Secrt. I (1)-I—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 Press
~~B.P. No.~~ Mis.

Dated 28-3-1854 197

Not to be folded or roughly handled

No 10.

From

Lieut. Colonel A. T. Cotton

Chief Engineer

To

The Chief Secretary to Government

Fort St. George

Sir

I have the honor to forward an Estimate for prosecuting the present works at Pauamben through the ensuing season so as to deepen it to 13 Feet at High Water ordinary tides which I beg to recommend for the following reasons.

1st The quantity of Material to be removed to complete the Pass to 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.

2d Such a depth will be a great benefit 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.

3d 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 employment to the powerful Dredge, (and also if Powder is used more freely), the work will certainly be executed more cheaply than the average of the work hitherto.

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

I may mention here that the Steam Dredge requires caulking and should be taken as soon as possible 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 Bar 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 Pumbers 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 Pumbers works. This seems to me another proof of the mistaken system of having the Publick Works 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.

I have the honor to
Sir
Your most obedient Servt

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

Lieut Colo
Chief Engineer

Report of a tour of Inspection of the Chief Engineer to Caumbau and other Works.

Para 1. October 23rd Embarked on a Steamer for Caumbau, but owing to very light Winds for the first 4 days 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 Caumbau 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 Captain Bordey to meet me, but in consequence of the weather he was detained on the road, and did not reach Caumbau till the 4th Ultimo. The rains were so heavy that the Bay came down in great force, and every Ravine was full of water, rushing 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 Kyd took charge in 1844, tried the Steam

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 pass 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. Appended 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 &c.— 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 two months of this.—

5. For this sum a very narrow, and necessarily crooked pass has been made about 5 feet

5 feet through at ab 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 12 feet at high water of ordinary tides.—

6. The freight has been lowered on an average about 6 Rupees a ton between Masulipatam 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 Vessels instead of Canoes, 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 adapt 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

the success of operations, and (which is less easily accounted for), an extraordinary mistaken conviction 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 3,000 Rupees could be justifiably expended on it, and the matter was referred in 1827 for the express orders of the Honorable Court. In 1829 when I was employed under them in examining the Pass, it was a constant subject of question whether if deepened the Pass upon & not fill up again. Now that we see the results of the operations, it seems strange that such a question should ever arise, for 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 5000 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 at first 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 Pass. — The comparatively small extent of the traffick was evidence, 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 1½ Lac of Rupees has been in a great measure wasted from the other operations not being in proportion.

4th. Sir's opinion that a much freer use of Powder would have been advisable. The common blasts have been 2 lb, in holes 6 inches 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

would have been far more economical
to remove an enormous quantity of Coral
and Boring whilst the cost of the Powder
is only a small part of the total Expence.

5th It has been a great draw-back,
that there have been no European Divers at
the works - The Native Diver
would have been five times as efficient
not 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
more than two of them now in this Presidency.

6th It seems a great mistake
to have an unexampled work carried
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 Pitt.
I found every thing in good order, and
the work very skilfully executed, consider-
ing 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
frequently cramped causing both loss of
time

time and waste of money -

8th The Steam Dredge Machinery
is in good order, but the Vessels require
Caulking, and this should be done before the
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,
& that the quantity of material to be
removed, in order to deepen it to 15 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 30,000 Rupees
besides the Prisoners and Establish-
ment now above. —

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 the
delay is great. Two days 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 work in the
rocky part of the Pass, but in the sand

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to remove an enormous quantity of Coral
and Boring whilst the cost of the Powder
is only a small part of the total expence.

5th It has been a great drawback,
that there have been no European Divers at
the Works - The Native Divers
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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
now two or three of them now in this Presidency.

6th Altho' a great mistake
has been made in employing a Corps
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 Pitt,
I found every thing in good order, and
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the circumstances I have mentioned.
I think he should have been placed
far more at liberty both as respects
expenditure, apparatus and mode of
operations for want of which he has been
exceedingly cramped causing both loss of
time

time and waste of money -

8th The Steam Dredge Mercury
is in good order, but the Vessel requires
refitting, and this should be done the
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,
& that the quantity of material to be
removed, in order to deepen it to 13 feet
is very moderate, certainly under 1500
Cubic yards, but a considerable quantity
of this is Rock and Coral. The whole
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next season at a cost of 30,000 Rupees
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10th Excepting the Steam Dredge
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There is not a single weighing Boat,
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for that purpose it is necessary to use
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no suitable boats for receiving the stones
and conveying them to the place where
they are to be discharged, so that when
it is calm considerable delay is made 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

to worked admirably, running at the rate of about 35 Cubic Yards 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 it 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 from 150 or 200 Cub-yards, but as Mr Pearce said the other operations

the means of judging what a Dredge of this power ought to raise, and therefore cannot say that the work done by it is fully equal to what is done in other places, but 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

in this Pass, I beg to recommend that the present pay and Rations should be continued 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 these three months in which time the boats could be prepared —

2nd The Dredge should be taken to Coringa to be examined and Caulked — As while there it would be used to cut thro' the bar at the mouth of the Coringa branch of the Godavery, which has been lately formed. I had not made myself sufficiently acquainted with the operations at Pumbaun 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 Pumbaun. — 200 or 300 Cubic yards a day, it will take a very short time to complete that work. This will be a most important service, and it's a great pity that it was not thought of three or four years ago —

3rd

An additional Officer should 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.

A European Supper, experienced in Diving should be attached to the Works, with a special allowance for such extraordinary duty. - It is probable that he 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. In concluding this part of my Report on this Pass, I would be guilty now a double duty on Square Rigged Vessels, as compared with Steamers. When it is considered how small a difference of this kind is sufficient to act as a serious check to any system of operation, it will be allowed that this tax of Charge may be a material hindrance to the progress & the introduction of the superior Class of Vessels. Even on the score of humanity alone every effort should be made to hasten the overthrow of the Calmony from these Coasts. Last year a Gentleman embarking in a Dhoney from Ceylon was blown off the Coast, & it was so many days before they could regain it, that he died mad in consequence of his suffering, from want of water, and how many Divers annually perish in this way we cannot tell, who

This has to the more now, as Gib will be required by Long for new Survey Regulations

have been saved in respect that capable of swimming to shore, & not the Coast that this greatly reduce the complement of Divers for the Pass, & therefore confidently that the amount of tonnage Charge should be for square feet Tonnage & Steam portion for Steamers 1½ time. If it should be thought to charge this Steamer tax for the Vessels of Peleb, that the tax after all is not a heavy being for instance only equal 2 per Cent upon the Freight & Salvage & Calmony and that even if there were a subject the Calmony neither these nor the present dangerous Peleb, for they are of Steamers no Peleb that course or three times in 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 a quite another footing. that is, that a Master Attendant should be appointed on a Salary that would secure an able and experienced Seaman

7. 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 —

This has to the more necessary as Capt Gib will be required by Government from time to time

4th A European Supper, experienced in Diving should be attached to the works with a special allowance for such extra ordinary duty. — It is probable that he 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. In concluding this part of my Report on this Port, I would be earnestly [illegible] to the [illegible] Port Dues now a double duty on Square Rigged Vessels, as compared with Steamers. 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 item 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 Overship of the Colony 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 [illegible] 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 hopes that were capable of navigating to Trincomalee I have not the least doubt that thereby would greatly retard the completion & execution of the improvements in the Port, as the Dhoneys would therefore confidently reckon that the amount of Tolls should be reversed, viz. that in future the Charge should be per square Foot Vessels measure 3/4 Anna per ton and for Dhoneys 1/2 Anna. If it should appear desired to charge this heavier Toll for the greater 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 Colombo and secondly, that even if it were more heavier, it would be still more advisable to subject the Colony Owners to it, rather than to attempt actually put a premium on those dangerous and expensive Vessels, for they are of course more expensive than Square Rigged and 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

Seaman to hold the appointment. He should have under him not only the Pilots, but also those on 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 mark post will be erected by the deepest part of the Pass to 15 feet, to leave room for vessels of 300 Tons and there passing up, but I consider that it will be found of much larger vessels than are at present employed in the Country trade than are at present employed in the Country trade there will be a further considerable reduction of freight. Vessels of 500 Tons could very conveniently now be employed in this line of traffic, but since, instead of rice from there & Ceylon is now not less than 25 Lacs of Rupees annually —

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

Chief Engineer

Land 8/46

Ellis Esqr
Chief Secretary
Fort St George

Dec 1854
Ans Dec 10.
Pub 1854
Sep 1890

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 Tamatory on the Continent, but its distance from Ceylon is about 55 Miles the intermediate Space being filled up by the small Islands of Ramysuram 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 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 Ramysuram	12½ Miles
Across the Island of Ramysuram	13 Do.
Adams Bridge	25 Do.
Across the Island of Manaar	16½ Do.
From the Island of Manaar to Ceylon	½ Do.
Total	56 Miles

Immediately North of the Channel and between it and the Bay of Bengal is Paumben Head on the Bay of Condy, 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 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 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 deep 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 Kolipatnam 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 increase.

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 92 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 sound the Coast as far as Cape Comorin.

Islands and rocky shoals.

The Gulf is 4 fathoms in depth at a distance of from ½ 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 ⅛ths to 3/16ths of a Mile.

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

Depth along South of Adams Bridge.

Along the South of Adams 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.

North of Do

Along the North of Adams Bridge the 4 fathom line is about 3 Miles from the Coast.

The following Extract from a report by Colonel Lieut: Chief Engineer dated 20th November 1822 and found in the sand bank called Adams Bridge. Page 154 of Corps Papers Volume 2

Extract of Colonel Sims Report on the Sand bank called Adams Bridge

"The sand bank called Adams 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 can 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."

There are three principal openings or Channels across the bank. One near the Island of Manaar called the Sal Manaar passage, the second 8 Miles further to the East, and the third about 11 Miles from the Island of Ramisseram, termed the Tammycoddy 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 mouths, on which

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

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 ½ to 7½ Miles.

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.

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

4½ Depth from the Shore.

Shoal of hard sand 16 Miles from main land.

Shifting Sand Banks in the direction

North of

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 5 Miles near Paumben to 12 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 1½ 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 1/8th to 3/4ths of a Mile.

Along the eastern Coast of the Gulf of Manaar the 4 fathom line is at a 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 1½ 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 Kalpentyn 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.

The following Extract from a report by Colonel Lowe while Chief Engineer dated 20th November 1822 [illegible] the sand bank called Adam's Bridge. Page 15 of Corps Papers Volume 2

Extract of Colonel Lowe's Report on the Sand Bank called Adam's Bridge

"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 [illegible] 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."

There are three principal openings or Channels across the bank. One, near the Island of Manaar called the Sale Manaar passage, the second 8 Miles further to the West, and the third about 11 Miles from the Island of Ramisseram, termed the Tammycoary 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 mouths, on which

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Depth of the Gulf.

and Cape Comorin the shore is rocky and goes down into 4 fathoms water from between ½ to 3/4 of a Mile.

Along the eastern Coast of the Gulf of Manaar the 4 fathom line is at a 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 beach 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 Calpentyn it is only 1¾ Mile and within the next 15 Miles the distance diminishes to ½ 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 do.

The following Extract from a report by Colonel Lennox Chief Engineer dated 20th November 1822 and Cape Comorin the shore is rocky and goes down into 4 fathoms water from between 1/16 to 3/4 of a Mile.

Along the eastern Coast of the Gulf of Manaar the 4 fathom line is at a 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 beach 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 Calpentyn it is only 1¾ Mile and within the next 15 Miles the distance diminishes to ½ of a Mile and it keeps within this distance as far as Columbo.

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

The following Extract from a report by Colonel Lennox Chief Engineer dated 20th November 1822 and Sand bank called Adam's Bridge. Page 154 of Corps Papers Volume 2

Extract of Colonel Lennox Report on the Sand bank called Adams Bridge

"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 proved 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."

There are three principal openings or Channels across the bank. One near the Island of Manaar called the Pat Manaar passage, the second 8 Miles further to the West, and the third about 11 Miles from the Island of Ramisseram, termed the Tamycoory passage. The 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

which there is not more than 5 or 6 feet of water.
The bank between it and Ramiseram is entire and several feet above water. The Tal Manaar passage was excavated by the Ceylon Officers and resembles exactly that of Tammycoody, but it is not so deep, there being only about 3 feet of water on its North bar.

"The intermediate opening was not excavated, 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 Tammycoody"

"In the vicinity of the Tal Manaar and Tammycoody openings, the bank is visible above water for several miles, interected by only a few narrow openings, but towards its centre it is chiefly covered with water, and very little land 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, or what was the lee side, being stirred up by the surf which 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

Estimate of the value of the Pamben channel -

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. [illegible] 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".

The value of a good Channel at Pamben will be seen by the following statements -

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 Channel

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 Suez would be 960 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 Calumbo
was from 1831 to 1840 By Country rigged Vessels Rupees 12-4-"

1849 to 1853 " 4-13-"

Difference 7-7-

Saving on 71,000 Tons Rupees 5,28,062-8-

By Steamers the difference is as follows

In 1820 . . . Rupees 8-5-7 Ton

1849 to 1853 3-10-5

4-10-7

Saving on 71,000 Tons Rupees 3,30,962-8-8

The aggregate tonnage of Vessels which passed through the Paumben Channel in the year 1852 was 148,244 Tons for the current year it is nearly 160,000 Tons. A considerable number of Dhonies in returning without cargo pass through the shallow openings in Adams 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 P. (according to the prices above given) 2½ Rice per Ton per Mile,

the

23

This does not include the saving of Demurrage from diminution in the time of Detention for Examination of

the total saving for the year amounts to 1,48,244 Tons × 300 Miles × 3 Rice = Rupees 8½ Lacs

This account does not merely represent the value of the Cargo as in rough weather, most of the Vessels which go through the Channel to [illegible] round Ceylon at all.

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

The obstacles to be overcome at Paumben will comprise 3 kinds of work. 1st a bank of Coral 600 Yards broad over which there were about 6¾ feet [illegible] water neaps 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.

Height of reef before commencement of operations.

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.

Before a clear depth of 10 feet could be obtained at low water it was necessary to deepen the Channel 6 feet on an average for a distance of 1400 Yards.

Cause for deepening the Channel 6 feet on an average.

3d The last obstacle is a bank of Sand and Mud lying South of the reefs at a distance of about 2500 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 neaps tides.

These three obstacles are within 4300 Yards or about 2½ Miles.

The first step towards deepening and

The first surveys of the Channel

widening the Channel seems to have been taken in the year 1822 in 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 Sullivans Letter recommending that a Channel should be cleared the Board brought the matter to the notice of Government.

Who

Brought over 1060.

the Paumben Channel 640 Miles

Saving in distance by going through the Channel

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 Suez would be 960 Miles

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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 Calumbo

	By Dhonies or Rigged Vessels
1821 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 8.5.7 P. Ton

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4.10.7

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

the total saving for the year amounts to 1,48,244 Tons × 300 Miles × 3 Rice = Rupees 5 Lacs

This does not include the saving of Demurrage from diminution in the cost of Interest from diminution of

This amount does not merely represent the value of the Cargoes in rough weather, most of the Vessels which go through the Channel would go round Ceylon at all.

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The obstacles to be overcome at Paumben will consist of 1st a bank of Coral 600 Yards broad over which there were about 6¾ feet at low water neaps tides. 2d a reef of sand, stone 900 Yards broad running across from the Island to the main land lying South of the Coral bank.

Height of reef before commencement of operations.

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.

Depth to be obtained in Channel.

Before a clear depth of 10 feet could be obtained at low water it was necessary to deepen the Channel 6 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 2500 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 neaps tides.

These three obstacles are within 4300 Yards or about 2½ Miles.

The first steps towards deepening and widening the Channel seems to have been taken in the year 1822 when 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 Sullivans Letter recommending that a Channel should be cleared the Board brought the matter to the notice of Government who

who directed that a survey should be made in consequence of which the pass was examined and reported on by Ensign (now Lieutenant Colonel) A. Cotton.

Nothing seems to 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 & 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 convey 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 Adams 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 anything being ordered in consequence until

in

The commencement of the work.

Employment of a party of Sappers and Miners.

Country Brig passed through at high water

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

25

1837 Colonel (now General) Monteith, Chief Engineer took up the matter and prosecuted it with much 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.

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.

On the 2nd of January 1838 Colo. 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 neaps tides.

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 Monteiths 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

The Note continues as follows.-

"Vessels drawing 6 Feet water can pass it at all times of tide in moderate weather and a fast sailer may 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 also be taken to prevent accidents from cross currents to be met between the reefs."

* "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."-

"With respect to the Tides General Monteath says *

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 Grand Dredge appears to have worked between two Boats connected as before by means and lashings × decked over.

× Fitted 23d Dec. 1840. See Colo. Monteath's Letter to Govt. dated 5th January 1841.

In the year 1841 the Dredge was worked on a Barge of 320 Tons made at Cochin for the Sum of Rupees 11,80 See Bill & Collectors dated August 1839.

Steam Dredge Machinery obtained from England End 1815 and a Boat made to suit it &c &c.

The Steam Engine is of 16 Horse power and obtained from England at a cost of Madras Rupees 26589. 6..

The Machinery was put into the Boat ×

The fact reported to Government by Colonel Lawe on the 9th April 1817.

× Bill dated 17th May 1815.

The Boat cost at Cochin Rupees 22029. 13. 3½

The miscellaneous expences connected with the Dredge and fitting the Machinery into the Boat Amounted to Rupees 2191. 1. 2. the total is made as follows:-

Machinery	26589 - 6 ..
Boat	22029 - 13. 4
Fitting &c	2191 - 1. 2
Total	50810 - 7. 6

Per a report to Government dated 23d April 1839 Colonel Monteith states that this Channel had been deepened 3½ feet during 1837 and 1838 and that it would require 200 Rupees a Month for 3 years at 9 working Months a year one 5400 Rupees more to deepen the Channel 3½ feet more which would give 15 feet depth when finished 10 feet at low water.

In a letter to Government dated 15th Feby 1842 Colonel Lane writes thus: "The passage through the reef has been strengthened and deepened to 8 feet but little has been done to the second bank South of it. The State is little further on that owing to 40 of the best Men of the Jaffnas having been called away for Sappers duty, it would take 15 or 18 Months the maintenance the depth of water to 8 feet over the second bank South of the reef.

On

On the 10th of July 1845 Colonel Sim reported that "it will be observed that the depths 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 still places where there is only ½ water

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

In 1850 Colonel Sim 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 ⅓ basket 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 the reefs appears from a Chart surveyed by Captain Giles 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 depths ——— 13 feet

Mean ——— 11¼

Minimum ——— 11

In the 2d 200 yards.

Maximum ——— depth ——— 11 feet

Mean ——— " ——— 11 ⅜

Minimum " ——— " ——— 11

In the 3d Length

Maximum ——— depth ——— 11 feet

Mean ——— " ——— 11 ½

Minimum ——— " ——— 10

In the 4th Length

Maximum ——— depth ——— 10 feet

Mean ——— " ——— 12 ¼ "

Minimum ——— " ——— 11 "

In the 5th Length

Maximum ——— depth ——— 10 feet

Mean ——— " ——— 11 ½ "

Minimum ——— " ——— 9 "

In the 6th Length

Maximum ——— depth ——— 10 feet

Mean ——— " ——— 10 ⅜ "

Minimum ——— " ——— 9 "

In the 7th

Maximum ——— depth ——— 11½ feet

Mean ——— " ——— 11 ¼ "

Minimum ——— " ——— 10 "

Captain Giles Soundings were taken in the Month of October 1852.

29

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 10385-4-11.

The Results are as follows.

The tonnage through the Channel has increased vide appendix B from 1700 in 1822 and 6573½ in 1839 to 48244 in 1852, and nearly 50000 in 1853-4

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 - 0 in year 1839 and 1840
and 2231 - 1 - 6 in year 1840 and 1841
to 6886 - 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 3695-12-0 in year 1842/44 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 Rupees 53651-5-7.
Less on Port dues from years 1845/46 to year 1851/52 " 31435-11-7
Remaining clear gain Rupees ——— 22215-10-0

At present there is a diminution of Port dues to the sum of 1300 Rupees since 1838 and an increase of the Pilotage of Rupees 6600 shewing a balance in favour of Government of 5,300 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 8-5-0 per ton in 1820 to Rupees 3-10-5 from 1849 to 1853 and that the freight by square rigged Vessels between the same Ports had diminished from Rupees 12-4-0 per ton from 1831 to 1840 to Rupees 4-13-0 per ton from 1849 to 1853-

I have shewn in a former part of this

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

If conveyed by Square rigged Vessels Rs. 5,28,000-8-0
" by Dhonies 3,33,900-8-0

so that may safely be calculated at Rupees 2 lacs per annum for this portion only of the trade.

The last no doubt owes one cause of the increase of the prosperity of Ceylon and it has no doubt had a considerable effect in increasing the revenue of that fertile province and it is evident that there is a permanent inventory likely to be increased by any thing that can facilitate those for the improvement of intercourse or communication.

The following Extract shews that as soon as the obtaining of the former enabled improvements to be made in the vessels used in the existing trade the Native Merchants did make the improvements, a fact which clearly shews 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 a Notice of the Surveys executed the Lights, Beacons and Buoys established, with their information laid for on the Order of Government dated 4th May 1848 No. 188.

19. "As a natural sequence to these extensive improvements, the trade through the Coomboo 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 retention, as long as the passage from the Sea-mouth to the Malabar Coast on the west side Ceylon was confined to one passage in the year, the Flower of many fruit description of craft, was in general favour as being less expensive, until as easily sailed with a fair wind as any other, but now that the Coomboo channel affords the passage practicable at all seasons it is a matter of the more substantial Brig and Schooner rigged vessels to work down the Gulf of Manaar round the S. W. point of Ceylon, a feat which 50 years back few English Ships would attempt. These are built by Natives at Cochin, Negapatam and Porto Nove; most are of teak, and many of them copper sheathed, and have generally a handsome and roomy cabin, which is occupied by Natives, affords an interesting specimen of their advance in the Science of navigation."

Trade passing through Coomboo passage.

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 1837 was about

Expenditure according to Account Current entered in Lieutenant Collyer's Report Rs 72,952. 3. 4
Superintendence, Coppers, and Carriage from 1839 to 1848 at Rupees 11,000 per annum Rs 66,000. - -

Total Rupees 138,952. 3. 4

The Expenditure up to the end of 1853 was Rs 342193. 11. 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 appeared 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.

The Paper contains the history of the Work, as drawn up by Lieutenant Powell 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 Lee but that another interval of 8 years passed before the deepening of the Coddo was systematically taken up by General Monteith. From that time to the present 16 years, the work has been prosecuted but owing to small grants only 20000 Rupees a year has been spent on it.

The subject of the further

19. As a natural sequence to these extensive improvements, the trade through the Coromandel harbour 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 the monsoon in the year, the Bombay or very small 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 the Government are anxious to encourage the employment of vessels of a more substantial Description and better 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 Moplahs, appear an interesting Specimen of their Seamanship.

Trade passing through Coromandel passage.

The Estimate 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 1838 was about

Expenditure according to Recent Current entered in Lieutenant Collyer's Report Rs. 72,952. 3. 4
Superintendence Coppers, and Convicts from 1839 to 1848 at Rupees 11,000 per annum Rs. 66,000. - -

Total Rupees 138,952. 3. 4

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The subject of the further

further in keeping of the Post is discussed in the Chief Engineers Report dated 16th January 1854.

W. Cotton

Chief Engrs Office
Fort St George
16th January 1854

Lieut Col
Chief Engr

Letter from Lieut Col Cotton dated 8th May 1854 & 1837

1

Chief Engrs Office
Fort St George
16th January 1854

General Statement of Receipts and Disbursements on account of Pauma

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 July 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 Nov. 1845 for Do Do				21993	14 7
						101993	14 7
		By Unserviceable Stores on September 1843				301	10 7
		By Amount received from the Paymaster Southern Div. 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				15	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

Chief Engineers Office
Fort Saint George
16th January, 1854.

Appendix A

to Journal from 1837 to April 1851.

37

Disbursements

1837	"	To Amount Expended on the Works at Paumben during the Year 1837 and Sanctioned by Government on the 15th July 1843				5527	13 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				10860	12 10
1840	"	To Do Do from January to November 1840 & Do on the 19th January 1841				11098	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 1842				1153	3 -
1842/43	"	To Do Do from July 1842 to July 1843 & Do 23d January 1844				3957	12 9
1843/44	"	To Do Do from March 1843 to January 1844 and Do on the 2d 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

W. C. Cotton
Lieut. Colt.
Chief Engineer

Appendix B

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

For the year 1839	65731½
" " 1840	74,645
" " 1841	92,994
" " 1842	87,869
" " 1843	98,412
" " 1844	1,15,898
" " 1845	1,11,283
" " 1846	1,13,892½
" " 1847	1,22,661
" " 1848	1,18,423½
" " 1849	1,32,514½
" " 1850	1,46,393
" " 1851	1,39,702
" " 1852	1,48,244
" " 1853	1,60,000
" January & February 1853	26,449

Appendix C.

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

Pilotage

Dubash Cheroyes

Faslies	Collection	Deduct Sibbandy	½ Share of the Collection allowed to the Licensed Pilots in lieu of pay	Total	Balance	Net Proceeds
	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	. . . .	. . . .	. . . .	. . . .	. . . .	1.403 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 .	2.052 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 . .	3.492 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	4.773 8 6
1257	7.017 12 .	2.963 . .	383 . . .	3.346	3.671 12 .	4.181 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	1.206 . .	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	1.339 6 1
1261	12.769 4 .	1.233 . .	2.689 14 1	3.922 14 1	6.846 5 11	968 4 9
Total	9.009 . .	9 26.770 6 4	9.587 8 10	36.357 11 2	52.651 6 7	48.427 . . 5

Madras 18th March 1853.
Signed/ R. D. Parker
Collector

Appendix C.

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

Pilotage

Deduct Charges

Fasles	Collection	5% for Sibbandy	½ Share of the Collection allowed to the Licensed Pilots in lieu of pay	Total	Balance	Port Dues
	C.R. A.P. 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						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	3.698 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	4.773 6 6
1257	7.017 12 ..	2.963	383	3.346	3.671 12 ..	4.181 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	1.206	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	1.339 6 1
1261	12.769 4 ..	1.233	2.689 14 1	3.922 14 1	6.846 5 11	968 4 9
Total	9.999 .. 9	26.770 5 4	9.587 8 10	36.357 11 2	53.651 5 7	48.427 .. 5

Madras 18th March 1853.
Signed/ R. D. Parker
Collector

Appendix D.

129

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 direction of the Marine Board to inform you that they addressed the Collectors of Tanjore and Madura with the view of ascertaining in what manner the deep cuttings of the Coleroon Channels had affected the rates of freights from the adjacent ports in the Cauvery district.

2. The accompanying returns 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.

In 1830	Freight by Coney	8. 5. .per ton
1831 to 1840	"	Square Rigged Vessel	7. . . "
1841 to 1848	"	"	10. . . "
1849 to 1853	"	"	4. 13. . "
"	"	by Coney	3. 10. 5 "

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

Letter Appendix D.
Received 29th April 1853.

Appendix D.

No 849.

Madras Marine Board Office
5th April 1853.

From,

J. J. Franklin Esqre
Secretary Marine Board

To,

Lieutenant Colonel J. 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 Madura with the view of ascertaining in what manner the Revenue of the Pumbun Channels had affected the rates of freights from the adjacent ports in Tanjore using that passage.

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

In 1820	Freight by Dony	8. 5.	per ton
1831 to 1840	"	Square Rigged Vessel	12. — "
1841 to 1849	"	"	10. — "
1849 to 1853	"	"	11. 13. "
"	"	by Coney	3. 10. 8 "

3. It appears that there is not any extensive trade between the Madura ports (unassisted Coasts, and in some places the Dony 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 tended downwards to tendency at Cannanore, Showing an average of 14 Rupees a ton between 1826/30, and 10 to 11 Rupees in 1850.

I have the honor to be &c.

Signed/ J. J. Franklin
Secretary

Madras
Marine Board Office
18th April, 1853.

/True Copy/
W. Cotton
Lieut. &c.
Chief Engr.

No. 126.

Tanjore
Villium 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 Pamben Channel has effected the rates of freight from this Port to Columbo and the Mediterranean Ports I have the honor to state that about 30 years ago the rate of freight from Tanjore to Columbo was from Rs. 7. 14. to Rs. 8. 10. per ton on an average of about Rs. 8. 5. per ton. These rates were for Dhonies and obtained without any little variation till within the last few years since the year 1831 and up to 1849 the trade has been also carried on by decked vessels by which and during these years the rate of freight varied from Rupees 11. 6. to Rupees 13. 2. per ton on an average Rupees 12. 4. From 1841 to 1848 the freight by the same vessels varied from Rupees 9. 12. to Rupees 10. 8. per ton but since the beginning of the year 1849 the average rate of freight to Columbo decreased to Rupees 3. 10. 5 per ton by Dhonies and by decked vessels to Rupees 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 Steamers has caused them to have a downward tendency.

I have &c.

Signed/ J. F. Bishop
Collector

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

No. 850.
1853.

Calicut 8th April 1853.

From,
H. V. Conolly Esqre
Collector of Malabar

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

Sir,

In reply to your letter of the 23d February last, informing me that the Marine Board are desirous of learning in what manner the opening of the Coimbatore passage has affected the rate of freight, and requesting me to communicate what the average rates per ton of Cargo were from this Coast to the Malabar Coast to those of the Corresponded year 1850. I have the honor to forward Copies of Letters from the Assistant and Custom House Managers at the principal ports in this district which contain all the information procurable on the subject.

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

I have the honor to be &c.
Signed/ H. V. Conolly.
Collector

Calicut
8th April, 1853.

B

/True Copies/
W. Cotton
Lieut. Colonel
Chief Engr.

92/1852
Ln 92.10

Estimate of the Expense of Deepening the Pamben Pass to 13 feet at low water Neaps 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	2400 - per annum
Prisoners 200 Men	7.500 -
Writers & Assistants	1.200
	11.100 - per Annum

or for 16 years during which the work has been carried on ____ 177.600.

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

1/3 of the cost of the Dredge ____ 11.000

Money grant ____ 173.592 - 14 - 7

3.42.193 - 14 - 7

2nd/11 The amount may be made up nearly as follows -

			Rs
On Sand Stone	50000 Cubic yards at	5½ Rs	275000
Coral	27,000	" 2	54,000
Sand	33,000	" 5 Annas	10,300
			339,300

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 yd.	1250
Apparatus as below	9000
Total of Estimate	30,250

Apparatus.

3 Weighing Boats at 1000	3,000
6 Stone Boats	4,800
5 Rafts	1200
	9000

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

Signed A. Cotton,
Lieut.t Colonel
Chief Engineer

(True Copy)

Chief Secretary

G.P. Mathewson

Marine Regd.
Lr. No. 10 of 1835
Rn 1835
Ex 8th 99

Secret Department
Letter No. 4 of 1837
Dated 11th

No. 63.

From,
Captain C. Gibb.
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. 2 Eight hundred and thirty six Rupees Eleven and Pice Three this Sum being the amount value of articles and Packing materials &c. &c. supplied on Indent for the use of the Pamban Works, as I have only 971. 9. 2 Nine hundred and Seventy one Rupees Nine and Pice Two at the Credit of the Works and the bills of February and March to pay out

that at the earliest [illegible] leaving it another Officer should be selected in his place, [illegible] entirely ignorant of the [illegible] operations locality & of the work [illegible] posted.

[illegible] Assistant [illegible]

out of this Sum as 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 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 my Salary I would request permission to return the present time with the Steamer.

I have the honor to be Sir
Your most obedient Servant
Colin Gibb Capt.
Engrs. Operations

Fort Pownbery,
9th March,
1854.

A true Copy
P. Worrall Lieut
Adjutant of Engineers

In 1854
In No 62

No. 10 of 1854

In No 99
In 3854

No. 121.

From Lieutenant P. P. C. Worrall
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. 68 dated 9th Instant received from Captain C. Gibb superintending Operations at Pownbery 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 Engineers Office,
Fort St. George
14th March, 1854.

P. Worrall Lieut
Adjutant of Engineers.

In the absence of his
[illegible] to whom
[illegible] following
[illegible] God.
[illegible] Dear
[illegible] necessary
[illegible] the
[illegible] the troops
[illegible] the
[illegible] are en-
[illegible] break
[illegible] ge and
[illegible] in this
[illegible]
[illegible] thought,
[illegible] in-
[illegible] Reserve
[illegible]
[illegible] consider-
[illegible] take to
[illegible] this last
[illegible] dence
[illegible] to
[illegible] that at the earnest of his
[illegible] leaving it another
[illegible] intended should be taken in his place,
[illegible] be placed
[illegible] entirely ignorant of the
[illegible] Cast Gibb for the locality of the work
[illegible] operations upon
[illegible] proposed.

Letter & Enclosure
May N.ts of 1854

Replied to 13th June
N.o 9 of 1853.

148-113

Inclosure in No. 10 of 1854

Sent to Cons 28th March
Do
Received 1854.

From Lieut. R. C. E. Hamilton
A.D.C. of Engrs
To The Chief Secy.
to Govt.

Dated 14th March 1854.
Rec.d 15-
No. 121.

Enclosure 1
No. 62

Forwards Copy of a Letter rec.d from Capt.n Gifford Engr.s & Superintendt to Committee - requesting instruction of the Right Honorable the Governor thereon with reference to the Chief Engineer dated 10 January 1854.

52

Ground

In the Report of his Committee of inspection Lt. Col. Colton remarks on the following points which have not been noticed by Govt.

5th of Para 2nd on the 4th of Para 8th

A European Diver is said to be necessary to check control the Native Divers at the locks and one or two of the Sappers who have employed on the work of the "Royal George" and [illegible] also in this Residency, but it is thought, the Committee, that this would be a very important aid. The Assistant Engineer

Col. Colton considers that a great mistake to entrust a work of this kind to the superintendence of a single Officer & that in the event of his leaving it another would be selected in his place, entirely ignorant of the locality & of the work.

#3 ment & the Stone should be raised to the tanks with a special allowance for extraordinary duty.

5th of Para 2nd on the 4th of Para 8th

Recommended should if possible be placed under Capt Gifford for the more effectual operations now proposed.

As Asst Engineer

4th of Para 7.

Col. Colton thinks that the Officer superintending the works should have been placed far more at liberty both as respects expenditure, preparation and mode of operations for want of which as he states, there has been both loss of time and waste of money

11th of Para 7.

The Steam Dredge, at present employed, should be made of as much use as possible, and as for this purpose there should be [illegible] additional Crew [illegible] to allow of relief being given day & night to the work, from day light to dark, by which means nearly 500 Cubic Yards a day - while now only 300 C. Yds. are about removed.

Col. Colton thinks it desirable that if practicable one of the Engineer Officers posted on England should be directed to make

make himself thoroughly acquainted with the working of such a Machine - there, with a view to his making any improvements in the working of this Dredge, on his return to India

2nd of Para 9.

In this Para Col. Colton points out that there is a double duty on Square rigged vessels as compared with Dhonies, & considers that this appears a charge is a natural hindrance to the progress of the introduction of the superior class of vessels. He therefore recommends that the rate of 6 As should be lowered. 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.

It is recommended that the arrangement

of the port of Paumbow
should be put on quite
another footing: that
a Master Attendant shd
be appointed on a Salary
that would secure the
able and experienced
Seaman to hold the ap
-pointment. That to have
the Channel Pilots under
his control and also
State for the Coast to
the Southward as far
as Tabatabar

Mem. D. of the points ad-
verted to in Col Colton's
Report of his tour of in-
-spection to Paumbow,
which have not been
noticed by Govt. the
Merchants of Govt.

Immk 63/

v. Para 13
of Draft Mar
Con: Words

I do not [illegible]
[illegible]

Notwithstanding that my instructions at Council were to the effect that the 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 - 92 was on 20th Feb 1847. until that

Honourable the Secretary
that the Marine
Bd in their letter
of the 15th Jany 1847
attended only with
the object of stating
the reasons then
assigned for their
inability to reduce
the dues on Steamers
are not applicable
to the present Pro-
posed reduction
now submitted to
the latter class
of Vessels - It
will be perceived
from the cor-
respondence before the Board of Trade
to be able to pro-

92 was not comprised
in that Report,
to make the reduction
in favour of Steamers
& the same time
if the Board of Trade
was solicited
and prior to the
Meeting - 92
is now submitted
to extend this re-
duction to all
Steam vessels, (not em-
braced generally
throughout the
Regulations, but
only to those)
carrying Pas-
sengers between the
Boundaries stated
- 92 with

the extra clerks
to which the
Secretaries
is to extend &
to know what
will be the probable
effect on the Post
Offices & the mea
sure.

Ground inbuck
Before that I
may be authorized
to alter Para: 13
of the draft Min:
con: so as to call
for the Opinion
of the Marine Bd
on the head of
Coal: (Stores both:
Victuals —

7/3/54 W.G. Mortons

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 Dredger at Coomboo being towed up to Bombay by the "Hugh Lindsay" for repair.

By the Pte & Com: the President.

I suppose there is a mistake in this letter as it speaks of the "Hugh Lindsay" towing the Dredger up with Treasure from the Northern Ports. - The use of the Hugh Lindsay seems to me to have been greatly mismanaged. First by Brig: Jones'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

the after part to Ships
Bow except Capt to Ships
the voluntaries
is to extend so
to know what
will be the probable
effect on the Post
Rates by the mea
sure.
Ground in Bank
Harbour Bank 9
mos he authorised
to alter Para: 13
of the Instr: Min:
con: It as to call
for the opinion
of the Marine Bd
on this head of
Enl: Cotton Instr:
-tions —

7/3/54 W.G. Mortgomery
Capt R.N.

Certainly Do 00
H.P.

Copy of Remarks of the President
and Members of Government on
Letter from the Secretary Marine
Board dated 9th January 1854 No 84.
respecting the Steam Dredger at
Coombem being towed up to Goringa
by the "Hugh Lindsay" for repair.

By the Pte Comm:
the Presidents.

I suppose there is a mistake
in this letter as it speaks of the
"Hugh Lindsay" towing the Dredger
up with Treasure from the
Northern Ports.. The use of the
Hugh Lindsay seems to me to
have been greatly mismanaged.
First by Brig: Jones'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

being used to tow the Dredger when she has Troops on board and is required to progress with all practicable despatch. I have no objections excepting those that spring from these Counts.

/Sd H. P.
19/1/54.

As the "Hough Lindsay" is at Madras and is to go to the spot where the Dredger is employed for troops. I think it hardly advisable that the Steamer should tow the Dredger 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 Hon'ble D. Elliott Esq^re

If the "Hough Lindsay" is required for the Troops I

By the Hon'ble G. F. Thomas Esq^re

I would allow no interference with the arrangements on this head and would not sanction delays as we may be moving Troops for Rangoon in the Monsoons /Sd J. F. J.
" W. S.

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

The 13,000 Rupees may be advanced and application made to the Govt. of India for the rest.

/Sd H. P.

By the Hon'ble D. Elliott Esq^re

opposite to the words in the Chief Eng^rs letter

"His seems to me another proof of the mistaken system of having the Public Works as at present under six different Departments"

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.

Navy Depart

Disp: 25

No. 56

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

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

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

Here enter 16th January 1854
from the Asst. Engineers.
(Here on Page March 1854 p. 121)

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

Copy

Commander of the
Squadron U.S. Steamers
at Vera Cruz on visit from
the Warrior, Commodore
Dec. 1853 relative
to the Steamboats
Steamers.

Marine Depart

No. 56

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

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

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

Herr enter 16th January 1854
from the Asst. Engineers. 90:10
(Here ends Dft. 6. March 1854 N 121)

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

Copy

Extract of the
Proceedings of the Board
of Works and Harbours
of Marine, Council
Chamber, 25th January 1854
at Bombay.

Marine Depart

N.o 56

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

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

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

Herewith 16th January 1854
from the Adj.t of Engineers.
(Here ~~on Public~~ March 1854 No 12)

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

Copy

Commander of the
Squadron to Secretary
of Navy dated on board the
Warrior, Gosport
25th January 1854 Rec.d
1st Feb.y 1854 relative
to the attack made
at Sammakam.

operations for deepening the Pamban 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.t Col.o Cotton represents that such a depth as that proposed will be a very great benefit not only enabling much larger Vessels to regularly employed in the Coasting trade, but also providing for the passage of Vessels of

of 300 Tons when the 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 improvement that have been executed to the Pamban Channel, it is noticed, has been the introduction, entirely by the Natives, of square-rigged Hoked Vessels instead of Dhonies - and the trade is stated to have

increased

increased from 1,00,000 Tons
in 1822 to 1,60,000 Tons in
1853.

4.— The total expendi-
ture on This Channel to the
end of 1853, "including the
estimated value of Convict
labour 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 Sounding taken
by Captain Pitt in October
1852, it appears that a
greater depth than this
was then attained, the
mean depth in the Down
part

Expenditure to 1845 as re-
ported by Lt. 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.

× 9 Rocks now been re-
ported by the Chief Engineer
that this Sunken has not
been examined.

Each 200 Yards in length.

Sectt, 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

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

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

_____ Branch.

LIST.

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.

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

_____ Branch.

LIST.

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.

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

_____ Branch.

LIST.

Remarks.	Final Disposal.

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

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

Department

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

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

Branch.

Current number and date of rece	Remarks.	Final Disposal.

Scott. 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 3/8 to 12 1/4 feet at low water neap tides. This State of the passage and the progress of the operations as reported by Lieut.t 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.

parts into which the length of the Channel has been divided being from 10 3/8 to 12 1/4 feet at low water neap tides. This state of the passage and the progress of the operations as reported by Lieut.t 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 signed by the Chief Engineer as to the advantage of such a depth being attained throughout the length of the

the foreshore and the
comparatively small ex:
=tent of the work to be
executed, the Right Worth
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 Estr:
=mate as requested by
Lieut.: Colr. 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 arrives for com:
=mencing operations.

Orders

6. Orders were issued
under date the 2nd. January
last respecting the re:
=moval of the Steam
Dredge from Paumben
to Coringa for repair.

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

Public

continues 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

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

par. 7 - 11. remark.

8.— In para 7 of the
report of his tour of in:
:spection to Pembam,
the Chief Engineer, refer:
ring to the Dredger, sug:
:gests that "this costly
"apparatus ought to be
"made of as much use
"as

* even if it be owned
that the Public Service
could be materially
suffered by such
the leading Officers
were absent -

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

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

"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 working
the Dredge, and desire that
he will arrange for this
being effected in future. *

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 tho-
"roughly 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.

12.- In para 4/88
of this 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 &
be then efficient

H

8/57

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 at
tached to the works, with
a special allowance for
such extraordinary duty.
The Chief Engineer will
ascertain and report for
the orders of Govt: whe-
ther 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.— Coll.: 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 opera-
"tions now proposed"—
As all that has hitherto
been required for the
improvement of the
Saundarra Channel has
been done, the Governor
in Council would defer
the consideration of
Coll.: Cotton's proposition
until the larger project
has been sanctioned.

× I consider it unnecessary now to entertain a 2d. Steamer to aid Capt.: Gib — in the little remaining work that it is intended to effect — he

opens that

P.— It is also stated
by Coll.: Cotton in Minute that "the
"works have been very
"well conducted by Capt.:
"Gib," and that he found
"the work very well ad-
:vanced." but he thinks
Captain Gib. "should
"have been placed far
"more at liberty, both as
"regards expenditure, &
"apparatus and mode of
"operation, for want of
"which he has been ex-
"ceedingly cramped, &
"causing both loss of time
"and waste of money."
In reference to this
remark, the Govt. would
only observe that if Capt.
Gib

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

12. 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 1½ Anna. The Govt. consider it will be sufficient to place the Square rigged Vessels on an equality in point of duties with Dhonies and resolve accordingly to solicit the sanction of the Govt. of India to the measure.

13. It is further represented by Coll. Cotton that the port and trade of Rangoon has

* 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.

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

What is Mr Detail's rate & the Pass.?

present necessary while there is an Officer of 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

W.H.M.

ine Board
Engineer
Acct. Genl
il Auditor

y to the Govt
ndia 6/25. March/54
No 97.

has now bec
importance th
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the managem
Port should be
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Master Attend
should be appoi
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Pilots but also t
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Southward as f
Tuticorin. I
cannot perceive
this measure is
pre

What is Lieut. Taylor's duty?

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.

W & 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 0/25. March/54
No 87.

57. 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 consideration and orders of the Govt. of India, the Extract from a accompanying letter from Lieutt. Colnl. 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.

To Govt. of India 28th March

Marine 1854 Department

No. 56.

Extract from the Procgs. of Govt.

dated 25th March 1857

Govt. thereon as contain
in Extract Minute
of this date; together
with an Estimate amo
:ing to Rupees 30,250 f
deepening the Channe
to 13 Feet at ordinary
Water, including Dept
and weighing Boats.

2.— Lieut. Col. Colt
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

93

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.

2

Govt. thereon as conta
in Extract Minute
of this date; & forther
with an Estimate and
:ing to Papers 30,250 f
deepening the Chann
to 13 Feet at ordinary
Water, including Raft
and weighing Boats.

2.— Lieut.-Col. 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
Existing trade, but also
providing for the passage
of Vessels of 1300 tons
when in ballast.— It
will

93

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 Hon.ble the Governor
in Council recommends
the Estimate and solicits
the Sanction of the Govt.

2

of India for the outlay
of Rs. 30,250, of which
he has already in anti-
-cipation of their approval
authorized the sum of
10,000 Rupees to be ad-
-vanced at the request
of Lt. Col. Cotton, to
enable the Officer in
charge to build such
Boats provided for in
the Estimate, as that
they may be ready when
the Season for work
arrives.

4— I am at the same
time directed to refer
you to the Despatch
of the Honble the Court
of

Continue his Ser-
-vations & to make
his Declarations
for the Records
of Government

of Directors to this Govt.
in the Marine Depart.
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
Pamban Passage. * It
appears from the report
furnished by Lieut. Col.
Cotton that a greater
depth than this has al-
-ready been attained—
the mean depth in the
several parts of the
Channel being from 10 3/8
to

* This fund has
now been exhausted

the 12¼ feet at low water
neaps tides.

Fort St George
25th March 1857.

Lieut Hyslop's
May 22nd 4 of 1854.

Replied to 13th June
No 9 of 1855
148-71 N
5-1-15
17.5.06
-7 d N
22.5.22

for sanction the Estimate
ing to Rs: 30,250 for deepen
the Channel to a given
depth, and reports that
authority has been grante
for the advance of Rs 1000
for making the requisite
preparations in antici
pation of the sanction
solicited.

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May 22nd 4 of 1854.

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pation of the sanction
solicited.

2nd Copy to Govt 28th March
Marine 1854 Depart.

No. 57.

From the Secretary to
the Govt. of India.

Dated 15th
Rect. March 1854.
Replied to 21 April 54 No 108

Forwards Extracts from
a letter from the Chief
Engineer touching his
annual report on the
operations for clearing
the Sunderbun Channels,
with the observations of

No 8.9

Lr. 8.9

Letter by Lieut Nyland
Recd 9th of 1854.

Replied to 13th June
Aug of 1854

148-7/M

5-1-15

7.5.05

7.06

22-5-22

for sanction the Dirt
ing to Rs: 30,250 for deep
the Channel to a given
depth, and reports the
authority to be granted
for the advance of Rs
for making the neces
preparations in antici
pation of the sanction
solicited.

No 57.

From the Secretary G
the Govt of India.

Dated 25th

Recd March 1854.

Replied to 21 April 54. No 108

Forwards Extracts from
Letter from the Chief
Engineer touching his
annual report on the
operations for clearing
the Southern Channel,
with the observations of
[illegible] Board

In 19 to 28 March
Marine 1854 Depart

Transcribed