

1. Date of receipt 22-7-57
3. Number of Retention

M.R.O. 1-88408-22-11-83

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT.

Cons. 28-7-57

G.O. No.	1438	Press Mis.
Dated	25-7-57	1857.

Not to be folded or roughly handled

No. 68. Read the following letter from J. J. FRANKLIN, Esq., Secretary Marine Board ;
to E. MALTBY, Esq., Acting Chief Secretary to Government, dated 23rd June
1857, No. 2183.

SIR,

I have the honor by desire of the Marine Board to inform you that they have had for some time under consideration a proposal for deepening the bar at Cochin by means of a rake to be worked over the shallowest part of the bank. Before Proceeding to England, Captain Ouchterlony the Civil Engineer of Malabar submitted to the Chief Engineer the report marked

A. in which he suggested the use of a rake for loosening the sand during strong ebbs. The cost he estimated at about (400) four hundred Rupees, the anchor boat being used and another large boat hired for the occasion. The Master

Attendant at Cochin is, however of opinion that no boat could be hired at the rate set down and he moreover points out the inconvenience, trouble and expense that would be entailed by having to fit one with the necessary appliances on each occasion of using the rake which would only be for eight days in each month. To avoid this he suggests that a boat should be built expressly for the purpose, and the Board think that in the end this may be the most economical plan.

No. 2. They therefore submit his estimate* amounting to Rupees (760) seven hundred and sixty for this and the articles required, and to Rupees (136)

one hundred and thirty-six for the monthly Contingent expenses for working during 8 days in each month, and solicit sanction to undertake the work. The anchor boat and crew will of course be employed conjointly with that now recommended, which last, might hereafter be sold if the experiment were found to be a failure.

2. The accompanying letter from the Chief Engineer will inform Government that that
Dated 17th June 1857, No. 1257. officer considers a trial advisable, although he is not sanguine
No. 3. of much permanent success.

Extract from the Proceedings of the Chief Engineer in the Department of Public Works, Fort
Saint George, dated 24th March 1857, No. 11264.

Read the following letter from Captain J. OUCHTERLONY, Civil Engineer; to Colonel C.
E. FABER, Chief Engineer, dated Malabar 12th March 1857, No. 942.

SIR,

Although not charged to submit any opinion in regard to improvements to this port, I have nevertheless considered it my duty to take advantage of all opportunities which have been afforded me of remarking and noting circumstances and data which promised to be of value as throwing light upon the principle of action of the currents, marine and fresh water, upon the entrance, or bar of the important estuary which forms the admirable harbour of Cochin.

2. In the hurry of departure time is not afforded me to enter at any length upon the general question, even if I deemed myself warranted in intruding my views; but as I am anxious to induce Government to grant sanction for an experiment being tried here which promises to be of great value, I shall take the liberty of offering a few remarks.

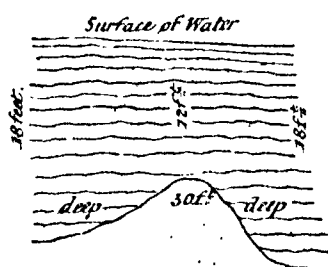
3. The Cochin bar has this peculiar characteristic that during the rainy season, when the volume of land water is at its utmost, the soundings over it decrease: shewing that deposits take place on the bank which constitutes it to an extent much more considerable than when the subsidence of the floods naturally slackens the velocity of the scouring stream. The cause appears to be that the obstruction of the bar, or bank, to the free vent of so large a body of water, compels it to force for itself channels of exit to the North (by Vypeen) and to the South on the Cochin side, abrading each coast to an extent of which I have had surprising ocular demonstration, and inducing the refusal of the natural or direct opening. As the volume of the land floods decreases, these extraneous channels become closed: and the North and South sets uniting near the entrance of the estuary, take a true onward direction over the bar and tend to abrade its substance. Thus it appears that while at the close of the S. W. Monsoon the fair way or passage over the bar, marks 11 and 12 feet, there are in the months of January et seq, fully 14 feet of water to navigate in at low water.

Fort Saint George, Public Works Consultation of 28th July 1857.

4. It seems therefore manifest that if by artificial means a deepening of the bar can be accomplished previous to the coming down of the land floods, the effect of the stream during the rainy season will be to preserve the passage at the depth established, and in all probability to increase it by the powerful scouring force which it would exert.

5. To effect and maintain a permanent deepening of the bar, I am informed it has been proposed to employ a small Steamer to work a dredging machine alternately with the duty of towing vessels trading with Cochin in and out of the harbour. I fear, however, that the great expence which the maintenance of such a vessel with its equipment would entail, and the inconsiderable returns which might be expected from its employment as a tug, will operate to induce Government to demur to an experiment so costly; at all events until some assurance could be given that the outlay would not be made in vain: and it is this consideration which induces me to propose the following undertaking as one involving a very inconsiderable expenditure, very simple in its operation and promising in a brief space of time and at little cost, to establish the fact of the possibility or impossibility of permanently improving this valuable sea port by artificial means and appliances.

6. I propose that two boats or rafts formed by decking two cargo boats be moored on either side of the bank or bar, each being fitted with a simple capstern or windlass, by means of which a heavy harrow or square rake armed with teeth 6 or 8 inches deep and shaped like a small plough share should be dragged backwards and forwards between the rafts, under the belief that it would plough up and loosen the sand on the surface, and cause it to be carried out seaward by the action of the outsetting stream. It has been found by soundings that the section of the bar at the point of passage is very acute, deep water prevailing on either side, and hence a far inferior motive force than that which I am informed the current seawards uniformly



exerts throughout the entire dry season (3 to 5 miles an hour) should suffice to sweep over the sand, if its cohesion were effectually destroyed by the ploughing of the harrow teeth. The period which, as far as I had been able to ascertain is the most favorable for the commencement of the experiment is December, as the sea is then smooth and the season in which squalls and shifts of wind occur passed and gone. I would propose to work the harrow for a period of a month or a month and a half and the most fit person to

superintend the operation and institute all the necessary arrangements, would be, I think, the present able and intelligent Master Attendant of the Port. So much interest would also be taken in the experiment by the commercial community of Cochin that Captain Caster might, I feel confident, count upon the most ready aid and co-operation on their part whenever desirable. There is already one excellent boat (an anchor barge) available, the property of Government, with a Syrang and 12 Lascars servants of the state; a hawser could be supplied from the stores boat or raft could be hired for one Rupee a day, and it would only be necessary to sink money fathoms of chain to save the hawser from injury by friction on the sand.

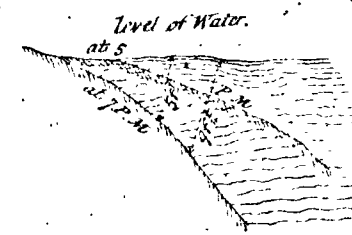
7. The entire cost of the undertaking or experiment would, I calculate, be as follows.

Purchase of 4 fathoms of chain and cost of making harrow, the frame being of Jungle wood weighted with pigs of iron or blocks of stone.	
Cost of constructing 2 Common Capsterns.....	Rs. 120
Do. platform to the 2 hired boats and fittings.....	55
Hire of 2 boats for a raft at per diem. 0 8 0	Rs. 20
Food of 30 Convicts..... 2 0 0	3 x 45
Pay of 2 peons and sundries..... 0 8 0	135
Incidental expences including moorings. &c. &c.....	70
	Rupees... 400

and for this outlay I would most earnestly solicit sanction, and that orders be passed upon the subject in due time to enable the Master Attendant to make all the necessary preliminary arrangements to ensure the experiment being actively commenced by the 1st December next.

Fort Saint George, Public Works Consultation of 28th July 1857.

8. Before quitting the subject I may mention, as an illustration of the remarkable agency exerted by the streams and currents in operation at the mouth of this harbour, that I yesterday witnessed the all but instantaneous removal by abrasion of a ledge or shelf of firm compact sand on which I walked dry foot at 5 P. M. and which at 7 P. M. was covered with water to the depth shewn in the marginal section. From 5 to 9 feet of sand had been swept clear away in the space of 2 hours and a jetty of piles constructed hard by had sunk by the head and appeared on the point of being submerged. This was in the Southern or Cochin side of the harbour and on the opposite point near, Vypean, the ravages of the sea were define to me by an inhabitant to an extent which was most surprising; it being estimated that during the last 6 or 7 years land bearing fully 10,000 Cocoonut trees has been swept away.



Resolved to forward to the Marine Board a copy of the letter No. 942, dated 12th March, from the District Engineer of Malabar, and to request the Board will favor the Chief Engineer with an opinion on Captain Ouchterlony's proposition to work a rake over the Cochin bar.

Resolved also to request Government to allow the Chief Engineer Department Public Work to peruse any reports on the subject of the Cochin Harbour which may have been received within the last two years and especially one understood to have been sent in by Colonel A. Cotton.

(Signed) P. P. L. O'CONNELL, Lieutenant,
Assistant to the Chief Engineer.

(True Copy.) (Signed) J. J. FRANKLIN,
Secretary Marine Board.

Probable estimate for raking the bar at the entrance of Cochin Harbour by Captain Ouchterlony's plan.

	Amount.	Remarks.
Purchase of 4 fathoms of Chain and cost of making a harrow the frame being of Junglewood weighted with pigs of iron or blocks of stone	Rs. 120 0 0	The boat is to be built of Injelly and iron fastened fitted with a Capstern and platform complete.
Cost of constructing 1 common Capstern to be fitted in the anchor Boat	40 0 0	
Cost of a boat as per Builders (Mr. Gueizelar) proposed offer fitted with a Capstern complete	485 0 0	
1 Piece of coir hawsers of 6 inch 35 fathoms each	45 0 0	
Incidental expenses including stern moorings for the boats &c....	70 0 0	
Rupees...	760 0 0	

Contingent expenses supposing the bar to be raked 8 days in the month.

	Rs.	A.	P.	
30 Coolies at 6 annas each per day for 8 days..	90	0	0	The bar could only be raked during the strongest ebb tides, which is calculated will afford opportunities four times each springs.
2 Boats for carrying the rakes forward when brought home by the Capsterns at 2½ Rupees each per day for 8 days....	40	0	0	
1 Tindal at 12 annas per day for 8 days	6	0	0	
Rupees...	136	0	0	

Master Attendant's Office,
Malabar Cochin, 15th
May 1857.

(Signed) JOHN CASTER,

Master Attendant.

(True Copy.) (Signed) J. J. FRANKLIN,
Secretary Marine Board.

Fort Saint George, Public Works Consultation of 28th July 1857.

Letter from Colonel C. E. FABER, Chief Engineer; to J. J. FRANKLIN, Esq., Secretary to the Marine Board, dated 17th June 1857, No. 1257.

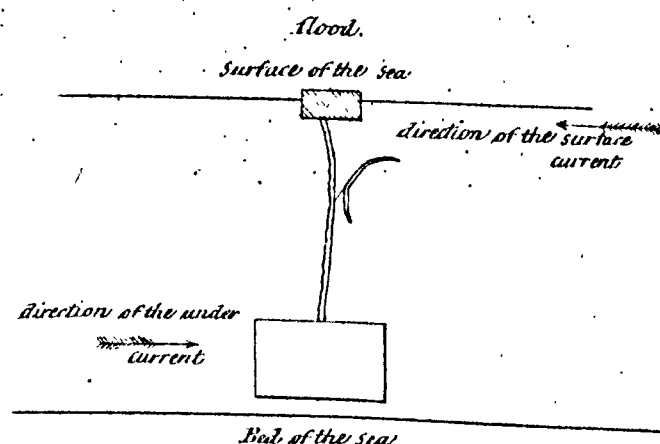
SIR,

I have the honor to acknowledge the receipt of your letter No. 1955, dated 27th May, forwarding a letter from the Master Attendant at Cochin submitting an estimate for raking the bar at that Port, and desiring an expression of my views on the subject, and my opinion of the rake described in your letter No. 1706, dated 2nd May 1857.

2. In reply, I have the honor to state that I look upon the suggestion to make the experiment of raking the Cochin bar as a useful one, I am also of opinion that before the experiment has actually been made we are not in a position to decide what description of rake is the best for the purpose: the one described in the Board's letter No. 1706, as having been used at the mouth of the Danube would in all probability be more easily drawn along the bed of the sea at the bar, inasmuch as it is so constructed as to revolve on an axis; but it is not improbable that this very circumstance may render it less effectual inasmuch as the teeth of the rake will not be drawn along the bar, but will simply enter and immediately pass out of its surface. It would be better, I think to allow the Master Attendant to try different kinds of rakes, some comparatively light and others heavy ones.

3. I do not anticipate any but temporary results unless the work is constantly done. Neither do I expect that much deepening will be caused, still I think the experiment should be tried, and its effects carefully observed and reported.

4. I would further add that it would be interesting and might prove useful if the Master Attendant would ascertain the direction and force of the currents near the bed of the sea about $\frac{1}{4}$ or $\frac{1}{2}$ a mile out to sea, beyond the bar, during ebb tides in the monsoon. I should not be surprised to hear that there is an under current setting in there in a direction opposite to that of the tide, it may be ascertained by sinking a Vessel somewhat heavier than sea water to within a foot or two of the bottom and attaching it by a rope or line to a small float thus.



if there be an under current the float will be seen to move against the tide.

5. The same information should be obtained at the bar itself.

6. Should it be found that there is an under counter current towards the bar it will probably be found to have but little force at the bar itself and be stronger out to sea.

7. At present we have information only respecting the surface currents which may not have much influence upon the bar, I think therefore that the Master Attendant could obtain much useful information by observing the direction and force of the under currents and also ascertaining to what depth the water is fresh during the monsoon and where salt water commences.

(True Copy.)

(Signed) J. J. FRANKLIN,

Secretary Marine Board.

Fort Saint George, Public Works Consultation of 28th July 1857.

No. 69. ORDER THEREON, No. 1438; dated 25th July 1857.

The letter above recorded refers to a proposal for raking the Bar at the mouth of the Cochin Harbour. The proposal had been submitted by Captain Ouchterlony, late Civil Engineer of Malabar, before he proceeded to England, and he estimated the entire cost of the experiment at about 400 Rupees, the anchor boat which is the property of Government being employed, and another large boat hired at one Rupee per diem for the time. But it would appear that the Master Attendant at Cochin could not engage a boat at the rate put down, and that even would one be hired at that rate, it would require to be fitted with the requisite appliances as often as the rake was worked, or during eight days in each month. The adoption of such a course Captain J. Castor believes, would entail much unnecessary trouble and expense, to avoid which he recommends a boat being built for the purpose. In this recommendation the Board concurs as being economical, and they submit an estimate, prepared by the Master Attendant, for Rupees (896) eight hundred and ninety-six, of which Rupees (136) one hundred and thirty-six is the amount of one month's contingent charges for working the machine.

2. The Chief Engineer expresses his opinion in favor of the experiment being tried, though he does not think that it will be productive of much permanent benefit.

3. The Right Honorable the Governor in Council approves of the proposition for attempting to deepen the Bar at the entrance of the Cochin Harbour on Captain Ouchterlony's plan, and accordingly sanctions the entry of the estimate of Rupees 760 for the construction of a boat in the Budget of 1858-59, and will be prepared at the proper time to grant the sanction for the charges of working the rake during 8 days in each month which should be entered in a contingent bill.

(Signed) H. FORBES,
Acting Secretary to Government.

N. 11264.

Extract from the Proceedings of the Chief Engineer
in the Department of Public Works Port M. George
Under date the 21st March 1857

Read the following letter
N. 942
The Chief Engineer D. P. W.
Sir,

Altho' not charged to submit any
opinion in regard to improvements to this Port,
I have nevertheless considered it my duty to
take advantage of all opportunities which
have been afforded me of remarking and
noting circumstances and data which promised
to be of value as throwing light upon the
principles of action of the currents, marine
and fresh water, upon the entrance, or bar
of this important Estuary & forms the admirable
harbour of Cochin.

2 In the hurry of departure time
is not afforded me to enter at any length upon
the general question, even if I deemed myself
warranted in intruding my views, but as I am
anxious to induce Government to grant sanction
for an experiment being tried here which

promises

promises to be of great value, I shall take the liberty of offering a few remarks.

3 The Cochin bar has this peculiar characteristic that during the rainy season, when the volume of land water is at its utmost, the soundings over it decrease: showing that deposits take place on the banks which constitutes it to an extent much more considerable than when the subsidence of the floods naturally shut the velocity of the scouring stream. The cause appears to be that the obstruction of the bar, or bank, to the free vent of so large a body of water, compels it to force for itself channels of exit to the North (by Vypren) and to the South on the Cochin side, abradin such Coet to an extent of which I have had surprising ocular demonstration, and involving the refusal of the natural or direct opening. As the volume of the land floods decreases, these extraneous channels become closed, and the North and South sets uniting near the entrance of the estuary, take a true onward direction over the bar and tend to abrade its substance.

Thus it appears that while at the close of the S.W. Monsoon the fair way, or passage over the bar, marks 11 and 12 feet, there are in the months of January at seq fully 14 feet of

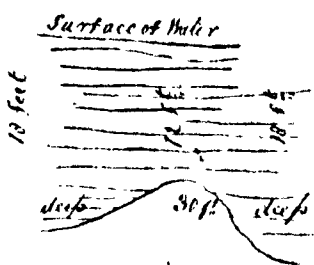
of water to navigate in at low water. 57

4 It seems therefore manifest that if by artificial means a deepening of the bar can be accomplished previous to the coming down of the land floods, the effect of the stream during the rainy season will be to preserve the passage at the depth established, and in all probability to increase it by the powerful scouring force which it would exert.

5 To effect and maintain a permanent deepening of the bar, I am informed it has been proposed to employ a small steamer to work a dredging machine alternately with the duty of towing vessels trading with Cochin in and out of the harbour. I fear, however, that the great expence which the maintenance of such a vessel with its equipment would entail, and the inconsiderable returns which might be expected from its employment as a tug, will operate to induce Government to demur to an experiment so costly; at all events until some assurance could be given that the outlay would not be made in vain: and it is this consideration which induces me to propose the following undertaking as one involving a very inconsiderable expenditure, very simple in its operation and promising in a brief space of time and at little cost, to establish

establish the fact of the possibility or impossibility of permanently improving this valuable sea port by artificial means and appliances.

I propose that two boats or rafts formed by decking two Cargo boats be moved on either side of the bar or bar, each being fitted with a simple capstern or windlass, by means of which a heavy harrow or square rake armed with teeth 6 or 8 inches deep and shaped like a small plough share should be dragged backwards and forwards between the rafts, under the belief that it would plough up and loosen the sand on the surface, and cause it to be carried out seaward by the action of the out-setting stream. It has been found by soundings that the section of the bar at the point of passage is very acute, deep water prevailing on either side, and hence a far inferior motive force than that which I am informed the current seawards — uniformly exerts throughout the entire dry season (3 to 5 miles an hour) — should suffice to sweep over the sand, if its cohesion were effectually destroyed by the ploughing of the harrow teeth. The period which, as far as I had been able to ascertain, is the most favorable for the commencement of the experiment is December, as the sea is then smooth and the season in which squalls and shifts of wind



67
of sand had been swept clear away in the space of 2 hours and a jetty of piles constructed hard by had sunk by the head and appeared on the point of being submerged. This was in the Southern or Cochin side of the harbour and on the opposite point, near Typcan, the ravages of the sea were defined to me by an inhabitant to an extent which was most surprising; it being estimated that during the last 6 or 7 years land bearing fully 10000 Coconut trees has been swept away.

Civil Engineers Office
Malabar Cochin
12th March 1857

I have &c
(Signed) J. Auchterlony
Civil Engineer Malabar

Resolved to forward to the Marine Board a copy of the letter No. 942 dated 12th March from the District Engineer of Malabar, and to request the Board will favor the Chief Engineer with an opinion on Captain Auchterlony's proposition to work a rake over the Cochin bar.

Resolved also to request Government to allow the Chief Engineer D.P.W. to

to peruse any reports on the subject of the Cochin Harbour which may have been received within the last two years and especially one understood to have been sent in by Colonel A. Cotton.

/ True Extract /
/ signed / Connell Lt.
Aptt. to the Chief Engineer.

To
The Marine Board

The Copy /

~~M. H. M. M.~~

Secretary

7
wind occur passed and gone. I would propose to work the harrow for a period of a month or a month and a half and the most fit person to superintend the operation and institute all the necessary arrangements, would be, I think, the present able and intelligent Master Attendant of the Port. So much interest would also be taken in the experiment by the commercial community of Cochin that Captain Custor might, I feel confident, count upon the most ready aid and co-operation on their part whenever desirable. There is already one excellent boat (an anchor barge) available, the property of Government, with a Syren and 12 Lascars servants of the State; a hawser could be supplied from the stores; Convicts could be employed to work the Capsterns under the direction of the Lascars, the 2^d boat or raft could be hired for one Rupee a day, and it would only be necessary to sink money in the construction of the Capsterns, platforms and harrow, and in the purchase of a few fathoms of chain to save the hawser from injury by friction on the sand.

7 The entire cost of the undertaking or experiment would, I calculate, be as follows

follows.

Purchase $\frac{1}{2}$ fathoms of chain and cost of making
harrow, the frame being of Jungle wood weighted
with pigs of iron or blocks of stone. Rs. 120 - " - "
Cost of Constructing 2 Common Capsterns — " — 55 - " - "
Do platform to the 2 hired boats and fittings — " — 20 - " - "
Hire of 2 boats for a raft at per diem " — 8 - " - "
Food of 30 Convicts — " — 2 - " - " } Rs. days
3 x 45 135 - " - "
Pay of 2. freons and sundries — " — 8 - " - "
Incidental expences including moorings $\frac{1}{2}$ Rs. — 70 - " - "
Rupces 400 - " - "

and for this outlay I would most earnestly solicit
sanction, and that orders be passed upon the
subject in due time to enable the Master
Attendant to make all the necessary preliminary
arrangements to ensure the experiment being
actively commenced by the 1st December next.

8 Before quitting the subject I may
mention, as an illustration of the remarkable
agency exerted by the streams and currents
in operation at the mouth of this harbor, that
I yesterday witnessed the all but instantaneous
removal by abrasion, of a ledge or shelf of
firm compact sand on which I walked
dry foot at 5 P.M., and which at 7 P.M.
was covered with water to the depth shown
in the marginal section. From 5 to 9 feet
of



Central Office of P.M.
Fort St. George
17th June 1857

N^o 1257

From

The Chief Engineer

To

The Secretary to the

Marine Board

Sir

I have the honor to acknowledge

the receipt of your letter N^o 1955 dated 27th May forwarding a letter from the Master Attendant at Cochin submitting an estimate for raising the bar at that Port, and desiring an expression of my views on the subject, and my opinion of the cable described in your letter N^o 1706 dated 2^d May 1857.

2 In reply, I have the honor to state that I look upon the suggestion to make the experiment of raising the Cochin bar as a useful one, I am also of opinion that before the experiment has actually been made we are not in a position to decide what description of cable is the best for the purpose: the one described in the Board's letter N^o 1706 as having been used at the mouth of the Danube would in all probability be more easily drawn along the bed of the sea at the bar

257

In a letter from the Secretary
Marine Board dated 27th
June 1857 N^o 2185

From
The Chief Engineer
To
The Secretary Marine Board

At
P.M. 1336/57

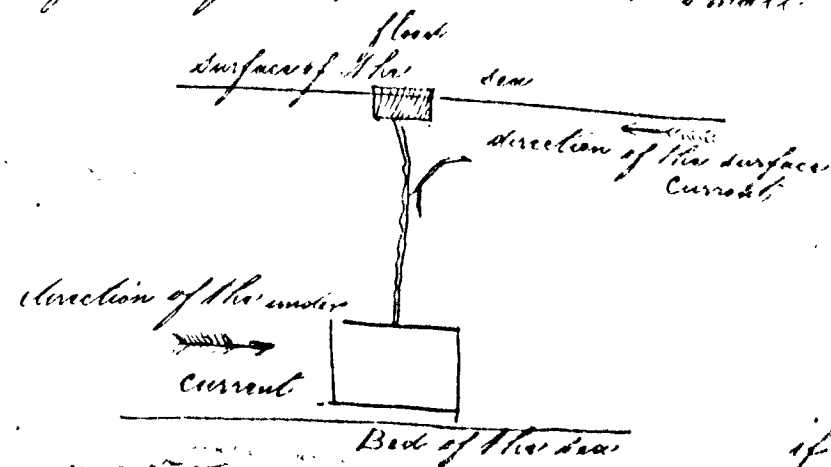
Forwarded copy of a letter
from the District Engineer of
Malabar and requests the
Board would favor the Chief
Engineer with an opinion on
Capt. Cuckelberg's proposition
to work a cable on the Cochin
bar.

N^o 132. D.
At N^o 231.

bar, inasmuch as it is so constructed as to revolve on an axis; but it is not improbable that this very circumstance may render it less effectual in as much as the bulk of the rakes will not be drawn along the bar, but will simply enter and immediately pop out of its surface. It would be better, I think, to allow the Master Attendant to try different kinds of rakes, some comparatively light and others heavy ones.

3 I do not anticipate any but temporary results unless the work is constantly done. Neither do I expect that much deepening will be caused, still I think the experiment should be tried, and its effects carefully observed and reported.

4 I would further add that it would be interesting and might prove useful if the Master Attendant would ascertain the direction and force of the currents near the foot of the bar about $\frac{1}{4}$ or $\frac{1}{2}$ a mile out to sea, beyond the bar, during ebb tides in the monsoon. I should not be surprised to hear that there is an under current setting in there in a direction opposite to that of the tide, it may be ascertained by sinking a float somewhat heavier than sea water to within a foot or two of the bottom and attaching it by a rope or line to a small float thus.



if there be an under current the float will be seen to move against the tide

5 The same information should be obtained at the bar itself

6 Should it be found that there is an under counter current towards the bar it will probably be found to have but little force at the bar itself and be stronger out to sea.

7 At present we have information only respecting the surface currents which may not have much influence upon the bar, I think therefore that the Master Attendant could obtain much useful information by observing the direction and force of the under currents and also ascertaining to what depth the water is fresh during the monsoon and when salt water commences

I have, &c.

Fort Saint George }
17th. June 1857 }

(Signed) R. C. Taber Esq.
Chief Engineer.

(True Copy)

Wm. A. ...
Secretary.

273

Letter from the
Secretary Marine Board
dated 23^d June 1854
No. 2185

From
The Chief Engineer
of
The Marine Board

187306157

Recommend that the
Master Attendant at Leith
should be allowed to try dipping
Punch of Marked time compasses
twice, light and others heavy,
once for making the last all right
port. To ascertain for the Master
Attendant the direction and
force of the current near the bar
of the River about 1/4 or 1/2 a mile
out to seaward and the last
during all tides in the summer

W. H. D.
1854 No. 231.

Probable estimate for making the Boat at the entrance of Grochin Harbour by Captain Buchterloing's plan

Amount	Remarks
120	The boat is to be built of any jelly and iron fastened filled with a capstone and platform complete.
110	
185	
115	
70	
760	Supplies

Purchase of 40 fathoms of chain and cost of making a hurren the frame being of shinglewood weighted with pigs of iron or blocks of stone.
 Cost of Constructing 1 Common capstone to be filled in the anchor boat
 Cost of a boat as per Builders bill. Quizzel's proposed after filled with a Capstone complete
 Price of six hurrens of 6 inch 35 fathoms each
 Incidental expenses including stern merrings for the boats

Contingent expenses during the time to be made 8 days in the month

30	Boats at 6 annas each for day for 8 days	90	duy the strongest of timber which is calculated with
2	Boats for carrying the water for man and when brought home by the capstone at 2 1/2 Annas each for day for 8 days	110	of the opportunity for time even of things.
1	Food at 12 annas per day for 8 days	6	
		136	

These boats only be made during the strongest of timber which is calculated with of the opportunity for time even of things.

Master William's Office
 Grochin 15th May 1857

Admiral Robert Buchter
 Master William's

1 Secretary

Mr. Houston

Secretary William's Board

2/2

Admiral

18/10/36/57

18/10/36/57
No 231

18/10/36/57
Marine Department
No 231
From the Secretary Marine Board
Dated 23rd June 1857
For Orders

This experiment may
be considered - I think. No.
I doubt. Whether there will be
sufficient power to effect
much good -

Before incurring such expense I think
it well to find out whether the plan will
succeed

How is the work to be worked
What agency do they mean
to employ - hand labor
is sufficient & steam is
not provided for.

12/2/85

From
J. J. Franklin Esq.
Secretary Marine Board
To
C. Maltby Esq.
Acting Chief Secretary to Government
Fort Saint George

Sir,
I have the honor by desire of
the Marine Board to inform you that
they have had for some time under consider-
ation a proposal for deepening the bar at
Poichin by means of a rake to be worked
over the shallowest part of the bank. Before
proceeding to England, Captain Buchterlong
the Civil Engineer of Malabar submitted
to the Chief Engineer the report marked
A, in which he suggested the use of a
rake for loosening the sands during strong
ebb. The cost he estimated at about
£1,000 four hundred Rupees, the anchor boat
being used and another large boat hired
for the occasion. The Master Attendant
at Poichin is, however, of opinion that no
boat could be hired at the rate set down,
and

Dated 12th March
1857

and he moreover points out the inconvenience, trouble and expense that would be entailed by having to fit one with the necessary appliances on each occasion of using the rake which would only be for eight days in each month.

To avoid this he suggests that a boat should be built expressly for the purpose, and the Board think that in the end this may be the most economical plan. They therefore submit his estimate amounting to Rupees 760/- seven hundred and sixty for this and the articles required, and to Rupees 136/- one hundred and thirty six for the monthly contingent expenses for working during 8 days in each month, and solicit sanction to undertake the work. The anchor boat and crew will of course be employed conjointly with that now recommended, which last might hereafter be sold if the experiment proved to be a failure.

2 The accompanying letter from the Chief Engineer will inform Government that that officer considers a trial advisable, although
he

N. 2.

dated 17th June
1857 No. 1257.
N. 3

16 +
he is not sanguine of much permanent success.

I have the honor to be,
Sir,

Admiral...
Naval Board Office
23rd June 1857

Your most obedient servant

Wm. H. R. R.

Secretary

P.W.D.

N^o 1438.

Extract from the Minutes of Consultation
Under date the 25th July 1857

I read the follow-
ing letter from the
Secretary Marine
Board.

I received 23rd June 57
(No 2185)

The letter above
recorded refers to a
proposal for raising
the bar at the mouth
of the Cochin Harbour.
The proposal had been
submitted by Captain
Auchterlony, late
Civil Engineer of
Malabar, before he
proceeded to England,
and

At
My

Public Works
Department
1857
to Civil: 28th July 1857
No 1438

From
the Secretary Marine Board
To
the Acting Chief Secretary
to Government
Fort St George

Dated 23rd June 1857
No 24

No 231. No 2185

At the Marine Board
Meeting on 25th July 1857
A 3

Amounting to Rs 9600 from
the Master Attendant of Cochin
for building a break wall for
the purpose of deepening the bar
at Cochin by means of a rake
and Rs 136 for the monthly
contingent expenses for working
during 5 days in each month and
to defray the expenses of undertaking
the work.

Enclosed herewith are from
the Chief Engineer of P & M and the
other from the Civil Engineer of
Malabar on this subject.

1229
1857
July 223

and he estimated the
entire cost of the ex-
periment at about
1000 Rs, the anchor-
boat which is the
property of Govt being
employed, and another
large boat hired at
one Rupee per diem
for the time. But it
would appear that
the Master attend-
ant at Cochin could
not engage a boat
at the rate put down,
and that even should
one be hired at this
rate, it would re-
quire to be fitted
with the requisite ap-
pliances as often as
the party ^{worked} ~~was~~ or during
eight days in each month
~~at least~~. The adoption

168
of such a course Cap-
tain J. Cantor believes,
would entail much
unnecessary trouble
and expense, to avoid
which he recommends
a boat being built for
the purpose. In this
recommendation the
Board concurs as being
economical, and they
submit an estimate,
prepared by the Master
Attendant, for Rs 896/
Eight hundred and
ninety six, of which
Rs 136/ one hundred
and thirty six is the
amount of one month's
contingent charges
for working the
machine.

The Chief Engineer
expresses his opinion
in

in favor of the experi- From Chief Engr 4/17 June
ment being tried, 1857. p 1257.

though he does not
think that it will
be productive of much
permanent benefit.

The Right Hon-
orable the Governor
in Council approves
of the proposition for
attempting to deepen the
bar at the entrance of
the Cochin Harbour on Capt
Ouchterlony's plan, and
accordingly sanctions the
entry of the estimate of
Rupees 760 for the con-
struction of a boat in the
budget of 1858/9,
and will be prepared at the
proper ^{time} to grant the sanc-
tion for the charges of
working the same during
8 days in each month
which

which should be entered
in a Contingent Bill.

W. S.

3 Copies to the Secy of the Marine Dept
of the Marine Dept
of the Chief Engineer.

Public Works 1837 Sept 15
No to Cons: 28th July

No 1438

Contract Mine: of Cons:
Dated 25th July/37

No 8169

Applying to the Judge:
order for allowing to
deposit the coal at the
entrance of the Lake -
Kashore secondly
paying the entry of the
Estimate of 1836 for
the construction of a Boat
in the August 1838-39.

c 18 July 1823