steam dredge *Albuquerque*.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

26th August 1880, No. 425.

Out-ports.

Read the following papers :—

No. 47. *From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated Madras, 10th August* 1880, *No.* 6917.

Administrative Department.

I have the honor to submit the accompanying remarks on the ports of Vizagapatam and Cocanada, in the inspection of which I was requested by Colonel R. H. Sankey, C.B., R.E., Chief Engineer and Secretary to Government, Public Works Department, to join him, as already reported to Government.

ENCLOSURE No. 1.

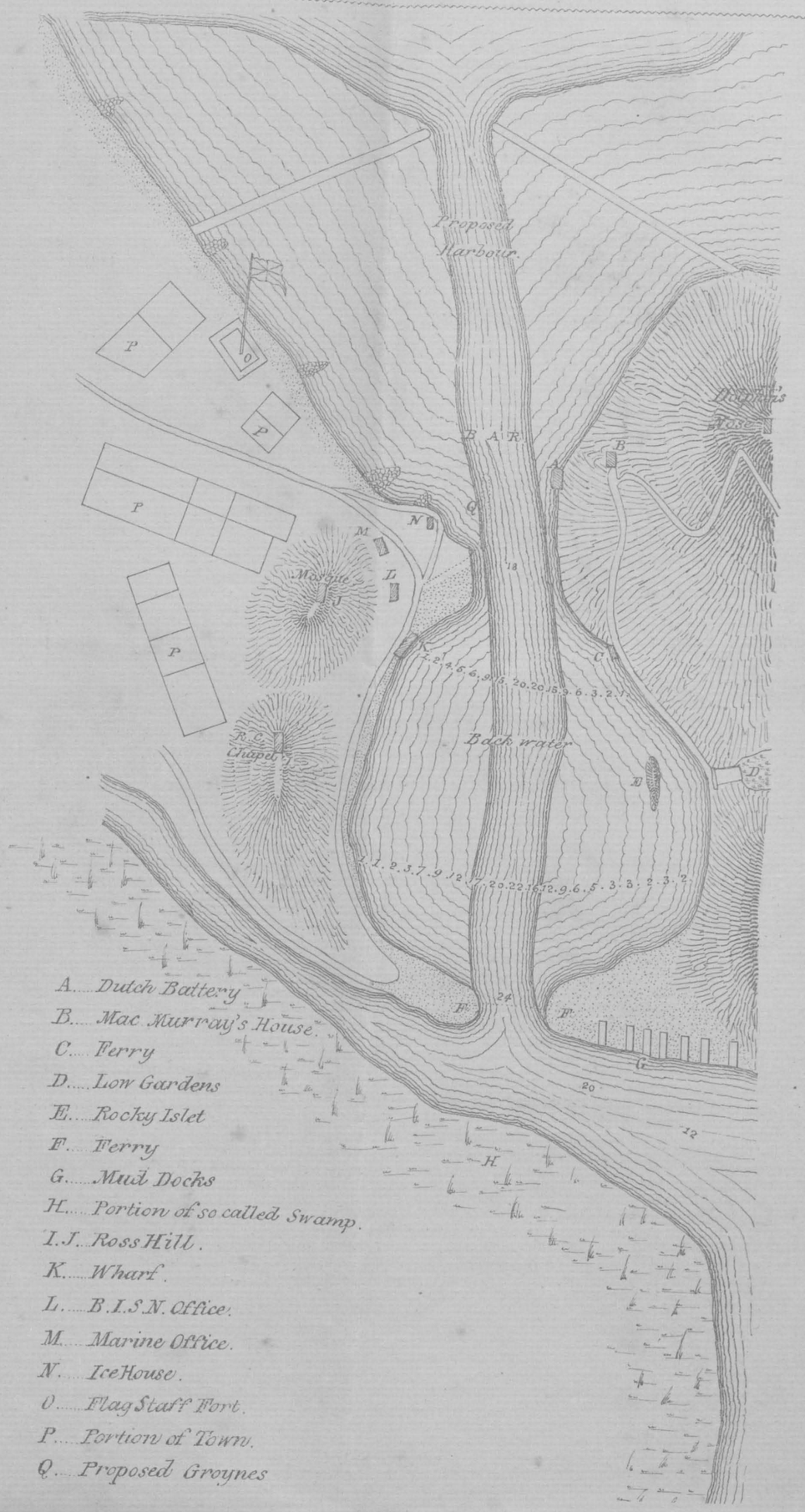
REMARKS ON THE PORTS OF VIZAGAPATAM AND COCANADA.

VIZAGAPATAM.

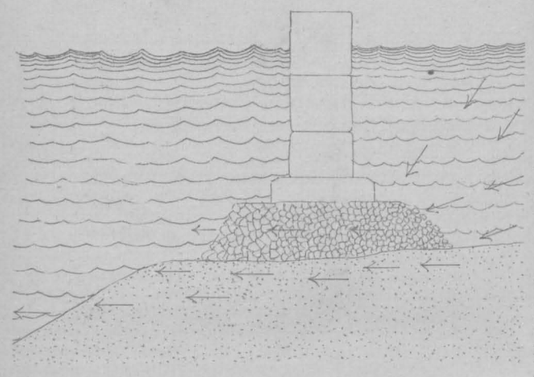
13*th July.*—On meeting Colonels Sankey and Prendergast and Mr. Harris this morning, I heard for the first time that Colonel Thomason's proposed harbour was not in the backwater, as all previous propositions have intended, but outside the present bar, and contemplates the enclosure of a basin of water within walls similar to those of the Madras Harbour piers. This therefore involves a reconsideration of the whole question.

2. In the first place I have no hesitation in saying that such a harbour is not demanded either by the present or prospective state of the town and neighbourhood of Vizagapatam, nor by the actual requirements of the shipping that frequent the Bay of Bengal either in the matter of protection or repairs. It has never been able to be shown that the latter advantages were necessary, and the formation of the Madras Harbour appears to me to entirely dispose of that question so far as Vizagapatam is concerned.

Here follows a rough design of the proposed harbour, by which it will be seen that the general plan amounts to little more than "An area similar in nearly all respects as to size, conditions of flood and ebb, &c., to the backwater itself," is projected into the open sea away from the protection now afforded by the Dolphin's Nose and Ross Hill, and subject to all the coast vicissitudes from which Vizagapatam, in virtue of its land-locked position, has hitherto claimed to be exempt. Such a complete shift of ground compels a more definite answer to the question "why should a harbour be made at all?" with which I commenced my report, and the answer acquires much more cogency. It is one thing to be in possession of a basin *claiming* to be already almost a dock and only wanting cheap alteration to become one, but a totally different thing to construct a harbour in the sea at this port in particular rather than at others more conveniently placed for purposes of trade, &c., like Calingapatam, Gopálpur, &c., as evidenced by the trade returns and the general choice of these places for export of the country's produce.



3. But however, leaving these matters, if we proceed to examine the plan, it will be found to possess all the objections which in my opinion render a harbour unadvisable, not only here, but wherever a river or backwater and inland water-communication exists, viz., the bar at the outside and the constantly-accumulating silt inside. It may be considered certain that wherever a sluggish tidal river like the Vizagapatam one debouches into the sea a bar will form outside and, except perhaps in the very main channel itself, will lay up silt inside as shown in this backwater. No interruption to this law can be proved to exist on this coast, and the harbour here would be only a repetition and extension of the *status quo* where the backwater is proved to have only a narrow central channel of about twenty feet in depth and about thirty feet in width, rapidly shelving to either shore. If the walls of the outer harbour were constructed and the shallow water inside dredged into the required depth, it would within a very short period imitate the action of the backwater and silt up again in all but the central passage, while the occasional attacks of cyclone torrents and freshes, with perhaps twenty-four inches or more of rain, in a few hours over a large hill district, for which this harbour would be the only outlet to the sea, may be imagined, but cannot be described, nor their effects prophesied. The "strong connections," "nice dependencies," "gradations just" of engineering would hardly cope with these two frequent foes, which leave traces behind them even upon the Dolphin's Nose itself, and expensive repairs would therefore be periodically demanded. Another danger to which the walls would be at all times exposed exists in the excavated deep basin on the one side and the comparatively shallow water in considerable portions of the wall on the other. The rubble base and the sand are porous enough to cause the currents to force a passage through, thereby undermining and giving the wall a tendency to slip into the basin below them, and this action would be unceasing. For these reasons I would not recommend such an outlay as the outer harbour would involve. I have only to add that the question of rock, which may be probably encountered in many of the most important positions, is of vital importance and may offer still greater impediment than those I have suggested.



4. The conversion of the backwater into a harbour and the removal of the present bar are however the real points to which local interest attaches and to which various suggestions of experience and invention have hitherto been directed. I have in former reports given my strong opinion against the possibility of a harbour being constructed here and my reasons for that opinion, which are not shaken by anything I have since seen or heard; but on the improvement of the bar for boat convenience I would beg to offer the following remarks.

5. The bar is now very wide, and the water of the river, on issuing from it in tides or freshes, disperses over this whole surface, losing thereby much of its force. It is observed that in the south-west monsoon the current seeks a passage near the sandy north shore and in the north-east monsoon has a drift towards the Dutch Battery. This is a necessary consequence of the permanent sea currents during those monsoons. The direction of the bar is from the Dutch Battery towards the second of the stone groynes thrown out by Sir A. Cotton to save beach. It is obvious to any looker-on that the sea on the bar enjoys a very considerable amount of protection from its position with regard to the Dolphin's Nose and that the farther the bar is projected the more that protection is weakened. This consideration, therefore, in my opinion should govern all operations having the improvement of the depth of water on the bar for their object. For this reason I would therefore not recommend any groyne extending from the Dutch Battery, but would look upon the natural barrier on the south side as sufficient for the purpose, but I would advise a groyne being thrown out from the mainland opposite the new British India Steam Navigation Company's Office, curving round till it becomes parallel to the Dutch Battery and continued until in fact it meets the line of the bar and becomes nearly, but not quite, opposite the battery; the whole stream would then attack the bar at a point where, without interfering with its natural direction, a good force of current might be at all periods of ebb or fresh brought to bear upon it, and the water is already deeper there from natural causes. I would curve the shore-end of this groyne until it meets the solid raised ground, because otherwise the sea and river might open another communication between the shore and groyne over the sand-spit where boats now lay up. This is the only measure of improvement I can suggest, and I do not know that it would be successful, but I think it is worth trying. It must, however, be borne in mind that the mouth there constructed must still be a wide one, or it will be difficult for several boats to shoot the bar at the same time, and yet it will be impossible to preserve regularity and strict order among them. If collisions occur from want of space, loss of life and property will follow

and the latter state be worse than the first. I consider 500 feet or even more should be arranged for.

6. I cannot, however, say that the boat-traffic of Vizagapatam has any disadvantages not shared in by other ports on the coast. Whatever trade can be directed here meets ready shipment or discharge, and therefore any distinct encouragement given by Government to the tax-payer here can only be purchased by an equal discouragement thrown upon similar classes of tax-payers elsewhere along the coast. This significant fact has been lost sight of in Vizagapatam itself, but has nevertheless an important bearing upon the harbour propositions. I will conclude this report with a few words on the swamp and reclamation question which I was called upon to examine under orders of Government in March 1875. It is contended now, as at that time, that the reclamation may injure the scour of the harbour, and this might be the case if it could be shown that the swamp was ever previously covered at high water, but all the evidence that can be found goes to prove the contrary, while its being raised and planted can have only a beneficial effect on the health of the town. Owing to its immense area its complete or even partial removal would be difficult and expensive. As a famine work, however, if such were again unfortunately needed, a portion might usefully be lowered to, say, mean sea level or any depth that admits of direct hand-labor, and the soil thus obtained spread upon the remaining portion to bring it into earlier cultivation.

7. If it was never a portion of the water-supply, its present position does not affect the scour question, and the fact remains that so small a volume of water is required by the natural bed of the river to keep up the tidal levels with the sea that the run out and in is very slow when spread, as it must be, over six hours' alternate action. It would be better in my opinion that, in considering improvements to the bar, the actual normal condition of the river be alone considered and action taken with reference to that alone. The periodical freshes and storm-water floods often do more harm than good. What is called the swamp appears now dry and healthy and emits no odour, but the stagnant pools and large basins all the way from the Parade Ground to Ross Island are the real source of danger to the town; they receive a great portion of the drainage, and latrines are built over them. If they could be thrown open to tidal action, benefit would certainly follow; a broad canal might be carried along the line of direction nearest the town, and the excavated soil levelled over the remaining portion of what is now stagnation and filth. Although the sanitary condition of the town is not included in the present inquiry, its importance is really greater than that of the harbour.

COCANADA.

8. At daylight on the 20th Colonel Sankey and myself with Mr. Walsh and Captain Gillham, Conservator, started in the S. *Lady Mary Grenville* to inspect the harbour. We reached the new mouth of the Godávari with the intention of proceeding up to Hope Island and the localities where certain dam operations were suggested in Mr. Robertson's report, but a heavy swell was on and rolling across the mouth with broken water from the eastward and the intention had to be abandoned, but, as this is my fourth visit to this spot since the discovery of the new mouth, I have paid great attention to any alterations that I fancied I could detect. From such observations I feel a hopeful confidence that the bank on the Cocanada side is hardening and extending and that on the sea side being lessened, the result of which action, if continued, would be to throw the Godávari water in a more direct line out to sea and greatly improve the bay of Cocanada and the present anchorage. It is, however, too soon to pronounce definitely on such a subject. I think the two spits should be marked out and carefully watched and reported on monthly, and I think stakes would be preferable to buoys for the purpose.

9. As the extension of the groynes at the Cocanada river mouth is now sanctioned, nothing more need be said than that experiments as to the cheapest method of construction are ordered to be carried out by the Master Attendant.

10. In a memorandum from the Superintendent of Marine Surveys, dated 26th May 1880, forwarded to the Government of Madras from the Government of India, it will be observed that the points mentioned by the Superintendent of Marine Surveys have been brought before the Government of Madras by independent observations of Madras Marine, and sanction given to the only effective portion of the memorandum. The *Albuquerque* is a vessel utterly unsuited to the duty proposed by the Superintendent of Marine Surveys; she draws nine feet water and could not approach within two miles of Cocanada river bar, and, owing to the tenacity of the mud, her under-water valves would soon choke and render her helpless. The old Cocanada dredge is now being docked, and, when the report upon her condition comes in, I will again address Government on the subject.

(Signed) J. H. TAYLOR,
Master Attendant.

MADRAS,
9th August 1880.

No. 1624-A.

Referred to the Chief Engineer, Public Works Department, for remarks, with reference to his Note, dated 19th August 1880, No. 295.

OOTACAMUND,
18th August 1880.

(Signed) R. DAVIDSON,
Chief Secretary.

No. 335.

No. 48. MEMORANDUM.

With reference to the Chief Secretary's endorsement, No. 1624-A, of 18th instant, forwarding for remarks a memorandum by the Master Attendant of the 9th instant, regarding the Vizagapatam and Cocanada Harbours, the undersigned has nothing to add to his memorandums on the same subjects of the 6th and 19th instant respectively, though he considers that it should in any case be communicated to this department with a view to its being forwarded for the information and guidance of the Superintending and Executive Engineers who are concerned with the investigations in regard to both the works in question.

2. He also thinks it would not be amiss if the papers, when disposed of by Government, were placed on the Editors' table, as there has been a good deal of misapprehension regarding especially the Vizagapatam Harbour scheme, which would probably be in great measure corrected by the publication of the professional opinions.

OOTACAMUND,
20th August 1880.

(Signed) R. H. SANKEY, Col., R.E.,
Chief Engineer, P.W.D.

To the Chief Secretary to Government.

No. 49. ORDER THEREON, 26th August 1880, No. 425.

Recorded.

(True Extract.)

R. DAVIDSON,
Chief Secretary.

To the Master Attendant, Madras.
" Public Works Department.
" Revenue Department.
" Collector of Vizagapatam.
" Collector of Godávari.

Exd. J. W. Fischer.

Govt. of (1880) Madras.

MARINE.

To

THE MASTER ATTENDANT,
Madras,
&c., &c.

Dated August, 26th.

Issued

Recd.

Encl.

G.O., *26th August* 1880, *No.* 426.

AUGUST.
Nos. 47–49.

Objects.—Letter from the Chief Engineer, Public Works Department, with reference to the Master Attendant's memorandum on the Visagapatam and Cocanada Harbours, that he has nothing to add to his memorandums of the 5th and 10th instant on the subject, &c., recorded.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

26th August 1880, No. 426.

Cocanada Harbour.

Read the following papers:—

No. 50. *From R. C. CARRINGTON, Esq., in charge of Office, Marine Survey of India, to the Chief Secretary to Government, dated Calcutta, 23rd June* 1880, *No.* 9.

I am directed to forward, for the information of His Grace the Governor, a copy of a Memorandum, by the Superintendent of Marine Surveys, on the Port of Cocanada and a new deep channel in the Godávari river, together with the tracing and chart mentioned therein.

ENCLOSURE No. 1.

Memorandum on the Port of Cocanada and a new deep Channel into the Godávari River.

The old Godávari mouths are fast closing whilst this great river has been, during the last year or two, cutting out a new channel, by which already vessels drawing eleven or twelve feet might be taken up the main river and close to the French territory of Yanam. There is reason to believe that, after the freshets of this south-west monsoon, the new mouth will improve itself and will require further examination.

2. The changes that have already occurred in the sandbanks which lie to the north and north-west of Point Gordeware, and in the depths of water near the black buoy, have doubtless benefited the Port of Cocanada. If these shoals advance northward through the power of the river freshets between July and October, they will still further improve the port by furnishing more shelter to the shipping, and the improvement will continue year by year.

3. It will become necessary to move the black buoy after every rainy season and perhaps oftener, as the northward advance of the shoal banks will form a serious danger to vessels entering the harbour. Notice will be given to the Hydrographer of the Admiralty of the great changes discovered this year and of the probable further annual encroachment of the sandbanks upon the sea, so that due warning may be given on the charts.

4. From an inspection of our Departmental chart of Cocanada, it will be observed how the bushes have extended themselves on the left bank of Coringa river entrance; the channel outside of the spot where the Steamer *Coromandel* lies is narrower than formerly, and with a little dredging might be much improved.

5. But the channel which most requires dredging is that of Cocanada creek, off the mouth of which there are sand-lumps with only a foot or two of water over them at low tide. It is a great pity that the Cocanada groynes have not been carried gradually farther out; had this been done year after year the deep channel would be more confined and the formation of sand-lumps would be avoided. I strongly recommend an extension of the groynes for half a mile on a gentle curve (as shown in blue on chart); the Coringa ebb-stream will then be more confined on the landward side and will assist the ebb from Cocanada creek.

6. The Dredger *Albuquerque* has done good service at Paumben by deepening the passage through the Horse-shoe sandbank down to sixteen feet. I believe the vessel might now conveniently be spared for service in the Cocanada channel. After working at Cocanada for a year or two, the *Albuquerque* could be utilised in dredging out the new Madras Harbour.

7. The Chamber of Commerce at Cocanada informed me that on account of the deterioration of the Cocanada bar, an alternative way of getting goods from the town of Cocanada to the

shipping had been proposed by the Engineers, that is to say, by cutting a canal from the Cocanada creek to the sea beach a little on the town side of Vakalapudi, the opening of this canal into the sea to be between two stone groynes which should run out into water sufficiently deep for large cargo-boats at all times of tide.

8. With reference to the above project I am of opinion that the Engineers would find it more difficult, after the first year or two, to keep the mouth of that canal clear than to keep the Cocanada mouth clear, because the site of the proposed new entrance is much more exposed to the sea than the entrance of Cocanada creek. I think therefore the attempt to carry out such a project is likely to prove a failure and certainly more costly than the simple measures recommended above for the improvement of Cocanada creek mouth. If two stone groynes be thrown out perpendicularly to the shore near Vakalapudi, the effect will most surely be to accumulate sand and mud on either side according to the season, and in two or three seasons the sand would pass round the ends of the groynes; then would come infinite trouble in keeping the mouth clear.

9. I am of opinion that, owing to the bursting out of that new Godávari mouth and the consequent changes spoken of in paragraph 2, the harbour of Cocanada (by which expression I mean that portion where the shipping now lie) will not now, and perhaps not for the next dozen years, be liable to become shallower. As a matter of fact (see tracing of Admiralty Chart with this letter) during the twenty-two years that have elapsed since my survey of Cocanada Bay, the five fathom line has advanced one and a-half nautic miles in a north-eastern direction towards the present position of the Black buoy; whereas in the harbour where the shipping lie, the five fathom line has only advanced three-quarters of a nautic mile. This shows the beneficial character of the growth of those north-east banks. It may truly be said that the sheltered anchorage of Cocanada is now improving.

CALCUTTA,
26th May 1880.

A. DUNDAS TAYLOR,
Superintendent of Marine Surveys.

No. 321.

Communicated to the Chief Engineer and Master Attendant for their remarks.

(Signed) R. DAVIDSON,
Chief Secretary.

9th July 1880.

No. 51. *Note by the Chief Engineer, Public Works Department, dated 9th August* 1880, *No.* 295.

The Government having in G.O., dated the 9th July 1880, No. 321, Marine Department, called for my remarks on a Memorandum* by the Superintendent of Marine Surveys on the "Port of Cocanada and a new deep channel with the Godávari River" forwarded by the Government of India, I have the honor to submit the following observations on the result of my inspection of the port on the 20th ultimo, in company with the Master Attendant of Madras, Captain Taylor, the Port Officer Master Attendant, Cocanada, and the Superintendent of Works, Godávari.

* Dated 26th May 1880.

2. I may in the first place note that previous to the receipt of the above instruction the question of how best to deal with the Cocanada harbour which for many past years has been silting up, and especially with reference to the altered conditions under which the Godávari river has lately been discharging itself through its northern defluent, had come under the notice of Government.

3. The subject was generally dealt with by the Professional Harbour Engineer, Mr. George Robertson, who late in 1870 was specially deputed by the Secretary of State to examine and report on the harbours of this Presidency. He there observes that "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 in consequence of the silting up of the bay," which placed as it is on the north flank of the Godávari delta has an enormous volume of mud poured into it during the floods of the south-west monsoon.

4. There is nothing to show that the annual rate of progression, at which the anchorage thus appears to have had to move seaward (viz., 487 feet), has been at all constant; indeed there is reason to think that of late years it has been very much less.

5. The chart now furnished by the Superintendent of the Marine Survey does not help us in deciding what this progression has amounted to lately; but, as the last one published is dated August 1875, it will probably not be long before accurate information will be available on a fresh survey of the harbour.

6. Mr. Robertson in his report commented on the neglected state of the harbour, and recommended that "the river should be narrowed by running a wall or bank on the south side from the bridge downward so as to make the width of the harbour approach more nearly to the width between the groynes."

7. This work has been carried out with the very best effect by the Port Officer (Master Attendant, Cocanada), Captain Gillham, who informs me that a depth of from seven to nine feet at low water, spring tides, is constantly maintained by the scour set up, and that this portion requires no work or attention.

8. The advance of the sand-spit on the north-east of the old light-house pillar (now disused) during the prevalence of the north-east monsoon has also been to a great extent arrested by a groyne thrown up on that side, but owing to the way in which the silt deposits still advance across the end of the channel, partly from the north, but chiefly during the south-west monsoon, constant dredging is needed, and the result is far from satisfactory.

9. The dredge is not of sufficient power, and the work is both slow and expensive, the removal of spoil in punts alone costing 10 annas per cubic yard.

10. Mr. Robertson further observed, "If the stone groynes on each side of this channel are ever lengthened, I would suggest that they should be curved a little seaward so as to take the stream more gently into the channel from Coringa, and not so directly at right angles to it," and the Master Attendant, Captain Taylor, following up this suggestion has lately advised that a north groyne should be pushed on 500 feet and south groyne 700 feet following a general curved line to the north-east, the cost being roughly estimated at Rs. 10,000. This has been approved by Government in G.O. of 6th July 1880, No. 1583 W.

11. Meanwhile the Superintendent of Works for the Godávari delta had drawn attention to the difficulties and expense of endeavouring to follow up the continued advance of the silt deposits by constructing a boat canal through them to sufficiently deep water, and as an alternative suggested the excavation of a coast canal which commencing a little west of the old light-house column would run for about four miles north directly towards the present Vakalapudi light-house. This point reached the end of the canal might, he considered, be turned into the sea, and the opening established in sufficiently deep water to admit of the entrance of cargo-boats.

12. The special advantages of this arrangement were—

1*st.*—The canal would be excavated for much less than a channel through the silt deposits.

2*nd.*—As these latter advanced the canal could be easily extended along the coast *pari passu* with the advance of the silt deposits northward.

3*rd.*—Cargo-boats would after tracking through the canal have only a short distance to sail in order to reach ships at anchor in the roads.

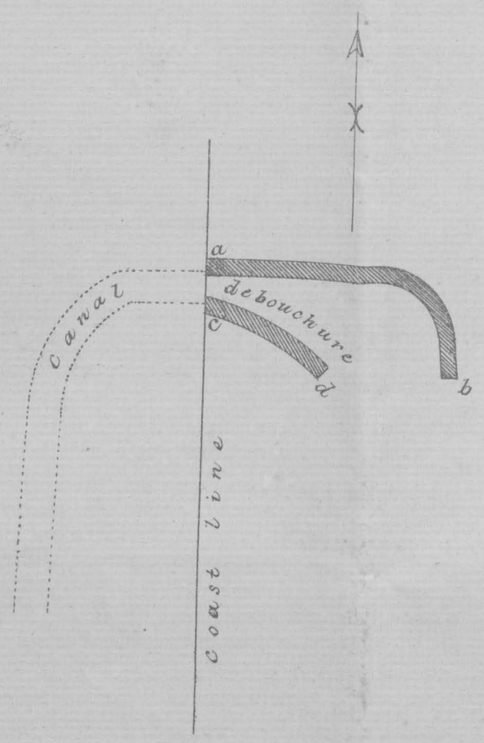
4*th.*—This canal would form in reality a portion of the projected canal along the east coast connecting (as may some day be the case) the Buckingham, Kistna, and Godávari Canals on the south with the Mahánadi Channels north, thus forming a continuous internal line of communication.

13. Objections to this scheme, which seemed to both the Chief Engineer for Irrigation and myself to hold out *primâ facie* a fair solution of the difficulty, were however strongly urged by the Master Attendant in the reference* previously adverted to, and I decided to examine the question carefully on the spot with Captain Taylor.

* Endorsement in the Marine Department, dated 14th June 1880, No. 1242.

14. Our examination of the coast near the Vakalapudi light-house showed that we could count on getting three fathom water within one-quarter of a mile of the shore, but as can be readily understood from an inspection of the chart the more northward the debouchure of a canal be taken the less protection would there be from swell and surf during the south-west monsoon, and as regards the north-east monsoon sand accumulations from that side would have to be guarded against.

15. Judging from our experience at the Madras Harbour Works it would apparently be necessary to carry out a sufficiently long and curved breakwater north as (*a b*) in the marginal sketch extending to three or three and a-half fathom line with a short one as (*c d*) to the south. Otherwise the canal mouth would, it seems to me, be insufficiently protected, first, from sand accumulations travelling from the north; and, secondly, from the surf which during the south-west monsoon would apparently bar the entrance to boats.



16. This, it need hardly be said, would be an expensive work, and as the silt deposits from the Godávari must in time reach the point at which it is placed, obliging a fresh debouchure to be established further north, the objection to this method of overcoming the difficulties must, so far as the particular point is concerned, be admitted to be serious.

17. The alternative of at once boldly carrying the proposed canal three or four miles north, and thus perhaps deferring the reconstruction of the proposed breakwater for, say 100 years and more, cannot be recommended, as, in spite of all present disabilities, cargo-boats would certainly accept these, and leave the canal, if thus lengthened, unused.

18. From another point of view, also, the proposed coast canal can hardly be made to meet the requirements of the Cocanada trade. There would be no difficulty and no very serious expense (say one or one and a-quarter lakhs) in excavating a channel of moderate section 25 feet bottom width, but to maintain this so as to ensure a greater depth throughout at low water than four feet would be both difficult and costly. We find even three feet at low water quite as much as can be maintained by hand labor on the Buckingham Canal, and unless we established rather expensive works at the head where the proposed canal would take off so as to scour the channel out with the freshets of the Cocanada river a costly system of steam dredging must be resorted to.

19. The alternative proposed by the Master Attendant is, first, to give a northern direction to the present river channel so as at once to exclude much of the silt which is now poured in from the south, and continue the scour which has had such a beneficial effect on the portion of the stream from the bridge downward which has been confined by rough stone groynes; and, secondly, to continue the work as funds admit across the whole of the shallow portion of the bay till a sufficient depth has been

reached to accommodate cargo-boats and such vessels of light draught as require to use the port. Thirdly, such further arrangements would be needed as would provide for continuing the groynes each year so as to keep pace with the advance of the silt deposits northward, and also keep down by dredging any silt that may accumulate and form a bar.

20. The execution of the first portion of this series of works has already been sufficiently provided for by G.O. of 6th July 1880, No. 1583 W., and consequently it only remains to discuss the remaining heads.

21. We have here in any case a certainty that if the same width be preserved between the advanced as between the existing groynes the same depth of channel, viz., 200 (?) feet will be preserved till we come to the end; and again that we should have a much wider and more roomy channel than we could reasonably hope to excavate for the proposed coast canal. This latter advantage, though not doing away with the necessity of having to track the cargo-boats up or down against a head wind, would in any case be desirable with the class of boats used and to meet the necessity for probably a fair-sized vessel and for the dredger having to pass now and then.

22. In fact the question resolves itself into one of cost and the feasibility of keeping down silt deposits at the bar, as the general principle on which the scheme is urged seems unobjectionable, and so far as the maintenance of depth throughout the channel is concerned compares favorably with the projected coast canal.

23. But at present it is impossible to express any reliable opinion as regards cost as this depends—

1*st*.—On the length to which the groynes would have ultimately to be carried, and

2*nd*.—On the materials to be employed in their formation with the section to be adopted.

24. The length will of course necessarily be decided by the draught of boats or vessels using the harbour, and on this point there is a difficulty arising from the peculiarly large class of boats now engaged in the trade.

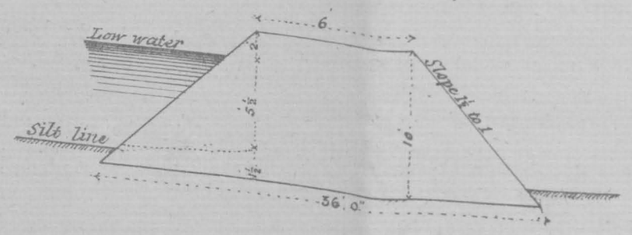
25. From all that I could see and learn the cargo-boats ranging from sixty to eighty tons burthen and drawing eight feet of water are quite unnecessarily large, as trade is carried on easily and efficiently at Masulipatam, and in a more exposed position than at Cocanada with good sea boats of only twenty and twenty-five tons drawing four or at most five feet. There is no economy so far as I can understand in using the larger class of boats now common at Cocanada, and I see no reason why the Port Funds should be called on to meet unnecessary demands of the kind. This, however, is a point regarding which the opinion of the Master Attendant will be necessary.

26. If we assume that five feet depth should suffice for the draught of cargo-boats, and allowing one foot of water below the keel to meet the requirements of ordinary weather, I would assume that if the groynes are extended into six or seven feet water nothing more should be required.

27. With a rise of tide equal to three or four feet this, it will be remembered, would allow of very large cargo-boats and of moderate-sized vessels passing up to Cocanada by waiting a little to take advantage of it.

28. On the accompanying chart of 1875 while AB shows the work now sanctioned, BC continued in a north-east direction to a depth of seven feet on the silt deposits as then existing is about 10,700 feet long, and as the shallow water must have extended northwards in the last five years, this is certainly within the mark for the length of groyne required.

29. For an average section, as per margin, 167,884 cubic yards of material would be required which at 2 rupees per cubic yard would not fall far short of $3\frac{1}{2}$ lakhs of rupees. The rough stone required would have to come from Sámalkót and could not so far as I can learn be laid down in position at a less rate than that named, but there may very possibly be means available for using the silt itself as a core for groynes (to be faced of course with stone) which may lead to a very sensible saving in the total outlay, and every effort should be devoted to securing this.



30. The silt which consists of mud in the finest state of communication is highly plastic and on desiccation forms such hard blocks that with suitable arrangements it could be made to answer admirably for the purpose proposed, and being on the spot should prove highly economical. It is, however, premature to say definitely the best method of using this material though several plans readily suggest themselves. These will be experimented with, and the result reported.

31. The port does not appear to be much exposed to the action of cyclones, and, judging from the small effects produced by the last heavy "blow" on the existing groynes, it may fairly be inferred that there will be little charge for future maintenance, and the excavation of the channel between the groynes will in all probability be done by the stream without the aid of the dredger. A little raking up in aid of the natural scour may be needed, but nothing more.

32. As regards the maintenance of a sufficient depth of water on the bar, which in the ordinary course of events must form at the end of the proposed artificial channel, it seems to me that this may be safely left to dredging, as, in the first place, there is no surf here to counteract operations in the south-west monsoon, and, as it may be inferred from the present report of the Superintendent of Marine, the harbour will gain sensibly in protection by the extension of the sand-spits now in course of formation to the north-east of Hope Island as the direct result of the manner in which the northern defluent of the Godávari is forcing itself.

33. That officer observes, "If these shoals advance northward through the power of the river freshets between July and October they will still further improve the port by furnishing more shelter to the shipping, and the improvement will continue year by year." This is certainly most encouraging, but we have not as yet sufficient to show whether more silt may not also be sent north-west in the direction of the anchorage and with which it might eventually interfere.

34. There is an advance of the five fathom line to westward of the black buoy which would indicate some action of the kind, and I would venture to suggest that looking to great interests involved some arrangements should be made for recording twice each year (*i.e.*, once before and once after the south-west monsoon) the changes in depth that may occur at certain selected typical points. I understood the Port Officer (Master Attendant), Captain Gillham, to say that this could be done, and the result might be reported on each occasion for the information of Government in this department.

35. It will be inferred from the foregoing observations that, to the best of my judgment, the balance of advantages would appear to turn in favor of Captain Taylor's suggestion to continue the groynes towards the present anchorage in lieu of constructing a coast canal up or near to the Vakalapudi light with the subsidiary works needed

for keeping the debouchure open; but, as the Superintendent of Works has his survey for the coast canal completed, it will be more satisfactory for Government to have both schemes worked out if not in complete detail at least in a much more reliable manner than I have had the opportunity of doing in this note.

36. If approved therefore the Superintendent of Works will undertake this duty in communication with the Master Attendant whose opinion as to the depth of channel to be provided for, &c., will have to be followed.

37. When the Superintendent of Works has sufficiently considered the various methods for utilizing the silt as suggested for forming the groynes, a small sum might be devoted either by him or by the Port Officer (Master Attendant) towards carrying out actual experiments with the different methods on the spot so as to ensure our having reliable rates for the estimate.

38. It is not to be inferred from what I have above advanced that there will be any immediate necessity for at once undertaking the work of continuing the groynes to the present seven-foot line. The work can go on gradually without in the least interfering with traffic as there are Port Funds to spare; every foot in advance being of some gain to the trade. If necessary indeed the work might extend over several years, but that some such work in aid of the port is necessary appears to me to admit of little doubt.

(Signed) R. H. SANKEY, Colonel, R.E.,
Chief Engineer, P.W.D.

To the Chief Secretary to Government.

No. 52. *From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated 16th August* 1880, *No.* 7069.

Administrative Department.

I have the honor to acknowledge Proceedings* of Government, forwarding a letter from the Government of India, dated 23rd June 1880, No. 9, accompanied by a Memorandum from the Superintendent of Marine Surveys, regarding the Port of Cocanada and the mouth of the Godávari.

* No. 321, dated July 9th, 1880.

2. In reply, I beg respectfully to remark that the various suggestions of the Superintendent of Marine Surveys have recommended themselves independently to me, and have been for a long time the subject of correspondence with Government. The extension of the groynes and the curve to north-east is sanctioned, and the action will be closely watched, and advantage taken of any change in the condition of the bay, owing to the new mouth of the great river, to draw the attention of Government to any improvements that may be commenced with confidence. From such observations as I have been able to make, I believe the mouth of the river will become directed more out to open sea, cutting away some portion of the present spit, and increasing and hardening the bank on the Cocanada side, gradually silting up the small channels which now do so much harm to Cocanada Bay. If I am correct in this surmise, a great benefit will be derived, and any question of removing the trade from Cocanada be set at rest.

3. As for the canal at Vakalapudi, I have already expressed the same views as the Superintendent, Marine Surveys, upon the impossibility of keeping the sea mouth clear. The whole line of coast offers repeated examples of the refusal of nature to give any assistance to such works, and art employed without any such assistance is far more costly than the occasion would justify. The class of boats engaged in carrying cargo at Cocanada is very large, and beyond the power of an ordinary canal to carry. Moreover, on a coast canal joining Madras and Calcutta, this branch would not fit in. The direct and easy line for canal continuation would be from Sámalkót to Tuni. Cocanada would be a detour causing twelve miles more work, and Colonel Sankey in conversation with me only proposed for the canal four and a-half-foot depth below low water-mark. It is to be observed that the bar has never been worse than that, and

the broad bay beyond it enables boats, after passing the bar, to sail easily up to their work without four miles laborious tracking. The ships also, owing to the distance of six fathom range from Vakalapudi, would still be one and a-half to two miles off shore. I do not see, unless matters were to become seriously worse at Cocanada, that the consideration of any present radical change need be entertained.

4. As regards the dredge *Albuquerque*, which the Superintendent of Marine Surveys recommends to be sent to Cocanada, I should be very glad if she could be so utilized, but unfortunately she draws nine feet of water on average, and could not approach Cocanada bar within two miles, and she could not work her way in, owing to the extraordinary tenacity of the Cocanada mud, which would soon choke her numerous under-water valves and cocks. She is much too large for any ordinary Madras work, and though she did do good service in deepening the sandbank channel at Paumben to sixteen feet, still she is too large for the reef channel, and would, if she worked there, fill up the whole channel, and stop all traffic, and even if that objection did not exist, her buckets and fittings are not suited to rock and coral dredging. She would probably be very useful at Bombay, where she now lies, and must at all events remain for the rest of the monsoon.

No. 53. ORDER THEREON, 26th August 1880, No. 426.

His Grace the Governor in Council authorizes the Chief Engineer, Public Works Department, to extend the present groynes gradually, appropriating a certain sum annually for the purpose from Port Funds.

(True Extract.)

R. DAVIDSON,
Chief Secretary.

To the Public Works Department.
,, Master Attendant, Madras.

Exd. J. Wright.

Govt. of {1880} Madras.

Rec'd 7/8/1

MARINE.

To

THE PUBLIC WORKS DEPARTMENT,

&c., &c., &c.

Dated August, 26th.

Issued

Read.

Encl.

G.O., 26*th August* 1880, No. 426.

AUGUST.
Nos. 50—53.

Cocanada Harbour.—The Chief Engineer, Public Works Department, authorized to extend the present groynes gradually; and copy of these Proceedings forwarded to the Government of India.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

10th September 1880, No. 453.

S.S. "Albuquerque."

Read the following papers :—

No. 17. *From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated 30th July* 1880, *No.* 6635.

Administrative Department.

I have the honor to forward copies of the letters as per margin, and to solicit the orders of Government thereon.

From the Superintendent of Marine, Western Division, Bombay, to the Master Attendant, Madras, No. 52-3112, dated 23rd July 1880.
From the Controller of Military Accounts, Calcutta, to the Superintendent of Marine, Western Division, Bombay, No. 6158, dated 15th July 1880.

2. It will be seen from the Controller of Military Accounts' letter that the repairs of the S.S. *Albuquerque* will amount to about Rs. (16,363) sixteen thousand three hundred and sixty-three, and as no budget provision has been made for the work, and no savings are anticipated under other heads from which the charge may be met, information is required as to the source from which it is proposed to meet the outlay. That officer further remarks that as the *Albuquerque* was employed on harbour duties under the Government of Madras, it is presumed the cost of maintaining her was paid either from the Provincial Revenues or from Local Funds of that Presidency, and requests definite information on this point to determine what the docking and commission charges will amount to in the present instance. The Superintendent of Marine, Bombay, desires me to furnish the information called for, and to state the source from which the above charges are to be paid.

3. I beg to observe that the *Albuquerque* is a vessel belonging to the Indian Marine, and her original value has been met from Imperial Funds. The maintenance and improvement of the harbours in this Presidency are of Imperial importance as well as of local advantage, and, under the latter consideration, the expenses of that vessel while employed at Cochin Harbour were borne by the Port Fund, and while dredging the Pámban Channel were debited to Provincial—Marine, but as the cost of her repairs is not a charge connected with any of the harbours or ports in this Presidency, it does not appear debitable to Provincial Revenues or Local Funds. As the vessel belongs to the Indian Marine, I presume the cost of her repairs, &c., should be borne under that head.

No. 1562.

Referred to the Accountant-General for his opinion, which he is requested to furnish at an early date.

OOTACAMUND,
6th August 1880.

(Signed) R. DAVIDSON,
Chief Secretary.

No. 18. *From A. C. TUPP, Esq., Officiating Accountant-General, to the Chief Secretary to Government, dated Ootacamund, 12th August* 1880, *No.* 869-*N.*

Treasury Account Department.

With reference to your endorsement, No. 1562, dated the 6th of August 1880, referring for my opinion letter from the Master Attendant, Madras, No. 6635, dated 30th July 1880, regarding the source from which the cost of the repairs of the S.S.

Albuquerque should be met, I have the honor to state that I am not aware of any distinct order of the Government of India on the subject; but under the spirit of the Resolution of the Government of India, No. 1680, dated 30th September 1879, it would seem that the cost of the repairs should be borne by Provincial or Port Funds.

No. 19. *From J. H. TAYLOR, Esq., Lieut., R.N.R., Master Attendant, Madras, to the Chief Secretary to Government, dated 24th August* 1880, *No.* 7394.

Administrative Department.

With reference to your official memorandum, No. 1646, dated 21st August, I have the honor to state, for the information of Government, that in the Resolution of the Government of India, dated 6th July 1877, No. 5-S, paragraph 1, the whole of the Marine Establishments afloat and on shore are ordered to be amalgamated into one Imperial Service to be designated "Her Majesty's Indian Marine," and (paragraph 3) all existing vessels, whether in Bengal, Bombay or elsewhere, to be placed on one list, and classified and employed under the orders of the Government of India. A statement of the vessels belonging to the Madras Government was called for in reference thereto, which was submitted to Government with this office letter, No. 5441, dated 6th August 1877. The sanction of the Government of India to the retention *in the Madras Presidency* of the *Albuquerque* for dredging operations at the port of Cochin is recorded in G.O., No. 165, dated 15th March 1878.

2. As regards the source from which the original value of the *Albuquerque* has been met, I beg to observe that the dredger was brought out in connection with the improvement of the Cochin Harbour, which, in the despatch of the Government of India marginally noted, is adverted to as a matter of Imperial importance, and, considering that the charge has not been debited to Port Funds, I felt authorized to mention that it has been adjusted against Imperial Funds.

To the Secretary of State for India, No. 37, dated 10th March 1869, recorded in G.O., Public Works Department, No. 1807, dated 2nd June 1869.

No. 20. ORDER THEREON, 10th September 1880, No. 453.

The Government of India Resolution, dated 30th September 1879, No. 1680, does not appear to have any bearing on the question under reference, and it seems very doubtful whether a Harbour dredge was properly included in the list of vessels of Her Majesty's Indian Marine; but as the dredge was got out from England for use in improving Madras Harbours, and has been constantly so employed since arrival, and will, after repair, return to the same duty, the cost of repairs should be charged to, and defrayed from, the Madras Presidency Port Funds.

Procs., Madras Government, dated 10th October 1879, No. 561.

(True Extract.)

R. DAVIDSON,
Chief Secretary.

To the Master Attendant, Madras.
„ Accountant-General.

Exd. J. Wright.

Br 2077/81
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Govt. of Madras.

MARINE.

To

THE MASTER ATTENDANT,
Madras.
&c., &c.

Dated September, 10*th*.

Issued

Recd.

Encl.

G.O., 10*th September* 1880, *No.* 453.

SEPTEMBER.
Nos. 17—20.

S.S. *Albuquerque*.—The cost of repairs to S.S. *Albuquerque* ordered to be charged to, and defrayed from, the Madras Presidency Port Funds.

GOVERNMENT OF MADRAS.

MARINE DEPARTMENT.

16th October 1880, No. 521.

Albuquerque.

Read the following paper :—

No. 34. *From H. A. STREET, Esq., Commander R.N., Assistant Secretary to the Government of India, Military Department, to the Superintendent of Marine, Bombay, dated Simla, 4th October* 1880, *No.* 2693-*S* (*Accounts*).

In reply to your letter, No. 1905, dated 1st June 1880, reporting the grant of an advance of Rs. 300 to the Officer Commanding the *Albuquerque* to pay up his deck crew and some contingencies, as also the entry of one tindal on Rs. 20 per mensem, and three lascars at Rs. 15 each per mensem, I am directed to inform you that the Government of India approve of your action in the matter.

No. 2694-S.

Copy of the above forwarded to the Chief Secretary to the Government of Madras, for the information of His Excellency the Governor in Council, and with a request that the Government of India may be informed how all the expenses on account of the *Albuquerque* are to be adjusted.

(By Order.)

(Signed) H. A. STREET, Commander R.N.,
Asst. Secy. to the Govt. of India.

To the Chief Secretary to Government.

No. 35. *To the Secretary to the Government of India, Marine Department, dated Ootacamund*, 16*th October* 1880, *No.* 521.

With reference to your endorsement, No. 2694-S, dated the 4th October 1880, inquiring how all expenses incurred on account of the *Albuquerque* are to be adjusted, I am directed to enclose, for the information of the Government of India, copy of the Proceedings of this Government marginally noted, determining that the "cost of repairs should be charged to, and defrayed from, the Madras Presidency Port Fund."

No. 453, dated 10th September 1880.

(Signed) R. DAVIDSON,
Chief Secretary.

To the Master Attendant, Madras.
„ Accountant-General.

Exd. J. Wright.

Govt. of {1880} Madras.

MARINE.

To

THE SECY. TO THE GOVT. OF INDIA,
Marine Department,
&c, &c,
&c.

Dated October, 16th.

Issued

Recd.

Encl.

16th October 1880, No. 621.

OCTOBER.
Nos. 34-35.

Albuquerque.—Transmitting copy of Proceedings of Government, dated 10th September 1880, No. 453, determining that the cost of repairs to the *Albuquerque* should be charged to, and conveyed from, the Madras Presidency Port Fund.

Ex 27/81

Mr 2077/81

Administrative Department.

MADRAS,
Marine Office,
19th February 1881.

No. 1603.

From

J. H. TAYLOR, ESQ., LIEUT., R.N.R.,
Master Attendant,
Administrative Department,
Madras.

To

The Honorable R. Davidson C.S.I.
Chief Secretary to Government,
Marine Department,
Fort Saint George.

SIR,

I have the honor to report that after careful consideration, I am decidedly of opinion that the Steam Dredge "Albuquerque" is too large for the Marine requirements of this Presidency. If any attempt were made to utilize her services on the Bar at Cochin, she would, with her side anchors down, virtually block the entrance to the harbour. She draws too much water to be of use at Vizagapatam, Beypore, Mangalore or Coconada, and thus it seems to me advisable to dispose of her, and I would recommend that if an offer of Rupees (184,580—0—0) One Lakh eighty four thousand five hundred and eighty be obtained, it should be accepted.

2. I base my valuation on the items noted below—

Original cost of "Albuquerque"—Rs 222,070

The

The vessel is as nearly as good as new, having just completed a thorough overhaul in Bombay Dockyard, at an expense of Rupees (14,292) — Fourteen thousand two hundred and ninety two, but allowing a depreciation of 5 % for 5 years, this would give her value as Rs 166,555

3. This does not include the cost of the four Spoil Barges built to work in conjunction with the Dredge, and which should be sold with her, as they will be of no service without her. They cost Rupees (24,000) — Twenty four thousand, and all have lately been repaired, so that the purchase price would be

"Albuquerque" as she now stands with four spoils Barges carrying 87 tons each Rs 188,155 ×

× Including Rs 21,600 for the Spoil Barges deducting at 5% off 3 years on original value.

4. It is probable that either the Calcutta, Bombay or Colombo Government might find it to their interest to take over the vessel at the valuation I have placed on her, or to make some offer. I would therefore — respectfully suggest that references be made to each, at an early date. One or even two more convenient vessels might be bought with the proceeds for general use in the Presidency.

I have &c.

(Sd) J. H. Taylor
Master Attendant
Administrative Department

No 2992

True copy forwarded to Colonel R. H. Sankey C. B. R. E.; with reference to his Demi Official note dated 14th February last, with File and G. O. No. 2 dated 4th January 1881.

By Order

Madras Marine Office 31st March 1881

Master Attendant
Administrative Department

From

The Master Attendant,
Administrative Dept.
Madras,

To

The Chief Secy. to Govt.,
Marine Department,
Fort Saint George.

Dated } 188 .
Received }

No.

Enclosure.

(188) Department.

P. W. C. № 2077

From

The Master Attendant,

Administrative Department,

Madras.

To

The *Secretary* to Government,

P. W. Department,

Fort Saint George.

E-8.

No. 2992.

Dated 31st March

Received 1st April 188/.

No.

Subject.

Forwarding copy of a letter addressed to Government regarding the "Albuquerque"

Brochure been published in Marine D. Hydrographic "Superior" to Col Lindsay might be brought to Ceylon Govt. that Col probably be available for the appointment

C. 2. 4. 12. 4. 4.

Hon W Wedderburn

For orders

I would beg strongly to suggest the recommendation made by the Accountant to sell the Albuquerque Dredge if any thing like the sum mentioned by him can be realized. To the best of my judgment she is quite unsuited to work at any of the ports or Harbours along the Madras Coast At Colombo I see by the design that it is proposed to dredge out a considerable area of the Harbour and constructing to 26 ft. in depth and to work of this kind she would probably be

well Limited
It is also not impossible that work
of a Similar Character
may have to be undertaken at Mannaar
if that Scheme reach
fruition
Captain Taylor and
I hope to be at Colombo on the 6th instant
and if the Govt would
authorize us by telegram
we might be in a
position to arrange
In a Sale, first
Of course communicating
the terms of the Offer
the Ceylon Govt may
be disposed to make

1/4/81

P. W. Dept.

For orders.

Colonel Haslett R.E.
has reported arrival;
he will relieve Col.
Stirling about the 12th.
inst. It is proposed
to attach him to the
Secretariat for duty
in the interim, as it is
necessary that he
should be placed
upon some duty.

Approved

Major R.E.
for Secy. to Govt.
P.W. Dept.

Telegraph
4th April 81

Noted. W.P.

For Orders.

Hon. W. Hudleston

[illegible] dated
[illegible] received herewith
[illegible] and enclosure from
[illegible] with Heads of
[illegible] standard [illegible] Hair
[illegible] and [illegible] to
[illegible] returned
[illegible] covering [illegible]
[illegible] last year's
[illegible] Heads [illegible] and [illegible]
[illegible] final [illegible]

S.O. D Col.
Hunted-R. Engrs
I. and Fn. Dept

8

[illegible]
[illegible]
[illegible]
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[illegible]

[illegible]

P

No 932 W

PUBLIC WORKS DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

UNDER date the 6th April 87

~~Read the following~~

Lieut. Colonel J. O. Hasted, R.E., Supply Engr Train reported this 1st class, who arrived from England ~~on the 2d~~ ~~Instant~~, ~~will relieve~~ Colonel J. Mullins, Chief ~~Engr for Irrign on the 12th~~ ~~idem~~ is attached to the Public Works Secretariat for duty in the interval which will elapse before his relief of Col. Mullins in the office of Chief Engineer Pub. Works & Irrigation.

To
Lt. Col. J. O. Hasted R.E. ×
Public Works for Irrign ✓
" Secretariat ✓

× given personally Dated 6-4-87

8

Down

Br 932 w 96 Afd 80

S. A. W.

May this paper
be given a Bis:
No. & brought on
record.

Aug. 6/4

Certified

Marine Department.

PROCEEDINGS of the MADRAS GOVERNMENT.

READ the following

Letters from the Master Attendant
dt. 25th October and 2nd December
1880 Nos. 9411 & 10614

Memo by Lt. Sankey dt. 4 Oct.
1880.

Order thereon 4 January 1881 No 2

This matter will stand
over till the Chief Engineer
and Master Attendant have
paid their proposed visit
to

to the West Coast Ports.

(True Extract)

F. Davidson
Chief Secretary

To
Lt Col R.H. Sankey R.E. C.B.
With file
The Master Attendant

P. W. Dept.

Govt. of {188/} Madras.

C. No. 27.

To _____ with file.

Dated _____ } Rc 2077/81
Recd. 5-4- } 188/ , No.

Nos.

Abd
6/1/82

M