Sectt. I (1)-1—10,008—7-10-70.

(1) Number of pages 98

(2) Date of repair 23.8.71

(3) Initials of the Referencer

TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

Marine – DEPARTMENT

G.O. No. 1-4
~~B.P. No.~~

Press
Mis.

Dated 28-3-1854 197 .

Not to be folded or roughly handled

No. 10.

From
Lieutt. Colonel A. T. Cotton
Chief Engineer

To
The Chief Secretary to Government
Fort St. George

Sir

1 I have the honor to forward an Estimate fo prosecuting the present works at Paumben through the ensuing season so as to deepen it to 13 Feet at High wat ordinary tides which I beg to recommend for the fol lowing reasons.

1st The quantity of Material to be removed to complete the Pass to 13 Feet at ordinary high tides i comparatively small, as it is only in a few spots tha it is not already of that depth.

2d Such a depth will be a very great benefit, no only enabling much larger Vessels to be regularly en ployed in the Coasting trade, but also providing for th passage of Vessels of 300 Tons when in ballast.

2 The quantity of Material to be removed is under 10,000 Cub. Yards, and if a better blasting and weighing apparatus is used, so as to supply full empl ment to the powerful Dredge (and also if Powder is use more freely), the work will certainly be executed mor cheaply than the average of the work hitherto.

I accordingly append a second Estimate for deepening the Pass to 13 Feet at Ordinary High Wate amounting to Rupees 30,250, including Rafts and Weighing Boats. 10,000 Rupees of this should be advan at once to enable the Officer in charge to build these Boa immediately that they may be ready when the seas for work arrives.

I

I may mention here that the Steam Dredge required caulking and should be taken as soon as paſsible to Coringa for that purpose, that it may be ready for work again at the proper time. Even if it did not require caulking it should be sent to Coringa for a time to cut thro' the Ba there, which it would do in a very short time.

It has been a great oversight that I did not recommend this before But under the constant expectation of visiting Paumben myself, I had not looked into the matters connected with it so particularly as I otherwise should have done, and was consequently not aware that this most invaluable apparatus was available for any other work for 6 Months in the year. It might have been sent to Coringa to perform the important service of opening that Port to all Veſsels for repairs years ago without the least hindrance to the Paumben works. This seems to me another proof of the mistaken system of having the Publick Works as at present under six different Departments.

I beg to transmit also the first part of my report of my late tour to the Southward on the subject of this Paſs, a further paper recommending the complete opening of the Paſs to 21 Feet will be forwarded in a few days.

Chief Engineer's office
Fort St George
16th January 1854

I have the honor to be
Sir
Your most obedient Serv

Lieut. Colo
Chief Engin.

M. C. 17 Septr/52 – No. 10 & 11
" " 7 Feby/53 " 9 & 10
" " 2 Septr " 12 & 13.
" " 18 Octr " No. 295
Letter to England 6 May No. 4 of 1854
Replied to 13th June No. 9 of 1853
148 – 11/1

Copy sent to the Marine Bd 25th March 1854 No. 56.
with Orig. Encls

Subd to Coun 28th March
Marine 1854 Depart.
From
Lieutt Colt A. T. Cotton
Chief Engineer
to
The Chief Secretary
to Government

Dated 16th
Received 17th January 1854

No. 10.
Enclosure 4 -

S. D. No 56 & 25th No. 57

No. 10.

Forwards an Estimate for prosecuting the works at Paumben thro' the ensuing season so as to deepen it to 13 feet at ordinary high tides with the first part of the Report of the tour to the Southward on the subject of the pass.

8

Report of a tour of Inspection of the Chief Engineer to Paumbaum, and other Works. –

Para 1. October 23rd Embarked on a Dhoney for Paumbaum, but owing to very light Winds for the first 4 days I did not arrive there till the morning of the 28th I was in hopes that the ordinary N. E. Wind would have taken me to Paumbaum in two days, but there was no monsoon till I approached the place and then it set in heavily, with excessive and continuous rains and several gales for many days. I had requested Captn Horsley to meet me, but in consequence of the weather he was detained on the road, and did not reach Paumbaum till the 4th Ultimo The rains were so heavy that the Vigay came down in great force, and a very large volume of Water reached the Sea by it, which does not occur more than once in fifteen or twenty years. –

2. During my stay I examined the locality as far as the weather permitted, enquired into the whole history of the operations from the time Captain Gib took charge in 1844, tried the

Steam Dredge, and after Captain Horsley arrived discussed with both those Officers the state and prospects of the undertaking.—

3. I am happy to state that the work so far as executed is highly satisfactory, inasmuch as that Vessels of 10½ feet, pass thro' without the slightest difficulty at high water of ordinary tides.— Numbers of Vessels passed thro' while I was there, and about 30 were at Anchor to the southward of the Pass, (most of them square rigged Vessels,) where there is a beautiful Anchorage perfectly sheltered by the Islands.—

4. I append to this an Abstract of the Operations from the Commencement to the present time, showing as nearly as can be calculated the actual total expenditure &ca. It will be only necessary here to state that the total sum including the estimated value of Convict Labour, and every item, is under 3½ Lacs, and that the trade has increased from 17,000 Tons a year, in 1822 when I was first sent to inspect the Spot, to about 160,000 in the Current year; last year having been nearly 150,000, and there having been a large increase in the first ten months of this.—

5. For this sum a very narrow and excessively crooked pass with about

5 feet

5 feet through it at high water, has been made almost straight, 90 feet wide, and 10½ feet deep, and further requiring only the removal of a small quantity of rock to complete it to 13 feet at high water of ordinary tides.—

6. The freight has been lowered on an average about 6 Rupees a ton between Negapatam and Columbo, showing a saving of at least 5½ Lacs a year on the whole trade passing thro'. But the most important effect of the works has been the introduction, entirely by the Natives, of Square rigged Decked Vessels instead of Dhonies, which is entirely owing to the deepening of the Pass.— This I consider a point of the greatest importance, as showing in the clearest manner, that if obstacles are removed by the Government, the Natives are not only prepared to take advantage of them but also to adopt such improvements as the new state of things makes an opening for.— The great additional saving of life in the new Vessels which are capable of working to windward, is particularly worthy of observation.—

supposing that the actual amount of goods carried by the 160000 Tons of Shipping is 90,000 Tons. for the greater part return in ballast.—

7. The principal remarks I have to make on the progress of the works hitherto are these.

1st There were at first, and perhaps it was to be expected, great doubts about the succeſs of operations, and (which is leſs easily accounted for), an extraordinary misapprehension of the importance of any improvement, and consequently there was great timidity in the mode of setting about the work. It was at first a question whether the sum of 5,000 Rupees could be justifiably expended on it, and the matter was referred in 1837 for the expreſs orders of the Honorable Court. In 1829 when I was employed under Colonel Sim in examining the Paſs, it was a constant subject of question whether if deepened the Paſs would not fill up again. Now that we see the results of the operations, it seems strange that such a question should ever arise, (as there is a Current of 7 or 8 miles an hour thro' the shallow part of the Paſs in stormy weather, and even in the cut thro' the sand bank at the Southern end of the Paſs, there is a stronger Current than elsewhere, so that) it seems difficult to conceive that more should be brought into the Paſs than would be carried out, unleſs the cut had been made in a direction forming a considerable angle with the line of the Current. — And with respect to the importance of the work it is evident now, that while it was a question whether 5,000 Rupees should be spent upon it, it was in reality a matter of 5 Lacs a year, the Interest of 125 Lacs as shown by the saving in freight. — But no doubt the mistake arose from taking

taking too confined a view of the matter viz.t by looking at the actual traffick at that time instead of to the circumstances of the countries, (and the prices of staple Articles of Commerce in them) between which the trade must go thro' the [illegible]. — The comparatively small extent of the traffick was of course, as in all other cases, simply the result of the want of a cheap means of transit. —

2nd It was not till the works had been in progreſs 11 years, that a Steam Dredge was provided and when set to work, the operation of blasting was carried on upon so small a scale as not provide a fifth part of the material that the Dredge was capable of removing.

3rd A much larger Annual Expenditure in money and a larger Establishment would have not only hastened the work, but also have been much more economical. — The Dredge which cost ½ Lac of Rupees, has been in a great measure wasted from the other operations not being in proportion.

4th I am of opinion that a much freer use of Powder would have been advisable. The common blasts have been 2 lb, in holes 1 inch Diameter and 2½ to 3 feet deep whereas from my former experiments in 1829, as well as from one made on this occasion, I feel confident that blasts of from 20 to 50 lbs. or 100 lbs.

would have been far more economical, saving an enormous quantity of Diving and Boring while the cost of the Powder is only a small part of the total expense.

5th It has been a great draw-back, that there have been no European Divers at the works— The Native Divers would have been five times as efficient had they had the check of a European ready at all times to go down and ascertain what they were doing— One or two of the Sappers who were employed on the Wreck of the Royal George, would be a very important aid, and there are one or two of them now in this Presidency.

6th It seems a great mistake to trust an unexampled work of this sort to the superintendence of a single Officer, so that if he were obliged to leave it, there would be no alternative but to send in his place one who was entirely ignorant both of the locality and of the work.—

7th I think the works have been very well conducted by Captain Gib, I found every thing in good order, and the work very well advanced considering the circumstances I have mentioned. I think he should have been placed far more at liberty both as respects expenditure, apparatus and mode of operation for want of which he has been exceedingly cramped causing both loss of time

time

time and waste of money.—

8th The Steam Dredge Machinery is in good order, but the Vessel requires caulking, and this should be done before next working season.—

9th Though the Pass is now only 10½ feet deep at high water, yet it is only for a very short distance that it is so shallow, so that the quantity of material to be removed, in order to deepen it to 13 feet, is very moderate, certainly under 10,000 Cubic yards, but a considerable quantity of this is Rock and Coral. The whole would I think be easily removed next season at a cost of 30,250 Rupees besides the Prisoners and Establishment now allowed.—

10th Excepting the Steam Dredge, the Apparatus is quite inadequate. There is not a single weighing Boat, to weigh heavy stones with, so that for that purpose it is necessary to use the Crab in the Dredge, and there are no suitable boats for receiving the stones and conveying them to the place where they are to be discharged, so that there is a great and unnecessary expense in loading and discharging, with the boats of the place, which are not made for such a purpose.—

11th The Current was too strong for me to see the Dredge worked in the rocky part of the Pass, but in the sand would have been far more economical, saving an enormous quantity of Diving and Boring while the cost of the Powder is only a small part of the total Expence.

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11th The Current was too strong for me to see the Dredge worked in the rocky part of the Pass, but in the Sand it worked admirably, running at the rate of about 35 Cubic yard per hour, or more than 300 Cubic yards in the day of 9 hours. I think this costly apparatus ought to be made of as much use as possible, and therefore that there should be half an additional Crew to allow of its being worked from day light to dark, by which means it could remove nearly 500 Cubic yards a day. — In the rocky parts the extent of its work depends of course entirely upon the extent of the operations of blasting and removing the large stones. Hitherto it has only removed about 30 Cubic yards a day, when it might have raised when there 150 or 200 Cub yards, but as I have said the other operations [illegible] the disproportion. I have no means of judging what a Dredge of this power ought to raise, and therefore I cannot say that the work done by it is fully equal to what is done in other places, and I think it desirable that if possible one of the Engineer Officers now in England, should be directed to make himself thoroughly acquainted with the working of such a machine there, with a view to his making any possible improvements in the working of this, on his return to India. —

8. Before proceeding to the consideration of the ultimate operation

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in this Pass, I beg to recommend that the present passage should be deepened to 13 feet. What is required for this purpose is,

1st That 15,000 Rupees should immediately be appropriated to the work to enable the officer to furnish himself with the apparatus mentioned in the Estimate that accompanies this. He will not probably be able to work to any purpose in the rocky part of the Pass for two or three months in which time, the boats &ca could be prepared —

2nd The Dredge should be taken to Coringa to be examined and caulked. And while there it would be used to cut thro' the bar at the mouth of the Coringa branch of the Godavery, which has been sanctioned. I had not made myself sufficiently acquainted with the operations at Paumbaum to be aware that this most useful Apparatus was idle for so many months together there, or it might have been taken to Coringa at the end of the last working season. There is however now time enough I believe for it to cut thro' the bar there before it will be wanted at Paumbaum. At 3 or 400 Cubic yards a day, it will take a very short time to complete that work. This will be a most important service, and it is a great pity that it was not thought of three or four years ago. —

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An additional Officer should if possible be placed under Captain Gib, both to be ready in case of that Officer's removal and also to be prepared for the more extensive operations now proposed—

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4th A European Sapper, experienced in Diving should be attached to the works, with a special allowance for such extra ordinary duty.— It is probable that it would not be necessary for him constantly to dive, but the presence of such a man who could be sent down at any moment, would make all the difference in the management of the Native Divers.—

9. 6 In concluding this part of my Report on this Pass, I would beg earnestly [illegible] to point [illegible] that there is now a double duty on Square Rigged Vessels, as compared with Dhonies. When it is considered how small a difference of tolls is sufficient to act as a serious check to any system of operation, it will be allowed that this excess of charge may be a material hindrance to the progress of the introduction of the superior Class of Vessels. Even on the score of humanity alone every effort should be made to hasten the sweeping of the Dhoney from these Coasts. Last year a Gentleman embarking in a Dhoney from Ceylon was blown off the Coast, and it was so many days before they could regain it, that he died in consequence of his suffering, from want of water, and how many crews annually perish in this way we cannot tell, who

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ould be reversed [illegible] that in future
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Vessels ~~[illegible]~~ ¾ Anna per ton and for
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Secondly. The place and trade has now become of that importance that I think it essential that the management of the Port should be placed on quite another footing. that is, that a Master Attendant should be appointed on a salary that would secure an able and experienced Seaman

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9. In concluding this part of my report on this Pass, I would beg earnestly represent to [illegible] that there is now a double duty on Square Rigged Vessels, as compared with Dhonies. When it is considered how small a difference of tolls is sufficient to act as a serious check to any system of operation, it will be allowed that this excess of charge may be a material hindrance to the progress of the introduction of the superior Class of Vessels. Even on the score of humanity alone every effort should be made to hasten the sweeping of the Dhoney from these Coasts. Last year a Gentleman embarking in a Dhoney from Ceylon was blown off the Coast, and it was so many days before they could regain it, that he died in consequence of his suffering, from want of water; and how many Crews annually perish in this way we cannot tell, who would

would have been saved in Vessels that were capable of working to Windward. I have not the least doubt that this extra toll greatly retards the complete substitution of the improved Vessels for the old ones; and I would therefore confidently recommend that the amount of tolls should be reversed, viz. that in future the Charge should be for Square rigged Vessels ~~[illegible]~~ $\frac{3}{4}$ Anna per ton and for Dhonies $\frac{1}{2}$ Anna. If it should seem hard to charge this heavier toll for the poorer Class of Vessels, I should say that first, the toll after all is not a heavy Charge, being for instance only equal to about 2 per Cent upon the Freight from Negapatam to Columbo, and Secondly, that even if it were much heavier, it would be still most advisable to subject the Dhoney owners to it, rather than as at present actually put a premium on those dangerous and expensive Vessels, for they are of course more expensive than Vessels that can make two or three times as many trips in the same time.—

Secondly. The place and trade has now become of that importance that I think it essential that the management of the Port should be put on quite another footing, that is, that a Master Attendant should be appointed on a Salary that would secure an able and experienced Seaman

Manar to hold the appointment. He should have under him not only the Pass Pilots, but also those for the Coast to the Southward as far as Tuticorin, who at present do just as they please, causing a serious hindrance to the trade on that line. —

10. I should mention that a great point will be gained by the deepening of the Pass to 13 feet, as large Vessels of 300 Tons can then pass thro' in ballast, besides that it will allow of much larger Vessels being employed in the Coasting trade than are at present, by which a further considerable reduction of freight may be effected. [illegible] [illegible] more especially now essential this line of traffic has become [illegible], inasmuch as the export of rice from there to Ceylon is now not less than 25 Lacs of Rupees a year.—

Chief Engineer's Office
Fort Saint George
16th January 1854.

Lieut Colo
Chief Engineer

Letter to Eng[illegible] 6
May No 4 of 1854

Pr 1854
In No 10.
Pr 1854
In No 99.

12

General Report on the operations for clearing the Paumben Channel from 1822 to 1851.

The Paumben Channel passes between the Continent of India and the Island of Ceylon in about latitude 9° 15' North; it is not far from Point Ramen or Tanmitory on the Continent, but its distance from Ceylon is about 55 Miles the intermediate space being filled up by the small Islands of Ramisseram and Manaar, the latter of which is divided from the former by a sand bank called Adams Bridge and from Ceylon by a narrow Channel called the Manaar Channel,

The total distance between the Main land and Ceylon is divided as follows.

From Point Ramen in the Ramnad province to Paumben at the West end of the Island of Ramisseram	1¼ Miles
Across the Island of Ramisseram	13 Do
Adams Bridge	25 Do
Across the Island of Manaar	16½ Do
From the Island of Manaar to Ceylon	¼ Do
Total	56 Miles

5

Immediately North of the Channel and between it and the Bay of Bengal is Palk Strait or the Bay of Tondy, which first widens out to 90 Miles at a distance of about 5 Miles from Paumben, and then continues of that width for about 40 Miles when it is first narrowed by the projection of the Island of Jaffna [illegible] its eastern shore which reduces its width to 55 Miles and then by the delta of Tanjore which reduces its width to 35 Miles at Point Calymere and at the

same

sametime changes its direction from about N: N: E: to E.

From its western shore along the Coast of Rannad and Tanjore, it continues shallow for a considerable distance the best idea of this will perhaps be given by mentioning that it becomes 4 fathoms in depth at a distance from the shore of from $\frac{1}{2}$ to $7\frac{1}{2}$ Miles.

Its depth from the Shore

The distance being $\frac{1}{2}$ a Mile immediately North of the Paumben reef and gradually increasing until it becomes $7\frac{1}{2}$ Miles opposite to Holepatnam immediately north of which is a shoal of hard sand running out from the main land for a distance of 16 Miles immediately North of this Shoal the distance again diminishes until it becomes 5 Miles opposite Point Calymere.

Shoal of hard sand 16 Miles from main land.

Within 15 Miles of Point Calymere in the direction of Point Pedro there are several sand banks which shift somewhat and are considered to be somewhat on the [illegible]

Shifting sand Banks in the direction

With the exception of the permanent & shifting shoals above mentioned the Strait has clear bottom with a least depth in the line of navigation.

On the south of the Paumben Channel is the Gulf of Manaar which widens out rapidly from 56 Miles near Paumben to 120 Miles opposite Tuticorin & 160 Miles opposite Cape Comorin.

Gulf of Manaar.

Opposite and near to the western shore of the Gulf of Manaar there are several Islands and rocky shoals running parallel to the Coast; the Islands are intermediate between Paumben and Tuticorin and there is a depth between them & Manaar having in one place a depth of only 2 fathoms but the rocks continue to bound the Coast as far as Cape Comorin.

Island and rocky Shoals.

The Gulf is 4 fathoms in depth at a distance of from $\frac{1}{8}$ to 7 Miles. In the southern portion between Manaar and

Depth of the Gulf.

and Cape Comorin the shore is rocky and goes down into 4 fathoms water from between $\frac{1}{8}$th to $\frac{3}{4}$th of a Mile.

Along the eastern Coast of the Gulf of Manaar the 4 fathom line is at distance from the coast varying from $\frac{1}{2}$ to 9 Miles.

Depth along South of Adams Bridge.

Along the south of Adam's Bridge the 4 fathom line is at a distance of from $\frac{1}{4}$ to $1\frac{1}{4}$ Miles from the coast but immediately afterwards the distance increases until about 6 Miles North of the Aripo River, it becomes 9 Miles after this the distance again diminishes, opposite Calpentya it is only $1\frac{3}{4}$ Mile and within the next 15 Miles the distance diminishes to $\frac{1}{4}$ of a Mile and it keeps within this distance as far as Columbo.

North of Do.

Along the North of Adam's Bridge the 4 fathom line is about 3 Miles from the Coast.

Extract of Colonel Sim's Report on the sand bank called Adam's Bridge

The following Extract from a report by Colonel Sim while Chief Engineer dated 20th November 18[illegible] [illegible] the sand bank called Adam's Bridge. Page 154 of Corps Papers Volume 2

"The sand bank, called Adam's Bridge is a very extraordinary formation. It is only about a quarter of a Mile in breadth and consists entirely of sand, partly above, and partly below water, collected apparently by the surf and currents, and unsupported, as far as could be ascertained by rock. The east end of it was pierced by the Ceylon Officers to the depth of 30 feet and nothing found but sand, On each side of the bank at the distance of $2\frac{1}{2}$ or 3 Miles, the sea is 6 fathoms deep and quite free from obstructions of every kind."

There are three principal openings or Channels across the bank. One near the Island of Manaar called the Tal Manaar passage, the second 8 Miles farther to the West, and the third about 11 Miles from the Island of Ramisseram, termed the Tannycoody passage. This last was examined and surveyed on the present Occasion. It is narrow in the centre, & 30 feet deep, with broad curved bars opposite to its two ends, on

which

sometime changes its direction from about N: N: E: to E.

Its depth from the Shore

From its western shore along the Coast of Ramnad and Tanjore, it continues shallow for a considerable distance the best idea of this will perhaps be given by mentioning that it becomes 4 fathoms in depth at a distance from the Shore of from $\frac{1}{2}$ to $7\frac{1}{2}$ Miles.

Shoal of hard sand 16 Miles from main land.

The distance being $\frac{1}{2}$ a Mile immediately North of the Paumben reef and gradually increasing until it becomes $7\frac{1}{2}$ Miles opposite to Kotepatnam immediately North of which is a Shoal of hard sand running out from the main land for a distance of 16 Miles immediately North of this Shoal the distance again diminishes until it becomes 5 Miles opposite Point Calymere.

Shifting sand Banks in the direction

Within 15 Miles of Point Calymere in the direction of Point Pedro there are several sand banks which shift somewhat and are considered to be somewhat on the increase.

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From its western shore along the Coast of Rammad and Tanjore, it continues shallow for a considerable distance the best idea of this will perhaps be given by mentioning that it becomes 4 fathoms in depth at a distance from the Shore of from ½ to 7½ Miles.

Its depth from the Shore

The distance being ½ a Mile immediately North of the Paumben reef and gradually increasing until it becomes 7½ Miles opposite to Kolepatnam immediately North of which is a Shoal of hard sand running out from the main land for a distance of 16 Miles immediately North of this Shoal the distance again diminishes until it becomes 5 Miles opposite Point Calymere.

Shoal of hard sand 16 Miles from main land.

Within 15 Miles of Point Calymere in the direction of Point Pedro there are several sand banks which shift somewhat and are considered to be somewhat on the move [illegible]

Shifting Sand Banks in the direction

"With the exception of the permanent & Shifting Shoals above mentioned the Strait has clear bottom with a least depth in the line of navigation.

On the south of the Paumben Channel is the Gulf of Manaar which widens out rapidly from 56 Miles near Paumben to 120 Miles opposite Tuticorin & 160 Miles opposite Cape Comorin.

Gulf of Manaar.

Opposite and near to the western shore of the Gulf of Manaar there are several Islands and rocky Shoals running parallel to the Coast, the Islands are intermediate between Paumben and Tuticorin and there is a depth between them & Manaar having in one place a depth of only 2 fathoms but the rocks continue to bound the Coast as far as Cape Comorin.

Island and rocky Shoals.

The Gulf is 4 fathoms in depth at a distance of from 1/8 to 7 Miles. In the southern portion between Manaar and Cape Comorin the Shore is rocky and goes down into 4 fathoms water from between 1/8th to 3/4th of a Mile.

Depth of the Gulf

Along the eastern Coast of the Gulf of Manaar the 4 fathom line is at distance from the coast varying from ½ to 9 Miles.

Along the south of Adam's Bridge the 4 fathom line is at a distance of from ¼ to 1¼ Miles from the Coast but immediately afterwards the distance increases until about 6 Miles North of the Aripo River, it becomes 9 Miles after this the distance again diminishes, opposite Calpentya it is only 1¾ Mile and within the next 15 Miles the distance diminishes to ¼ of a Mile and it keeps within this distance as far as Columbo.

Depth along South of Adams Bridge.

Along the North of Adam's Bridge the 4 fathom line is about 3 Miles from the Coast.

North of D.

The following Extract from a report by Colonel Sims while Chief Engineer dated 20th November 18[illegible] [illegible] the sand bank called Adam's Bridge. Page 154 of Corps Papers Volume 2

"The sand bank called Adam's Bridge is a very extraordinary formation. It is only about a quarter of a Mile in breadth and consists entirely of sand, partly above, and partly below water, collected apparently by the surf and currents, and unsupported, as far as could be ascertained by rock. The east end of it was pierced by the Ceylon Officers to the depth of 30 feet and nothing found but sand, On each side of the bank at the distance of 2½ or 3 Miles, the sea is 6 fathoms deep and quite free from obstructions of every kind."

Extract of Colonel Sim's Report on the sand bank called Adam's Bridge

There are three principal openings or Channels across the bank. One near the Island of Manaar called the Tal Manaar passage, the second 8 Miles farther to the West, and the third about 11 Miles from the Island of Ramisseram, termed the Tannycoody passage. This last was examined and surveyed on the present Occasion. It is narrow in the centre, & 30 feet deep, with broad curved bars opposite to its two ends, on which there is not more than 5 or 6 feet of water. The bank between it and Ramisseram is entire and several feet above water. The Tal Manaar passage was examined by the Ceylon Officers and resembles exactly that of Tannycoody, but it is not so deep, there being only about 3 feet of water on its North bar".

"The intermediate opening was not examined, but from its appearance, as well as from the description given of it by the fishermen who frequent the place, there can be no doubt of its corresponding very nearly with the other two, It is said to be rather deeper than the Tal Manaar passage, but not quite so deep as that of Tannycoody"

"In the vicinity of the Tal Manaar and Tannycoody openings, the bank is visible above water for several miles, intersected by only a few narrow openings, but towards its centre it is chiefly covered with water, and very little bank is to be seen; though from the surf breaking exactly on the line of the bank, the depth of water cannot exceed 2 or 3 feet."

"During both monsoons, on the lee side of the bank, to the distance of from half a Mile to a mile, there are a great number of irregular shifting sand banks scattered about, on which there is from 2 to 4 feet of water, with passages between them 8 or 9 feet deep. The weather side, on the contrary, particularly towards the end of the monsoon, is in a great measure clear of such banks, and the surf breaks on its shore nearly in a straight continued line. When the monsoon changes, the strength & prevailing direction of the current changes too, and the loose sand of which the shifting banks are composed, on what was the lee side, being stirred up by the surf [illegible] is swept by the current through the Channels, and deposited on the opposite side, partly on the bars, and partly in loose detached heaps along the bank, These deposits appear to be further increased by the sand thrown up on the weather shore by the surf, which as soon as it becomes dry is carried by the wind across the bank into the sea on the other side. It was observed, when the wind was tolerably strong that a continued stream of sand was swept

swept across the Bank into the Sea on the lee side. The beach of Adam's Bridge therefore to the distance of about a Mile on both sides is continually changing and shifting. On the weather side, it is generally clear except immediately opposite to the Channels, where there are long projecting bars, while on the opposite side, there are many loose banks scattered about, and constantly varying in position and extent, as the monsoon advances, and according to the state of the Sea and weather.

"During both monsoons, rather a high surf breaks on the weather side of the bank, but the South West monsoon produces much the highest surf accompanied by a long heavy swell. During part of the North East monsoon, the surf breaks on both sides of the bank".

"Dhonies in ballast and fishing Boats, occasionally pass through the openings in fine weather, but the passage is attended with some difficulty and danger, & is not common".

There is an account I was informed given in the records of the Dutch Government of Ceylon, of a Dutch Fleet having on one occasion escaped from a Danish fleet - by passing through the Channels of Adam's Bridge. If this be authentic, either some of the Channels must have been deeper in former days or the Ships must have been of a small size. It is probable indeed, that the depth and extent of the openings are constantly changing from the effect of the current and surf, and the quantity of loose sand about the bank, and that they will not be found of the same size for any length of time. They appear to be affected by every change in the weather, the currents and surf, and most likely vary considerably in depth in different seasons".

Estimate of the value of the Paumbon channel -

The value of a good Channel at Paumben will be seen by the following statement -

The distance from Madras to Cochin round Ceylon is . . . . 1060 Miles

The distance from Madras to Cochin through the

Carried over 1060 - "

Brought over 1060-

the Paumben Channel 640 Miles

Saving in distance by going through the C[illegible]

The saving in distance to Vessels going from Madras to Stations on the Western Coast of Ceylon varies from 550 to 0 Miles and averages 275 Miles. The distance that would be saved by the Steamers from Madras to Suiz would [illegible]260 Miles

In the Official year 1850-1851 the export of Rice and Paddy to Ceylon from our own ports in Tanjore alone (including the French Port of Carical was as follows

	Quantity Tons	Value Rupees
Rice	57,000	18,74,816
Paddy	14,000	2,80,370

The total value of merchandize exported from our Ports in Tanjore to Ceylon for the same year was . . . . Rupees 25,32,897

Freight from Negapatam to Columbo
By Square rigged Vessels
was from 1831 to 1840 . Rupees 12-4-"
1849 to 1853 4.13-.
Difference 7-7-
Saving on 71,000 Tons Rupees 5,28,062.8-
By Dhonies the difference is as follows
In 1820 . . Rupees 8.5-. Pr. Ton
1849 to 1853 3.10.5
4.10-7
Saving on 71,000 Tons Rupees 3,30,963.8.8

The aggregate tonnage of Vessels which passed through the Paumben Channel in the year 1852 was 1,48,244 Tons for the current year it is nearly 1,60,000 Tons. A considerable number of Dhonies in returning without [illegible] pass thro' the shallow openings in Adam's Bridge, to avoid paying the toll at Paumben.

Supposing each of these Vessels to have been saved only 300 Miles sailing on an average and the freight to be 3 R. (according to the prices above given) 2½ Pice per Ton per Mile,

the

the total saving for the year amounts to 1,48,244 Tons × 300 Miles × 3 Pice = Rupees 3½ Lacs

This does not include the saving of Insurance from diminution risk and of Interest from diminution of

This amount does not nearly represent the value of the Pass as in rough weather, most of the Vessels which pass through the Channel [illegible] go round Ceylon at all.

Statement of the obstacles to be overcome in clearing a Channel at Paumben.

The obstacles to be overcome at Paumben were (commencing from the North) first a bank of Coral 600 Yards broad over which there were about 6¾ feet of water at low water neap tides. 2d a reef of sand stone 800 Yards broad running across from the Island to the main land lying south of the Coral bank.

Hight of reef before commencement of operation.

In the line of the Channel the highest point of this reef was, before the commencement of the operations about 4 feet below low water and 6½ feet below high water.

In the West of the Channel the reef rises above the water to the height of about 5 or 6 feet at high water.

Cause for deepening the Channels 3 feet on an average.

Before a clear depth of 10 feet could be obtained at low water it was necessary to deepen the Channel 3 feet on an average for a distance of 1400 Yards.

3d The last obstacle is a bank of Sand and Mud lying South of the reefs at a distance of about 2,500 Yards, this bank was passed by Dhonies at a spot where it was about 400 Yards in width and from 3½ to 6½ feet below low water neap tides.

These three obstacles are within 4,300 Yards or about 2½ Miles.

The first proposal of a Channel.

The first step towards deepening and widening the Channel seems to have been taken in the year 1822 w[illegible] the Marine Board at the suggestion of the Acting Chief Engineer wrote to Mr. Sullivan the Commercial Resident at Tinnevelly and called for his opinion. on obtaining Mr Sullivan's Letter recommending that a Channel should be cleared the Board brought the matter to the notice of Government.

who

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The commencement of the work.

Nothing ~~[illegible]~~ have been done in the year 1822 in the way of clearing away rock from the sand stone reef but a rough survey was made [illegible] the project seems to have been laid aside until 1829 when the work was again renewed under Lieutenant Colonel Sim. On this occasion a party of Sappers was sent, and the bottom of the Pass was thoroughly examined throughout by blasting and removing the fragments. The Pass was also considerably improved. It was previously so crooked that in one part, it was necessary when the current was strong to have out 5 warps at once to conduct a Vessel round a rock. Such obstacles were removed as to make the Channel nearly straight and at the same time the shallowest points were deepened so as to allow of Vessels passing through drawing about a foot more water than before. A minute survey was also made of the whole Pass and of Adam's Bridge on the other side of the Island of Ramisseram. At this time also the Commanding Engineer from Ceylon with the Superintendent of the Ceylon Pearl fishery met the Officers from Madras and the whole subject was discussed. The conclusion was that it was hopeless to attempt any thing on the Ceylon side and that the Paumben Pass alone offered any prospect of success. The reports of the results of these examinations remained without any thing being ordered in consequence till

in

in 1837 Colonel (now General) Monteith, Chief Engineer took up the matter and prosecuted it with such energy & perseverance that a real commencement was at length made upon its improvement and it is to that Officer that the whole credit of this important work is due.

Employment of a party of Sappers and Miners.

A party of 83 Sappers and Miners and 50 convicts were usefully employed in deepening the Channel at the expense of Rupees 5541-1 which had been sanctioned by the Court of Directors for the experiment, as it was then considered.

Country Brig passed through at high water

On the 2nd of January 1838 Colˡ. Monteith reported that a country Brig drawing 8 feet had passed through at high water and a Dhony drawing 8'–6" had done the same at the highest Spring tides shewing that the least depth at low water Spring tides must have been about 6'–4" as the tide rises 2'–2" at Spring and 1'–4" at neap tides.

Depth of the Channel not considered safe for a Vessel to pass.

It appears that the depth of the Channel was very irregular as well as its width and that it was not considered safe for a Vessel drawing more than 8 Feet water to attempt passing through even at high tide of neaps.

From the following note attached to Colonel Monteith's Letter dated 2nd January 1838 it seems that there was 6 Feet clear over the Coral bank, sandstone reefs and Southern sand bank also."

The Note continues as follows.-

"Vessels drawing 6 Feet water can pass at all times of tide in moderate weather and a great number have sailed through drawing 7 Feet at half tide, but great caution must be observed as to the State of the Swell which is sometimes very great and a proportional allowance made, a Pilot should always be taken to prevent accidents from cross currents to be met between the reefs."

With respect to the Tides General Monteith says *

* "The tides are so irregular that little dependance can be placed on the difference between high and low water, the average has been 2'-1" common tide and 3 feet Springs even to 3'-6" but it has once been as low as 4" and twice as high as 4 Feet. taking the whole year 1'-6" may safely be expected.-"

In the year 1837 it appears that the operations were carried on by means of

1st Blasting rock, the Jumpers being used from a platform supported on two Canoes connected by cross beams and lashing.

2d Lifting Stones from the bed of the Channel on to another platform supported as before on two Canoes: a rough crane being fixed on the platform for the purpose.

3d Clearing sand partly by long handled Scoops used by convicts and partly by Bags filled by the Divers and then hauled up and emptied on to the last mentioned platform.-

In the year 1838 and 1839 a hand Dredge appears to have worked between two Boats connected as before by means and lashings× decked over.

× Fitted 23d Decr 1840. See Colls Monteith's Letter to Govt dated 6th January 1841.

In the year 1841 the Dredge was worked on a Barge of 20 Tons made at Cochin for the Sum of Rupees 1480 See letter of Collector dated August 1839.

Steam Dredge Machinery was obtained from England in 1845 and a Boat made for it at [illegible]

The Steam Engine is of 14 Horse power and obtained from England at a cost of Madras Rupees 26589 - 6 - ..

The Machinery was put into the Boat [illegible] the fact reported to Government by Colonel Lawe on the 9th of April 1847.

The Boat cost at Cochin Rupees× 22029-13. 3¾

× Bill dated 17 May 1845.

The miscellaneous expences connected with the Dredge and fitting the Machinery into the Boat Amounted to Rupees 2191-4-2 the total is made as follows:

Machinery	26,589 - 6 ..
Boat	22,029 - 13 - 4
Fitting &c	2191 - 4 - 2
Total	50,810 - 7 - 6

In a report to Government dated 23d April 1839 Colonel Monteith states that the Channel had been deepened 3½ feet during 1837 and 1838 and that it would require 2000 Rupees a Month for 3 years at 9 working Months a year or 54,000 Rupees more to deepen the Channel 3½ feet more which would give it a depth when finished of 10 feet at low water.

In a letter to Government dated 15th February 1842 Colonel Sim writes thus. "The passage through the reef has been straightened and deepened to 8 feet but little has been done to the mud bank South of it" He states a little further on that owing to 40 of the best Men of the Sappers having been called away for Service elsewhere it would take 15 or 18 Months to increase the depth of water to 8 feet over the mud bank South of the reef.

On the 10th of July 1844 Colonel Sim reported that "it will be observed that the depth of water at low water spring tides through the reef is 8 feet and across the Horse Shoe bank 9½ with the exception of a few small patches where it is 9 feet. These depths of water however do not extend across the whole width of the Channel but diminish towards the sides."

Of the Channel through the Sand Stone reefs he writes that there are some places where there is only $\frac{1}{8}$ water

"The Sand Bank (or Horse Shoe) Channel is generally 10 feet deep at neap tides"

In 1850 Colonel Lowe and Captain Horsely of the Engineers reported that Vessels of 150 tons drawing from 8 to 10 feet pass through the Channel but that 6733 $\frac{1}{3}$ cubic yards of material required to be removed for which Rupees 12000 are required to perform the work in 2½ years.

The State of the Channel in September 1852 through the reefs appears from a Chart prepared by Captain Gile to be as follows. Dividing the length of the Channel through the reefs into 7 parts each about 200 yards in length and commencing from the Northern Buoy the depths are at low water neap tides.

In the 1st 200 yards

Maximum depth ——— 13 feet

Mean ——— 11 $\frac{1}{4}$

Minimum ——— 11

29

In the 2d 200 yards.

Maximum ——— depth ——— 14 feet

Mean ——— " ——— 11 $\frac{3}{4}$

Minimum ——— " ——— 11

In the 3d Length

Maximum ——— depth ——— 14 feet

Mean ——— " ——— 11 $\frac{7}{8}$

Minimum ——— " ——— 10.

In the 4th Length

Maximum ——— depth ——— 16 feet

Mean ——— " ——— 12 $\frac{1}{4}$ "

Minimum ——— " ——— 11 "

In the 5th Length

Maximum ——— depth ——— 16 feet

Mean ——— " ——— 11 $\frac{1}{2}$ "

Minimum ——— " ——— 9 "

In the 6th Length

Maximum ——— depth ——— 16 feet

Mean ——— " ——— 10 $\frac{3}{8}$ "

Minimum ——— " ——— 9 "

In the 7th

Maximum ——— depth ——— 14 feet

Mean ——— " ——— 11 $\frac{1}{4}$ "

Minimum ——— " ——— 10 "

Captain Gile's Soundings were taken in the Month of October 1852.

The quantity of Material which must be removed to give the Channel a depth of 12 feet at low water neap tides is as follows.

The work required to obtain a depth of 12 feet at low water neap tides

Sandstone ———— 5000
Sand and Coral ———— 5000

The expenditure on the Paumben Channel and the results may be roughly compared as follows.

Expenditure Contained in the Account shewn in Appendix A. Rupees 10387-[illegible]-11-

The results are as follows.

The tonnage through the Channel has increased vide Appendix B from 17000 in 1822 and 65731½ in 1839 to 148244 in 1852, and nearly 16000 in 1853.

Appendix C Shews that the balance obtained after deducting the Charges for Pilotage from the Collections for the same in the Madura District has increased from

R a p
187 - 12 - " in year 1839 and 1840
and 2231 - 1 - 4 - in year 1840 and 1841
to 6826 - 5 - 11 in year 1851 and 1852

The tolls charged are 9 Pie per ton per Dhoni and 1½ Annas per square rigged Vessels

It also shews a falling off in the Port dues owing most probably to a freedom from the detentions formerly experienced on one side or other of the Channel. The falling off is from Rupees 3695-12- in year 1843/44 to Rupees 968-4-9 in year 1851/52.

The balance may be struck as follows

Gain on Pilotage from years 1839/40 to year 1851/52 Rs 53651-5-7.
Loss on Port dues from years 1845/46 to year 1851/52 " 31435-11-7
Remaining clear gain Rupees ———— 22,215-10-

At present there is a diminution of Port dues to the Sum of 1300 Rupees since 1838 and an increase ~~of net Pilotage~~ of Rupees 6600 Shewing a balance in favour of Government of 5,500 Rupees per annum which is all the direct profit obtained by Government.

Appendix D Contains a letter from the Secretary to the Marine Board Shewing that the freight by Dhonies from Nagapatam to Columbo had diminished from Rupees 8-5- per ton in 1820 to Rupees 3-10-5 per [illegible] from 1849 to 1853 and that the freight by square rigged Vessels between the same Ports had diminished from Rupees 12-4- per ton from 1831 to 1840 to Rs 4-13- per ton from 1849 to 1853-

I have shewn in a former part of this

this report that the freight of the Annual export of Rice and Paddy from Nagapatam to Ceylon is diminished at the above rates as follows.

If conveyed by Square rigged Vessels Rs 5,28,062-8-
Do Do by Dhonies 3,30,963-8-

so that may safely be calculated at [illegible] Lacs per annum for this portion only of the trade.

This has no doubt been one cause of the increase of the prosperity of Tanjore and it has no doubt had considerable effect in increasing the revenue of that fertile province and it is evident that this is a permanent advantage likely to be increased by any thing that is hereafter done for the improvement of internal communication.

The following Extract shows that as soon as the opening of the Channel enabled improvements to be made in the vessels used in the coasting trade the Native Merchants did make the improvements, a fact which clearly demonstrates that they are not unable to perceive the advantages of a great work of this Kind but on the contrary that they were waiting for it.

Extract from a Report of the Marine Board on the means adopted by the Madras Government since the year 1820, for facilitating the navigation of the Coasts of the Madras Presidency including Notices of the Surveys executed the Lights Beacons and Buoys established, with their information called for in the Order of Government dated 4th May 1848 No 183.

Trade passing through Paumben passage.

19. "As a natural sequence to these extensive improvements, the trade through the Paumben Channel had gradually acquired a vigour which has, in the course of 13 years more than quadrupled its former amount, and the annexed Statement not only exhibits the progressive increase in the quantity of tonnage passing through, but shows that a Superior description of vessel is being thereby brought into action. As long as the passage from the Coromandel to the Malabar Coast on the West side Ceylon was confined to one voyage in the year, the Dhoney a very frail description of Craft, was in general favour as being less expensive and as easily sailed with a fair wind as any other, but now that the communication renders the passage practicable at all Seasons this is giving way to the more Substantial Brig and Schooner able to work down the Gulf of Manaar against the S. W. Monsoon, a feat which 50 years back few English Ships would attempt. These are built by Natives at Cochin, Negapatam and Nagore: most are of teak, and many of them coppered, and being generally commanded and manned by Natives afford an interesting Specimen of their advance in the Science of navigation."

The rate at which the work has been executed may be roughly stated as follows

The expenditure on the Pass up to the time when it was reported on by Lieutenant Collyer in 1845 was about as follows

Expenditure according to Account Current entered in Lieutenant Collyer's Report Rs.	72,952. 3. 4
Superintendence, Sappers, and Convicts from 1839 to 1845 at Rupees 11,000 per annum Rs.	66,000. .. ..
Total Rupees	1,38,952. 3. 4
The expenditure up to the end of 1853 was Rs.	342193. 14. 7
Difference	203,241. 11. 3

From a Report made by Colonel Monteith in January 1838. It appears that the least depth of the Channel was about 6 Feet, when reported on by Lieutenant Collyer the least depth appears to have been about 8 Feet.

By the end of 1852 the depth at low water spring tides was on an average about 11½ Feet, though in a few places there were only 9 Feet of water in the centre of the Channel.

This Paper contains the history of the Work, as drawn up by Lieutenant O'Connell Adjutant of Engineers, to the present time. It shows that it is 31 years since first the subject was taken up by Colonel De Havilland, that 7 years after that actual experiments were made and some small improvement effected under Colonel Sim but that another interval of 8 years passed before the deepening of the Pass was systematically begun by General Monteith. From that time to the present, 16 years, the work has been prosecuted but on so small a scale that only 20000 Rupees a year has been spent on it.

The Subject of the further

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The subject of the

further deepening of the Pass is discussed in the Chief Engineers Report dated 16th January 1854.

A. Cotton

Chief Engrs Office
Fort St George
16th January 1854

Lieutt [illegible]
Chief Engr

Letter to England 5th May No 4 of 1854.

Letter to England 6 May No 4 of 1834

128-71

M. 1854 d
In No. 10.

M 1854 d
In No 99

General Statement of Receipts and Disbursements on account of Paumben Channel from 1837 to April 1851.

Receipts

1837	"	By Amount Sanctioned in the Minutes of Consultation Dated 3d February 1837 for the Works at Paumben	5000	"	"			
"	"	By Do — Do on the 29th August 1837 for Do — Do	1000	"	"			
1838	"	By Do — Do on the 9th Feby 1838 for Do — Do	7000	"	"			
1839	"	By Do — Do on the 29th January 1839 for Do — Do	7000	"	"			
"	"	By Do — Do on the 27th August 1839 for Do — Do	3000	"	"			
"	"	By Do — Do on the 18th October 1839 for Do — Do	54000	"	"			
1845	"	By Do — Do on the 1st Novr. 1845 for Do — Do	24993	14	7	101993	14	7
—		By Unserviceable Stores in September 1843	301	10	7			
		By Amount received from the Paymaster Southern Dn. by the Superintendent of the Works for the Empty Gun Powder Barrels returned into the Palamcottah Arsenal in November 1848	528	12	2			
		By Brass Rollers sold by Public Auction in July 1846	241	1	7			
		By Amount received by the Sale of an Old Boat in October 1846	18	8	"			
		By Do — Do of Cocoanut Oil in Do	26	"	"			
		By Amount received in February 1848 for Advances made on account of Steam Dredge	456	8	"			
		By Do Do from the sale of a Teak Spar in February 1851	21	"	"			
		By Cash received in July 1850 from the Paymaster for not purchasing Iron Articles and Charged the same in the Accounts of February 1850	200	"	"			
						1843	8	4
		Total Company's Rupees				103837	6	11

Disbursements

1837	"	To Amount Expended on the Works at Paumben during the Year 1837 and Sanctioned by Government on the 18th July 1843	5527	15	2			
1838	"	To Do — Do During the Year 1838 & Do — Do on the Same Date	6919	5	2			
1839	"	To Do — Do during Do 1839 and Do Do on the Do	10860	12	10			
1840	"	To Do — Do from January to November 1840 & Do on the 19th January 1841	14098	8	"			
1840/41	"	To Do — Do from December 1840 to October 1841 and Do on the 11th April 1842	12097	3	"			
1841/42	"	To Do — Do from November 1841 to April 1842 and Do 19th July 1842	4233	11	5			
1842	"	To Do — Do for May & June 1842 and Do on the 3d September 1844	1153	3	"			
1842/43	"	To Do — Do from July 1842 to Feby 1843 & Do 23d January 1844	3987	12	9			
1843/44	"	To Do — Do from March 1843 to January 1844 and Do on the 3d September 1844	5794	3	10			
1844	"	To Do — Do from February to June 1844 & Do on the 3d September 1844	3158	"	8			
1844/45	"	To Do — Do from July 1844 to April 1845 & Do on the 27th June 1845	5122	2	"			
1845/46	"	To Do — Do from May 1845 to April 1846 & Do On the 5th June 1846	5124	11	7			
1846/47	"	To Do — Do from May 1846 to April 1847 & Do On the 13th July 1847	5735	11	2			
1847/48	"	To Do — Do from May 1847 to April 1848 & Do On the 4th July 1848	9800	9	6½			
1848/49	"	To Do — Do from May 1848 to April 1849 & Do On the 26th June 1849	4234	1	11			
1849/50	"	To Do — Do from May 1849 to April 1850 & Do On the 13th August 1850	3770	7	4			
1850/51	"	To Do — Do from May 1850 to April 1851 & Do on the 10th September 1851	2102	6	4			
						103720	13	8½
		To Cash in the hands of the Superintendent 1st May 1851				116	9	2
		Total Company's Rupees				103837	6	11

Chief Engineer's Office
Fort Saint George
16th January, 1854.

W. Cotton
Lieut. Col.
Chief Engineer

Appendix B

Statement shewing the Tonnage of Vessels and Dhonies for each year from January 1839 to February 1853.

For the year	1839	65,731½
Do.	1840	74,645
Do.	1841	92,994
Do.	1842	87,809
Do.	1843	98,412
Do.	1844	1,15,898
Do.	1845	1,11,203
Do.	1846	1,13,832¼
Do.	1847	1,22,661
Do.	1848	1,18,423½
Do.	1849	1,32,514¼
Do.	1850	1,46,393
Do.	1851	1,39,782
Do.	1852	1,48,244
Do.	1853	1,60,000

Do. January & February 1853 - 26,449

Appendix C.

Statement of Receipts on Account of Pilotage & Port dues in the Districts of Madura & Dindigul from Fusly 1237 to 1261.

Pilotage

Fuslies	Collection			Deduct Charges For Establishment			1/4 Share of the Collection allowed to the Licensed Pilots in lieu of pay			Total			Balance			Port Dues		
	C.Rs.	A.	P.	C.Rs.	A.	P.	C.Rs.	A.	P.	C.Rs.	A.	P.	C.Rs.	A.	P.	C.Rs.	A.	P.
1237	..			..			..			..			..			1,489	..	..
1238	..			..			..			..			..			1,615	..	..
1239	..			..			..			..			..			1,389	4	..
1240	..			..			..			..			..			1,400	12	..
1241	..			..			..			..			..			1,710	..	..
1242	..			..			..			..			..			1,632	12	..
1243	..			..			..			..			..			1,641	12	..
1244	..			..			..			..			..			1,849	8	..
1245	..			..			..			..			..			1,850	4	..
1246	..			..			..			..			..			2,071	8	..
1247	..			..			..			..			..			1,788	4	..
1248	..			..			..			..			..			2,232	8	..
1249	748	12	..	561	..	..	..			561	..	..	187	12	..	2,352	4	..
1250	4,660	12	..	2,429	10	8	..			2,429	10	8	2,231	1	4	2,540	..	..
1251	4,629	8	..	2,142	10	8	..			2,142	10	8	2,486	13	4	2,419	..	..
1252	5,400	4	..	1,676	..	..	..			1,676	..	..	3,724	4	..	2,889	2	..
1253	5,878	..	..	2,424	..	..	..			2,424	..	..	3,454	..	..	3,498	12	..
1254	6,761	..	..	2,233	..	..	..			2,233	..	..	4,528	..	..	3,695	12	..
1255	6,847	4	..	2,918	12	9	..			2,918	12	9	3,928	7	3	2,803	8	6
1256	7,659	12	..	3,123	3	3	..			3,123	3	3	4,536	8	9	1,773	8	6
1257	7,017	12	..	2,963	..	..	383	..	..	3,346			3,671	12	..	1,181	5	6
1258	8,485	..	3	2,474	..	..	1,237	14	2	3,711	14	2	4,773	2	1	1,319	4	4
1259	10,552	12	6	1,296	..	..	2,631	6	2	3,927	6	2	6,625	6	4	1,245	6	9
1260	10,599	..	..	1,296	..	..	2,645	3	5	3,941	3	5	6,657	12	7	1,039	6	1
1261	10,769	4	..	1,233	..	..	2,689	14	1	3,922	14	1	6,846	5	11	968	4	9
Total	90,009	..	9	26,770	5	4	9,587	5	10	36,357	11	2	53,651	5	7	48,427	..	5

Madras 18th March 1853.

Signed/ R. D. Parker
Collector

Appendix C.

41

Statement of receipts on account of Pilotage & Port dues in the Districts of Madura & Dindigul from Fusly 1237 to 1261.

Pilotage

Fuslies	Collection			Deduct Charges						Total			Balance			Port Dues		
				For Establishment			1/4 Share of the Collection allowed to the Licensed Pilots in lieu of pay											
	C.R.	A.	P.	C.R.	A.	P.	C.R.	A.	P.	C.R.	A.	P.	C.R.	A.	P.	C.R.	A.	P.
1237	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,489	..	..
1238	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,615	..	..
1239	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,389	4	..
1240	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,400	12	..
1241	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,710	..	..
1242	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,632	12	..
1243	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,641	12	..
1244	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,849	8	..
1245	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,850	4	..
1246	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,071	8	..
1247	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1,788	4	..
1248	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2,232	8	..
1249	748	12	..	561	..	..	..	..	..	561	..	..	187	12	..	2,352	4	..
1250	4,660	12	..	2,429	10	8	..	..	..	2,429	10	8	2,231	1	4	2,540	..	..
1251	4,629	8	..	2,142	10	8	..	..	..	2,142	10	8	2,486	13	4	2,419	..	..
1252	5,400	4	..	1,676	..	..	..	..	..	1,676	..	..	3,724	4	..	2,889	2	..
1253	5,878	..	..	2,424	..	..	..	..	..	2,424	..	..	3,454	..	..	3,493	12	..
1254	6,761	..	..	2,233	..	..	..	..	..	2,233	..	..	4,528	..	..	3,695	12	..
1255	6,847	4	..	2,918	12	9	..	..	..	2,918	12	9	3,928	7	3	2,803	6	6
1256	7,659	12	..	3123	3	3	..	..	..	3,123	3	3	4,536	8	9	1,773	8	6
1257	7,017	12	..	2,963	..	..	383	..	..	3,346			3,671	12	..	1181	5	6
1258	8,485	..	2	2,474	..	..	1,237	14	2	3,711	14	2	4,773	2	1	1,319	4	4
1259	10,552	12	6	1,296	..	..	2,631	6	2	3,927	6	2	6625	6	4	1,245	6	9
1260	10,599	..	..	1,296	..	..	2,645	3	5	3,941	3	5	6,657	12	7	1,039	6	1
1261	10,769	4	..	1,233	..	..	2,689	14	1	3,922	14	1	6,846	5	11	968	4	9
Total	90,009	..	9	26,770	5	4	9,587	5	10	36,357	11	2	53,651	5	7	48,427	..	5

Madras 18th March 1853.

Signed/ R. D. Parker
Collector

Letters Negapatam
[illegible] 4 of 1837

Appendix D.

No. 849.
Madras Marine Board Office
6th April 1853.

From,
J. J. Franklin Esqre
Secretary Marine Board

To,
Lieutenant Colonel A. T. Cotton
Chief Engineer

Sir,

In accordance with your request verbally communicated to me, I have the honor by desire of the Marine Board to inform you that they addressed the Collectors of Tanjore and Malabar with the view of ascertaining in what manner the deepening of the Paumben Channels had affected the rates of freights from the adjacent Ports in Vessels using that passage.

2. The accompanying replies have been received from which it will be seen that at Negapatam the rate of freight to Colombo has decreased nearly one third within the last 18 or 20 years, as follows.

			Rs. as. p.	
In 1820	Freight by doney		8. 5. ..	pr ton
1831 to 1840	Do Square rigged vessel		12. 4. ..	"
1841 to 1848	Do	Do	10.	"
1849 to 1853	Do	Do	4. 13. ..	"
" "	Do by doney		3. 10. 5	"

3. It appears that there is not an extensive trade between the Malabar and Coromandel Coasts, and in some places the doney owners purchase Cargo for Shipment on board their

[illegible]
[illegible] 4 Oct 1857

Appendix D.

No. 849.

Madras Marine Board Office
5th April 1853.

From,
J. J. Franklin Esqre
Secretary Marine Board

To,
Lieutenant Colonel A. T. Cotton
Chief Engineer

Sir,

In accordance with your request verbally communicated to me, I have the honor by desire of the Marine Board to inform you that they addressed the Collectors of Tanjore and Malabar with the view of ascertaining in what manner the deepening of the Paumben Channels had affected the rates of freights from the adjacent ports in Vessels using that passage.

2. The accompanying replies have been received from which it will be seen that at Negapatam the rate of freight to Colombo has decreased nearly one third within the last 18 or 20 years, as follows.

		Rs. as. p.	
In 1820	Freight by Doney	8. 5. ..	per ton
1831 to 1840	Do. Square rigged Vessel	12. 4. ..	"
1841 to 1848	Do. Do.	10.	"
1849 to 1853	Do. Do.	4. 13. ..	"
"	Do. by Doney	3. 10. 5	"

3. It appears that there is not an extensive trade between the Malabar and Coromandel Coasts, and in some places the Doney owners purchase Cargo for Shipment on board their

own vessels rendering it difficult to compute the amount to be considered as freight. The rate however has had a downwards tendency at Cannanore, having averaged 14 Rupees a ton between 1820/30, and 10 to 11 Rupees in 1850.-

I have the honor to be &ca

Signed/ J. J. Franklin
Secretary

Madras
Marine Board Office,
18th April, 1853.-

(True Copy)
W. Cotton
Lieut. Colt.
Chief Engr.

No. 126.

Tanjore
Vallum 7th March 1853.

From
J. F. Bishop Esqre.
Collector of Tanjore.

To
J. J. Franklin Esqre.
Secretary to Marine Board.
Madras.

Sir,

With reference to your letter of the 22nd February calling for information as to how the opening of the Paumben Channel has affected the rates of freight from this Port to Columbo and the Malabar Coast I have the honor to state that about 30 years since the rate of freight from this port to Columbo was from Rs. 7.14. to Rs. 8.10.- per ton or an average of about Rs. 8.5. per ton. These rates were for Dhonies and obtained with very little variation till within the last few years. Since the year 1831 and up to 1840 the trade has been also carried on by decked vessels by which and during these years the rate of freight varied from Rups. 11.6. to Rups. 13.2. per ton or on an average Rups. 12.4. From 1841 to 1848 the freight by the same vessels varied from Rups. 9.10. to Rups. 10.8. per ton but since the beginning of the year 1849 the average rate of freight to Columbo decreased to Rups. 3.10.5 per ton by Dhonies and by decked vessels to Rups. 4.13.-

I regret I have been unable to ascertain the rates of freight to the Malabar Coast during the same period but the amount of trade therewith from this District is very trifling and as regards the rate of freight now prevailing it is to be borne in mind that the large increase in the number both of Ships and Dhonies has caused them to have a downward tendency.

I have &c.

Signed/ I. F. Bishop
Collector

(True Copy)
Signed/ J. J. Franklin
Secretary.

No. 850
1853.

Calicut 8th April 1853.

From,
H. V. Conolly Esqr.
Collector of Malabar

To,
J. J. Franklin Esqre.
Secretary to the Marine Board.
Madras.

Sir,

In reply to your letter of the 23rd February last, informing me that the Marine Board are desirous of learning in what manner the opening of the Paumben Passage has effected the rate of freight and requesting me to communicate what the average rates per ton of Cargo were from the Ports on the Malabar Coast to those of the Coromandel side in the years 1823, 1830, 18 and 1850. I have the honor to forward Copies of letters* from the Masters Attendants and Custom House Managers at the principal Ports in this district which contain all the information procurable on the subject.

I have the honor to be &c.

Signed/ H. V. Conolly
Collector

Calicut
8th April, 1853.

(True Copies)
W. Cotton
Lieut. Colonel
Chief Engr.

* dated 5th and 15th March and 6th April 1853.

No. 1854
In No. 10

Estimate of the Expense of Deepening the Paumben Pass to 13 feet at low water Neap Tides.

The quantity of material to be removed is as follows—

Sand stone—	5000 Cubic yards
Sand	5000 Cubic yards.

The rates for executing this are deduced from the cost of the work already executed as follows—

1st The cost of the work has been as follows.

	Rupees
Superintendent	2,400 — per annum
Prisoners 200 men	7,500 —
Writers & Artificers	1,200 —
	11,100 — per Annum

or for 16 years during which the work has been carried on	1,77,600
Cost of working Dredge for Six years at Rs. 4000 per annum	24,000
Overseers for 16 years at Rs. 600 per Annum	9,600
1/5th of the cost of the Dredge	17,000
Money grant	1,13,992 - 14 - 7
	3,42,193 - 14 - 7

2nd This amount may be made up nearly as follows.

			Rs	
or Sand Stone	50000	Cubic yards at	5½	2,75,000
			Rs	
Coral	27,000	"	2	54,000
Sand	33,000	"	5 Annas	10,300
				3,39,300

The present Estimate may therefore be put down as follows.

Sand Stone Cubic yards 5000 at 4 Rupees a Cubic yard	20,000
Sand 5000 at 4 Annas per Cubic Yds	1,250
apparatus as below	9000
Total of Estimate	30,250

Apparatus.

3.	Weighing Boats at 1000	3,000
6	Stone Boats	4,800
5	Rafts	1,200
		9000

Chief Engineer's Office
Fort Saint George
16th January, 1854.

(Signed) A. Cotton,
Lieut. Colonel
Chief Engineer

(~~True Copy~~)

~~Chief Secretary~~

Letter & Enclosure
Page N° 4 of 1837
148-11

Marine Depo:
In No 10 of 1854

M 1854
In No 99

52

Read

In the Report of his
[illegible] to Paum-
[illegible]tton &c.
following
[illegible]ance to
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No. 63.

53

From,
Captain C. Gib.
Superintending Operations

To,
Lieutenant P. O'Connell
Adjutant of Engineers
Fort Saint George.

Sir,

I have the honor to inform you that Captain Little Acting Principal Commissary of Ordnance has requested me to remit to him the sum of Company's Rupees 836. 11. 3 Eight hundred and thirty six, Annas Eleven and Pice Three this sum being the amount value of articles and Packing materials &c. supplied on Indent for the use of the Paumben Works, as I have only 971. 9. 2 Nine hundred and Seventy one, Annas Nine and Pice Two at the Credit of the Works and the bills of February and March to pay

out

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that in the event of his
leaving it another w.d
[illegible]nded should be sent in his place,
[illegible]ble be placed
[illegible] Capt Gib for the entirely ignorant of the
[illegible]future operations locality & of the work.
[illegible]posed. In Seal & Office, &c.

M 1854 d
In No 99

In No 10 of 1854

out of these Sums I am at a loss
what to do because if I have
to pay Captain Little out of
the Money in my hands I shall
be left without a rupee to go
on with.

I have to request therefore that you will inform me
if any money for the Works is
likely to be granted and if so when;
if there is a likelihood of any
delay I would request permission
to return the powder into the
Arsenal.

I have the honor to be &c
Signed/ Colin Gib Capt.
Supg. Operations

Paumben
9th March
1854.

A true Copy
P. O'Connell Lieut.
Adjutant of Engineers

M 1854 d
In No 62

No. 121.

From
Lieutenant P. P. S. O'Connell
Adjutant of Engineers.

To
The Chief Secretary
to Government.

Sir,

I have the honor, in the absence of the Chief Engineer, to forward Copy of a letter No. 63 dated 9th Instant received from Captain C. Gib Superintending Operations at Paumben and to request the instruction of the Right Honorable the Governor thereon with reference to the Letter of the Chief Engineer dated 16th January 1854.

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

Chief Engineer's Office,
Fort St. George
14th March, 1854.

P. O'Connell Lieut.
Adjutant of Engineers.

55

52

Memo

In the report of his
... to Paum-
... ttee a-
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that in the event of his
leaving it another w.d
... mended should be sent in his place
... sible to placed entirely ignorant of the
Capt Gib for the locality & of the work.
... extensive operations
proposed. An Seal & Officer, ...

No. 10 of 1854

Letter to England of
May No 4 of 1854

Replied to 13th June
No 9 of 1855

148-11A

2

Ind. to Cons. 28th March
May 1854. Dept.

From
Lieut. A. O. L. C'onnell
Asst. of Engrs.

To
The Chief Secy.
to Govt.

Dated 14th March, 1854.
Recd. 15th do.

No. 121

Enclosure 1

No. 62

Forwards Copy of a letter recd. from Captn. Gib Supt. of Operations at Paumben — requests the instruction of the Right Honorable the Governor thereon with reference to the Chief Engineer's letter dated 16th January 1854.

L. S. No. 6

526

Memo

In the report of his tour of inspection to Paumben Lt. Col. Cotton remarks on the following points which have not been noticed by Govt.

5th of Para 1st and 4th of Para 8.

A European Diver is said to be necessary to ~~check~~ control the Native Divers at the works and one or two of the Sappers who were employed on the wreck of the "Royal George" and [illegible] in this Residency, ~~are~~ [illegible] it is thought, would be a very important aid. This recom#

#mended that one should be attached to the works with a special allowance for such extraordinary duty.

Col. Cotton considers it a great mistake to trust a work of this sort to the superintendence of a single Officer so that in the event of his leaving it another would be sent in his place entirely ignorant of the locality & of the work. An 2nd Officer, it is^

3rd of Para 7 and 3rd of Para 8

^recommended should if possible be placed under Capt. Gib for the more extensive operations now proposed.

7th of para 7.

Col. Cotton thinks that the Officer superintending the works should have been placed far more at liberty both as respects expenditure, apparatus and mode of operations, for want of which it is stated, there has been both loss of time and waste of money.

11th of para 7.

The Steam Dredge, it is recommended, should be made of as much use as possible, and that for this there should be half an additional Crew to allow of its being worked from daylight till dark, by which means it could remove nearly 500 Cubic Yards a day while about 300 C. Yds. are now removed.

11th of para 7

Col. Cotton thinks it desirable that, if possible, one of the Engineer Officers now in England should be directed to make himself thoroughly acquainted with the working of such a machine there, with a view to his making any possible improvements in the working of this Dredge, on his return to India.

a 9.

In this para Col. Cotton points out that there is a double duty on Square rigged vessels as compared with Dhonies, & considers that this species of charge is a material hindrance to the progress of the introduction of the superior class of vessels. He therefore recommends that the rate of tolls should be reversed, and that in future the charge should be for Square rigged vessels 3/4 Anna per ton and for Dhonies 1/2 anna per ton.

2d of para 9.

It is recommended that the management

of the port of Paumben should be put on quite another footing — & that a Master Attendant shd be appointed on a salary that would secure an able and experienced Seaman to hold the appointment. He is to have the Channel Pilots under his control — and also those for the Coast to the Southward as far as Tuty[illegible]

Memd of the points adverted to in Col. Cotton's Report of his tour of Inspection to Paumben, which have not been noticed by Govr & the Members of Govt.

Council
when orders
on the [illegible]
withdrawn [illegible]
[illegible]
[illegible]

Memo

v. Para 13
of Draft Min
Con:
W.C.H.

Notwithstanding that my instructions at Council were to the effect that this Govt. could make this reduction of duties on Square rigged vessels without having the Opinion of the Marine Bd. I would beg again to ask that a reference should be made to the Marine Bd. before any application is made to the Govt. of India —

I do not agree

92 was on 26th Feby 1847. ruled that

It was not compe-tent to this Govt, to make the reduction in favor of Dhonies & the sanction of the Govt of India was solicited and given to the proposal — It is now proposed to extend this re-duction to all square rigged vessels, (not en-tirely generally throughout the Presidency but only to those) plying thro' the Bombay Chan-nell — It will

however be seen that the Marine Bd in their letter of the 15th Jany 1847 entered fully into the subject & that the reasons there assigned for their proposal to reduce the duty on Dhonies are not applicable to the present pro-posed reduction if extended to the latter class of vessels — It will be proper there-fore in laying the case before the Govt of India to be able to say

~~the extent to which~~
~~the~~ exact class
of Vessel to which
the reduction
is to extend &
to know what
will be the probable
effect on the Port
Dues by this mea-
=sure —

I would submit
therefore that I
may be authorized
to alter Para: 13
of the Draft Min:
Con: so as to call
for the opinion
of the Marine Bo:
on this head of
cal: culations produ:
=ctions —

6/3/54 W. G. Montgomery

[illegible]
15

Certainly do so
H. P.

Copy of Remarks of the President
and Members of Government on
Letter from the Secretary Marine
Board dated 9th January 1854 No. 81.
respecting the Steam Dredge at
Paumben being towed up to Coringa
by the "Hugh Lindsay" for repair.

By the Rt. Hon:
the President.

I suppose there is a mistake
in this letter as it speaks of the
"Hugh Lindsay" towing the Dredge
up with Treasure from the
Northern Ports. — The use of the
Hugh Lindsay seems to me to
have been greatly mismanaged.
First by Brigr. James's unauthorized
and wholly useless interference
and now by the Marine Board
sending orders to her to come to
Madras for no ostensible object
that I can see. The Marine
Board I suppose know best
but I doubt the propriety of her

bring

~~the extent to which~~ ~~the~~ each class of Vessel to which the reduction is to extend & to know what will be the probable effect on the Port dues by this measure.—

I would submit therefore that I may be authorized to alter Para: 13 of the Draft Min: Con: so as to call for the opinion of the Marine Bo: on this head of Cal: Cations Reduc:=tions —

6/3/54 Wl. Montgomery

Certainly do so
H.P.

Copy of Remarks of the President and Members of Government on Letter from the Secretary Marine Board dated 9th January 1854 No. 81. respecting the Steam Dredge at Paumbum being towed up to Coringa by the "Hugh Lindsay" for repair.

By the Rt. Hon: the President.

I suppose there is a mistake in this letter as it speaks of the "Hugh Lindsay" towing the Dredge up with Treasure from the Northern Ports.— The use of the Hugh Lindsay seems to me to have been greatly mismanaged. First by Brigr. James's unauthorized and wholly useless interference and now by the Marine Board sending orders to her to come to Madras for no ostensible object that I can see. The Marine Board I suppose know best but I doubt the propriety of her being used to tow the Dredge when she has Treasure on board and is required to progress with all practicable despatch. I have no objections excepting those that spring from these doubts.

(Sd) H. P.

19/1/54.

By the Honble D. Eliott Esqr.

As the "Hugh Lindsay" is at Madras and is to go to the spot where the Dredge is employed for treasure, I think it clearly advisable that the Steamer should tow the Dredge to Coringa for the purpose stated. I presume that the Marine Board would not have recommended this if it would be a considerable obstruction to the Steamer

(Sd) D. E.

By the Honble J. F. Thomas Esqr.

If the "Hugh Lindsay" is required for the Troops I would allow no interference with the arrangements on this head and would not sanction delays or we may be moving Troops for Rangoon in the Monsoon.

(Sd) J. F. T.

" W. S.

By the Rt Hon: the President respecting the Ch: Engineer's letter circulated together.

The 10,000 Rupees may be advanced and application made to the Govt. of India for the rest.

(Sd) H. P.

By the Honble D. Eliott Esqr. opposite to the words in the Chief Engrs letter "This seems to me another proof of the mistaken system of having the Public Works as at present under six different Departments &c."

The observation seems singularly inapplicable here - as of the 2 Departments concerned the Chief Engineer Superintends himself and is a Member of the Board for the Superintendence of the other.

Copy

Remarks of the President & Members of Govt. on letter from Marine Board of 9th Jany 1854 No. 81 relative to the Steam Dredge at Paumbam.

Dip. 25

Marine Depart

No. 56

Extract from the Mins: of Cons: Dated 25th March 1854

Read again letter from the Secretary Marine Board dated 6th and recorded in Dy to Cons: 20th Sept. 1853.

AV

M

D&

Read the following letter from Lieut. Col. A. T. Cotton, Chief Engineer

Here enter 16th January 1854 No. 10

from the Adjt. of Engineers.
(Here on 27th March 1854 No. 125)

1. — With his letter of the 16th January the Chief Engineer submits a General Report on the operation

Copy

Remarks of the President & Members of Govt. on letter from Marine Board of 9th Jany. 1854 No. 81 relative to the Steam Dredge at Paumben.

No. 25

Marine Depart

No. 56

Extract from the Mins: of Cons:
Dated 25th March 1854

Read again letter from the Secretary Marine Board dated 6th and recorded in Dy to Cons: 20th Septr. 1853.

AP
M
JE

Read the following letter from Lieut. Col. A. T. Cotton, Chief Engineer

Here enter 16th January 1854 No. 10
from the Adjt. of Engineers.
(Here enter 16th March 1854 No. 121)

1.— With his letter of the 16th January the Chief Engineer submits a General Report on the operation

Copy

Remarks of the President & Members of Govt. on letter from Marine Board of 9th Jany. 1854 No. 81 relative to the Steam Dredge at Paumben.

Desp. 25

Marine Depart

No. 56

Extract from the Mins: of Cons:
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Read again letter from the Secretary Marin
Board dated 6th and recorded in Dy to Cons:
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Read the following letter from Lieut. Col. A. T. Cotton, Chief Engineer

Heere enter 16th January 1854 from the Adjt. of Engineers. No. 10
(Heere enter 16 March 1854 No. 121)

1.– With his letter of the 16th January the Chief Engineer submits a General Report on the

operation

[illegible]

operations for clearing the Paumben Channel from 1822 to 1851, and also the first part of his report of his late tour to the Southward regarding this Passage together with an Estimate for deepening the Channel to 13 Feet at ordinary High water, amounting to Rupees 30,250 - including Rafts and Weighing Boats -

2.- Lieut. Col. Cotton represents that such a depth as that proposed will be a very great benefit not only enabling much larger Vessels &c. regularly employed in the Coasting trade, but also providing for the passage of Vessels of

of 300 Tons when in ballast - and that the quantity of material to be removed to complete the passage to the depth of 13 Feet at ordinary high tides is comparatively small as it is only in a few spots that it is not already of that depth -

3.- The most important effect of the improvements that have been executed to the Paumben Channel, it is noticed, has been the introduction, entirely by the Natives, of Square rigged Keeled Vessels instead of Dhones - and the trade is stated to have increased from 1[illegible],000 Tons in 1822 to 1,60,000 Tons in 1853.

4.— The total expenditure on this Channel to the end of 1853, "including the "estimated value of Convict "labor and every item," is computed at less than 3½ Lacs.— In 1851 the Honble the Court of Directors sanctioned an outlay of Rs 12,000 for obtaining an uniform depth of 10 feet throughout the Passage.× From the Soundings taken by Captain Gib in October 1852, it appears that a greater depth than this was then attained, the mean depth in the seven parts

Expenditure to 1845 as reported by Dr Collyer — Rs 72,952—3—4
Superintendence, Sappers & Convicts from 1839 to 1845 at Rs 11,000 per annum . . 66,000—"—"
Total Rs 1,38,952—3—4.
Total Expenditure to the end of 1853 —— Rs 3,42,193-14-7.

× It has now been reported by the Chief Engineer that this fund has now been exhausted.

Each 200 Yards in length.

Scott, Old No. II-33 New No. 21—938 Bks.—19-1-56.

LIST.

Branch.

Remarks.	Final Disposal.

Sectt. Old No. II-33, New No. 21.

______ Department.

ARREAR LIST.

Sectt, Old No. II-33 New No. 21—938 Bks.—19-1-56.

______ Branch.

Current number and date of receipt.	From whom.	Brief title.	Present stage.	Remarks.	Final Disposal.

Sectt. Old No. II-33, New No. 21.

__________ Department.

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______ Branch.

Current number and date of receipt.	From whom.	Brief title.	Present stage.	Remarks.	Final Disposal.

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Current number and date of recei

Sectt. Old No. II-33, New No. 21.

Department.

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Current number and date of receipt.	From whom.	Brief title.	Present stage

IST.

Sectt. Old No. II-33, New 21—938 Bks.—19-1-56.

Branch.

Remarks.	Final Disposal.

Sectt. Old No. II-33, New No. 21.

_____ Department.

ARREAR

Current number and date of receipt.	From whom.	Brief title.	Present stage.

---

parts into which the length of the Channel has been divided being from $10\frac{3}{8}$ to $12\frac{1}{4}$ feet at low water neap tides. – This State of the passage and the progress of the operations as reported by Lieut. Colonel Cotton, the Govt. consider to be very satisfactory.

5. The Estimate now submitted provides for deepening the Channel to 13 feet at ordinary High water at a cost of Rupees 30,250. Concurring in the reasons assigned by the Chief Engineer as to the advantage of such a depth being attained throughout the length of the

Scott. Old No. II-33, New No. 21.

Department.

ARREAR

Current number and date of receipt.	From whom.	Brief title.	Present stage.

---

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5. The Estimate now submitted provides for deepening the Channel to 13 feet at ordinary High water at a cost of Rupees 30,250. Concurring in the reasons assigned by the Chief Engineer as to the advantage of such a depth being attained throughout the length of

the passage and the comparatively small extent of the work to be executed, the Right Honble the Governor in Council resolves to solicit the sanction of the Govt. of India for the proposed outlay, and in anticipation of their approval, to authorize an advance of 10,000 Rupees upon the Estimate as requested by Lieut. Col. Cotton, to enable the Officer in charge of the works at Paumben to + ~~build the Boats provided for in the Estimate so that they may be ready when the Season arrive for commencing operations.~~

+ continue his operations which must be suspended unless further means are granted, and to make his preparations for the deepening the Channel to 3 feet throughout as now proposed

Orders

6. Orders were issued under date the 27th January last respecting the removal of the Steam Dredge from Paumben to Coringa for repairs.

7. In reference to this Dredge, Lieut. Col. Cotton remarks that "it might have been sent "to Coringa to perform "the important Service "of opening that Port to "all Vessels for repairs "years ago without the "least hindrance to the "Paumben Works. This "seems to me another "proof of the mistaken "system of having the

"Public Works are at present
"under Six different
"Departments." This ob:
:servation seems to the
Govt. to be singularly
inapplicable here, x ~~as~~ as of
the two Departments
concerned the Chief
Engineer superintends
one himself and is a
"Member of the "Board
for the Superintendence
of the other.

x even if it be conceded
that the Public Service
could be materially
improved by ~~[illegible]~~
the dredging pursued,
in as much as -

par. 7 - 11th remark.

8.— In para 7 of the
report of his tour of in:
:spection to Paumben,
the Chief Engineer, refer:
:ring to the Dredge, sug:
:gests that "this costly
"apparatus ought to be
"made of as much use
"as possible, and therefore
"that there should be half
"an additional crew to
"allow of its being worked
"from daylight to dark
"by which means it could
"remove nearly 500 Cubic
"Yards a day" instead of
300 Yards as at present.
The Govt. ~~fully~~ agree with
the Chief Engineer as to
the advantage of ~~its~~ fully working
the Dredge, and desire that
~~he~~ the local officer will arrange for this
being effected in future, x

Can one Officer
superintend from
day-light to dark!
and can it be
worked without
supervision?

E.H.

x if it can be readily
carried out and he is
satisfied it will be
accompanied with the
advantages contemplated.

9.— The Chief Engineer
moreover "thinks it desirable
"that, if possible, one of the
"Engineer Officers now in
"England should be directed
to

"to make himself thoroughly acquainted with the working of such a Machine there, with a view to his making any possible improvements in the working of this Dredge on his return to India." The Governor in Council considers this to be very desirable, and he will not fail to draw the Honorable Court's special attention to the subject when reporting these proceedings.

~~13.— In paras 7/8 of his report Coll: Cotton represents the Employment of a European Diver to be necessary to control the operations of the Native Divers,~~

and

can they do any thing without a diving Bell and the other apparatus

~~and recommends that one of the Sappers who were employed on the wreck of the "Royal George" and a few of whom are said to be now at this Presidency, should be attached to the works, with a special allowance for such extraordinary duty. The Chief Engineer will ascertain and report for the orders of Govt whether such persons are here and are able to dive, and should any one be found fit and willing to undertake the duty, he will state the amount he would propose to grant as special Allowance~~

Coll:

10.— Col.l Cotton further recommends that an additional Officer should, if possible be placed under Captain Gib, "both "to be ready in case of that "Officer's removal, and "also to be prepared for "the more extensive operations now proposed"— As all that has hitherto been required for the improvement of the Paumben Channel has been ~~done~~ so nearly accomplished, the Governor in Council x would defer the consideration of Col.l Cotton's proposition until the larger project has been sanctioned.

x considers it ~~more~~ unnecessary now to entertain a 2d Officer to aid Captn Gib in the little remaining work that it is unknown ~~to expend~~ — be

observes that

12.— It is ~~also~~ stated by Col.l Cotton ~~that~~ he thinks "the "works have been very "well conducted by Captn "Gib," and that he found "the work very well advanced."— ~~but he thinks Captain Gib "should "have been placed far "more at liberty, both as "respects expenditure, a "apparatus and mode of "operation, for want of "which he has been exceedingly cramped, a "causing both loss of time "and waste of money." In reference to this remark, the Govt would only observe that if Capt~~

~~Gib was restricted in his operations, it was by the Chief Engineer under whose immediate orders he was, and it was for that Officer to rectify any defect in this respect.~~

11 In para 9 of his report Colˡ Cotton represents that there is now a double duty on Square rigged Vessels as compared with Dhonies, and thinks that this excess of charge may be a material hindrance to the progress of the introduction of the superior class of Vessels and for this and other reasons he recommends that the amount of tolls should be reversed viz that in future the charge should be for Square rigged Vessels 3/4 Anna per ton and for Dhonies 1 1/2 Anna. The Govt consider it will be sufficient to place the Square rigged Vessels on an equality in point of duties with Dhonies, but before soliciting the sanction of the Govt of India to the measure, they resolve to refer Colˡ Cotton's proposition for the opinion of the Marine Board with reference to their letter of the 15th January 1847 No 58. The Board will state the exact class of Vessels to which the present proposed reduction should extend, and what will be the probable effect on the Port dues by the measure.

~~and resolve accordingly to solicit the Sanction of the Govt of India to the measure.~~

12 It is further represented by Colˡ Cotton that the port and trade of Paumben has

Whal is the actual
trade of the Port - ?

has now become of that
importance that he
thinks it essential that
the management of the
Port should be put on
quite another footing -
and he suggests that a
Master Attendant -
should be appointed on
a Salary that would
secure an able and
experienced Seaman -
who would have under
him not only the Pass
Pilots but also those
for the Coast to the
Southward as far as
Tuticorin. - The Govt.
cannot perceive that
this measure is at
present

present necessary while
there is an Officer -
having Magisterial
powers constantly on
the spot - with a Head
Pilot under him for
the express purpose of
controlling the Channel
pilots - If the Head
Pilot is fully efficient
for his duties, the Govt.
think that there can
scarcely be occasion
for a Master Attendant
being appointed to the
Port.

WEM

ine Board
Engineer
Acctt. Genl.
il Auditor

y to the Govt.
ndia 8/25 March/54
No. 87.

What is the actual trade of the Port?

has now become
importance th
thinks it essenti
the management
Port should be p
quite another f
and he suggests
Master Attend
should be appoi
a Salary that w
secure an able
experienced Se
who would hav
him not only th
Pilots but also t
for the Coast t
Southward as f
Tuticorin. – T
cannot perceive
this measure is
pre

present necessary while there is an Officer having Magisterial powers constantly on the Spot with a Head Pilot under him for the express purpose of controlling the Channel pilots. If the Head Pilot is fully efficient for his duties, the Govt. think that there can scarcely be occasion for a Master Attendant being appointed to the Port.

H&M

Copy to the Marine Board ✓
" Chief Engineer ✓
Para 5 to the Acctt. Genl.
& Civil Auditor ✓

Copy to the Secy to the Govt.
of India d/25 March/54
No. 87.

Letter to England 6
148—149
May 24th 1854
Replied to 13th June No 9 of 1855
1 @ 3

as to the advantage of such a measure, will apply for the sanction of the Govt of India to the outlay & anticipating approval, authorize an advance of 16,000 Rs for all necessary preparations — Pass observations on Colᵉ C's remarks on the utility &c of the Steam Dredge — also on the duty levied on Square rigged Vessels as compared with Dhonies & direct the Marine Board to report on the exact Class of Vessels to which the proposed reduction should extend. See no reason for appointing a Master Attendant to the Port while there is an Officer with Magisterial powers constantly on the Spot and aided by an Head Pilot.

Intd to Cons 28th March

Marine 1854 Departt

No 56.

Extract from the Mins: of Cons.

Dated 25th March 1854

In the Letter from the Chief Engineer D/23d January 1854 No 17
& the Letter from the Marine Board D/1st May 1854 No 99

Review the General report of the Ch: Engineer on the operations at Paumben from 1822 to 1851 — also the first part of his report of his late tour in connexion with the Channel — Consider the progress made very satisfactory — Notice that the Estimate submitted for deepening the Channel to 13 feet amounts to Rs 130250 & concurring with Colᵉ Cotton

C7 hand
R 15+

---

67 sup 25

Marine Departt

No 2.

To
The Secretary to the Government
of India.

Sir,

I am directed by the Right Honble the Governor in Council to submit for the considera-tion and orders of the Govt of India, the Extract from a accompanying letter from Lieutt Colᵉ Cotton the Chief Engineer forwarding a general report on the operations for clearing the Paumben Channel from 1822 to 1851, and also the observations of Govt

paras 1 @ 3

Govt. thereon as conta
in Extract Minut
of this date; together
with an Estimate amo
:ing to Rupees 30,250 f
deepening the Chann
to 13 Feet at ordinary h
Water, including Rafts
and weighing Boats.

2.— Lieutt. Colt. Cotto
represents that such a
depth is that proposed
will be a very great ben
:fit, not only enabling
much larger Vessels to be
regularly employed in the
Coasting trade, but also
providing for the passage
of Vessels of 300 Tons
when in ballast.— It
will

will also be observed
that the quantity of
material to be removed
to complete the passage
to the depth of 13 Feet
at ordinary high tides
is comparatively small,
as it is only in a few
Spots that it is not already
of that depth.—

3.— Concurring with
the Chief Engineer in
the reasons submitted
by him for the execution
of the proposed work,
the Rt. Honble. the Governor
in Council recommends
the Estimate and Solicits
the Sanction of the Govt.
of

Govt. thereon as conta
in Extract Minu
of this date; togethe
with an Estimate am
ing to Rupees 30,250 f
deepening the Chann
to 13 Feet at ordinary
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will

will also be observed
that the quantity of
material to be removed
to complete the passage
to the depth of 13 Feet
at ordinary high tides
is comparatively small,
as it is only in a few
spots that it is not already
of that depth.

3.– Concurring with
the Chief Engineer in
the reasons submitted
by him for the execution
of the proposed work,
the Rt. Honble the Governor
in Council recommends
the Estimate and solicits
the sanction of the Govt.
of

of India for the outlay of Rs. 30250, of which he has already in anticipation of the approval, authorized the sum of 10,000 Rupees to be advanced at the request of Col. Cotton, to enable the Officer in charge to ~~build the Boats provided for in the Estimates, so that they may be ready when the Season for work arrives.~~

continue his oper-
ations & to make
his preparations
for the proposed
extension

4. I am at the same time directed to refer you to the Despatch of the Honble the Court of Directors to this Govt. in the Marine Depart.t dated 15th January 1851 No. 2 from which it will be seen that an outlay of Rupees 12,000 was sanctioned by them in that year for obtaining an uniform depth of 10 feet throughout the Paumben Passage.× It appears from the report furnished by Lieut. Col. Cotton that a greater depth than this has already been attained - the mean depth in the several parts of the Channel being from 10 3/8 to

× This fund has
now been exhausted

to 12¼ feet at low water neap tides.

Fort St George
25th March 1854.

Lieut Inglaws
May No. 4 of 1854.

Replied to 13th June
No 9 of 1855

148-71

5-1-15

17.5.06

-7

22.5.22

for sanction the Estimate amtg to Rs: 30,250 for deepening the Channel to a given depth, and reports that authority has been granted for the advance of 15000 Rs for making the necessary preparations in anticipation of the sanction solicited.

Ind Dy to Cor 28 March
Marine 1854 Departt.

No. 57.

To the Secretary to
the Govt. of India.

Dated 15th
Recd. March 1854.
Replied to 21 April /54 No 10

Forwards Extracts from Letter from the Chief Engineer touching his general report on the operations for clearing the Paumben Channel, with the observations of

6.8.07

Lieut Rylands
May No 4 of 1854

Replied to 13th June
No 9 of 1855

148-71

5-1-15

17-5-06

4

7

22-5-22

for sanction the Estimate amounting to Rs: 30,250 for deepening the Channel to a given depth, and reports that authority has been granted for the advance of 10,000 for making the necessary preparations in anticipation of the sanction solicited.

Incl 19 p to 28 March

Marine 1854 Departt

No 57.

To the Secretary to the Govt of India

Dated 15th
Recd 4 March 1854
Replied to 21 April /54 No 18

Forwards Extracts from letter from the Chief Engineer touching his general report on the operations for clearing the Paumben Channel, with the observations of

No 8.9