Archives 1—10,000—6-10-76.

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(2) Date of repair July.

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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

P. W. DEPARTMENT

G.O. No. 1887-W Press.
B.P. No. Mis.

Dated 17-4-1878 197-

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1887
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GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

17th April 1878, No. 1,887 W.

Buildings and Roads.
Civil Works.

Read the following :—

No. 199. Despatch from the Most Honorable the Secretary of State for India.

Public Works, No. 5.

INDIA OFFICE, LONDON, 7th March 1878.

MY LORD DUKE,—In continuation of my Public Works Despatch of the 20th December last, No. 21, I forward, for your Grace's information, copy of a report* by Mr. W. Parkes on the progress of the Madras Harbour Works during the quarter ended 31st December 1877.

* Dated 13th February 1878.

I have, &c.,
SALISBURY.

His Excellency the Most Noble
The Governor in Council, Fort St. George.

MADRAS HARBOUR.

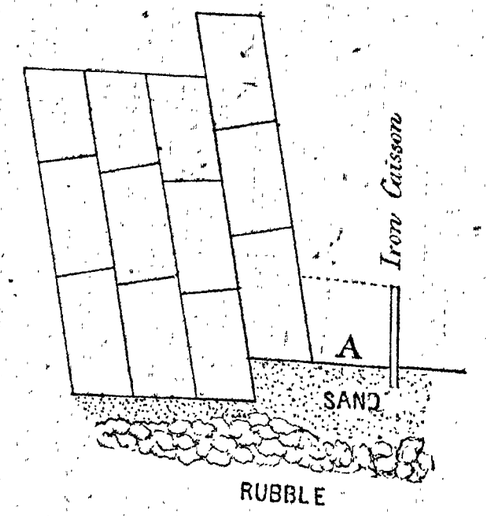
Report of Progress of the Works for the Quarter ending 31st December 1877.

I have the honor to forward, herewith, a plan showing the state of the works on the 31st December, and photographs of the north and south piers, respectively, taken on the 7th January 1878.

2. The progress made within the quarter has been, at the north pier especially, very little, and I should have reported this with a feeling of deep mortification were it not that I can supplement my unsatisfactory report of the quarter's progress by the announcement received by telegram on the 31st January that the progress in the month of January has been much better and is an evidence that the obstacles which have for so many months retarded the work no longer exists. The advance in the north pier was in the quarter ending 31st December 30 feet, that in the month of January 84 feet. At the south pier the quarter's advance was 75 feet, that in the month of January 105 feet.

3. The cause of the slow progress was different from that which previously existed. The sand accumulation at the north pier was at its height during the month of October, and has since diminished, though at the date of my last intelligence by letter it had not entirely disappeared. Mr. Thorowgood had, however, after many trials succeeded in devising a means of sinking the blocks through the sand nearly to the rubble below. This was accomplished by setting them

in the first instance on the surface of the sand, and then digging away the sand immediately in front of them by means of a "Bulls' dredger" as at A. The blocks then sink by their own weight to within a foot or 18 inches of the surface of the rubble. Even if the sea were to draw out this bed of sand so as to allow the blocks to settle down to the rubble that amount of subsidence would not be injurious, but as a matter of fact this has been so far prevented by placing a foreshore of rubble on the sand on either side of the pier which protects it from the wash. The work so constructed has been subject to some heavy seas without movement. By this device Mr. Thorowgood has obviated the necessity of suppressing the lowest course of blocks which I had most unwillingly advised him to do if he could not advance in any other way.



4. It was in this way that the length of 30 feet was gained in the quarter and much more would have been gained but for a continuance of bad weather during November and December, a season in which interruptions must always be expected, but which this year appears to have been unusually severe. The succeeding three months may be expected to be the most favorable of the year, and the progress in January promises well for a good advance. It will be seen that the mass of rubble and protection blocks on the north side of the pier has decreased since September. It has been washed down by the northerly seas in the way anticipated to below the surface of the water, but remains as a protection to the shallow foundation of that part.

5. At the south pier I have already reported that the rubble stone surf bank was carried out to its intended termination previous to 30th September. The slopes near the end were flattened down by the sea and covered with a number of 6-ton concrete blocks which were prepared for the purpose. They are placed at random on the slopes, and will protect the rubble below them from the action of the sea.

6. The setting of the regular blocks in form by the Titan was commenced on the 19th November, and by the 31st December, as above stated, 75 feet were completed. The work is only two blocks in height, and at the commencement these are not of the full depth of 8 feet each, but as deeper water was gained full-sized blocks have been used. The foundations are now 9 to 10 feet below mean sea level, and this depth will be carried on till it is judged that there is no danger of a deeper foundation being obstructed by sand as in the north pier.

7. The rubble base for both piers is formed by dropping stone from Masula boats and catamarans—a plan which answers very well, though at a cost rather greater than that estimated for, until a berth for the steam-hoppers can be formed alongside the north pier. This of course has been delayed by the want of progress for the last few months, but I hope it will now shortly be accomplished.

8. It will no longer be necessary for me to report on the progress of the preliminary works as they are now substantially completed. Mr. Thorowgood has lately submitted a statement of their total cost which agrees in a remarkable way with my original estimate of £80,000. The actual total given in the statement is Rupees 8,61,543, but as this includes about £50,000 of payments in England, converted to Rupees at the depreciated rate, the apparent excess is accounted for. So close a coincidence is of course accidental, but I hope it will be taken as presumptive evidence of the soundness of the basis of my estimate. I need hardly say that the coincidence does not extend to a comparison between certain arbitrarily arranged heads of cost and the imaginary estimates of the same which were made by some unknown authority in India soon after the works were commenced without the concurrence of either the Superintendent or myself, and which are not only exhibited monthly in a statement of accounts, but are officially brought before the Government in a separate form wherever the expenditure exceeds the so-called estimate of any of these items, no notice being taken of those items in which the balance is on the

1887
2

other side. I can only hope that these one-sided reports do not make any unfavorable impression on the minds of the higher authorities of the Government.

9. The comparison of estimate and expenditure is equally favorable when applied to other heads. Up to the end of November Rupees 1,86,314 had been expended in making 1,140 concrete blocks, being at a cost of Rupees 164 per block. My estimate was £16, but £7-10 of this being for cement paid for in England the depreciation of exchange again more than accounts for the apparent excess. The block-making will be the largest single item of expenditure, being estimated at £200,100 for the whole work.

10. The above two items of preliminaries and block-making are not subject to those special uncertainties which are incidental to works carried on in the sea. It would be premature to say that the north pier has passed through all its difficulties, but as far as it has gone it has had its fair share of them in having been exposed to four monsoons and one cyclone. Yet so far no expenditure has been charged to "repairs of sea damage." The total amount including extra rubble foreshore, protection blocks, and all other incidental expenses, some rather heavy ones being at present unproductive, was up to the end of November Rupees 2,90,492. If the work had been carried to the same point exactly in the manner assumed in the estimate, and at the same rates, the expenditure would have been £33,970. The south pier will probably show a still more favorable result, but a comparison with estimate would as yet be premature.

11. The only item which at present shows an expenditure in excess of the estimate is "establishment." This as yet is 8 per cent. instead of 5, but the obstacles to free productive expenditure for the last nine months naturally told heavily against this item. The present staff will require no material increase to carry on a much higher rate of expenditure.

12. The total sum carried to account up to the end of November is Rupees 14,70,555, the total estimate for the works alone converted at par being Rupees 56,50,000, so that about one-fourth has been expended. The estimate includes Rupees 4,91,370 for contingencies, on which item only Rupees 20,171 has yet been charged. So far, therefore, more can be shown for the money expended than my estimate anticipated.

13. In one respect, however, I have to make a slight correction in a statement made in my last report. I stated on Mr. Thorowgood's authority that my original estimate of 200 working days in the year was confirmed by his observations. The very unfavorable weather of the following three months has made him wish to modify this estimate. He has recorded only 170 days fit for ordinary sea work in the year 1877. The difference will scarcely affect my anticipations as it is within the margin I had allowed when I gave three years of actual building work as required to complete the harbour, but it is right to make the correction as the former statement was made on Mr. Thorowgood's authority.

14. Looking to the immediate future, and the prospect of the sand continuing to impede the progress of the work, there is every hope that in the next two or three months the north pier will have advanced so far seaward as to be beyond the reach of any serious inconvenience, but such as may occur will, I think, be met much more successfully than was the case last year. The south pier will not of course be so far forward, and some impediment may be expected, but it will be further forward than the north pier was in April last year, and the mode of sinking the blocks sufficiently into the sand is now established.

15. The plan shows the changes which have taken place in the shore line since the commencement of the works, and I beg to call especial attention to them as I think they are calculated to remove one of the most plausible objections to the soundness of my calculations. My calculations of the possible rate of advance of the shore line were based on the supposition that the north surf bank, as it existed in 1876, intercepted the whole of the along shore movement of sand. It was suggested that there was no proof of this, and that a large quantity might have passed the end of the bank without leaving any evidence of its movement. This quantity would of course have been interrupted by a longer bank, and have formed a part of the annual rate of accumulation. In the absence of direct evidence I could only rely on the argument that the transporting power, which acted in shallow water close to shore, was wanting in the deeper water in which the end of the bank stood.

16. The results of the south-west monsoon of 1877, however, furnish the direct evidence which was wanting in 1876. The original high-water mark before 1876 is shown by a plain blue line, the extent to which it advanced in the south-west monsoon of that year is shown by a line with a double shade or brown marked September 1876. The position to which it receded in the following north-east monsoon is shown by the double-shaded blue line marked March 1877. A little previous to this the south surf bank had been commenced and the south-west monsoon followed. The beach advanced to the dotted brown line in June showing an accumulation against both piers. In the following three months the surf bank advanced more rapidly, and the beach also advanced against it on the south side, but there was no further advance against the north pier. The dotted line for June and the single-shaded brown line

for September are almost coincident between the piers (except in the acute angle close to the south surf bank where it would be locally affected to a great extent by the surf bank itself). Then followed the north-east monsoon which washed the beach south of the south pier back to where it was in June, and also washed it away from the north pier, driving it along towards the south pier, but leaving the whole area of sand between the piers the same as it was from June to September, though differing in form. I think there could be no better proof that up to June the south bank was only partially effective in stopping the alongshore movement, but it afterwards became completely so, both as regards the movement from the south and the subsequent countermovement from the north.

17. I must repeat, however, that this alongshore movement in the immediate vicinity of the coast line is quite distinct from that which has caused us so much trouble during the last few months by burying the foundations of the north pier in sand. The latter movement is one which was from the first anticipated in some form, but which from general considerations we were justified in concluding would be mainly transverse to the shore and therefore not affected outside the harbour by the projection of the piers or liable to form a permanent accumulation. The facts which we have lately collected support this general conclusion, but whether they are sufficient to justify a more detailed explanation of the causes of the movement of its limits, and of the periods of its recurrence, is a question to which I should wish to reserve my full reply until after further investigation to which Sir Andrew Clarke's pending inquiry may contribute some materials, and to which I think valuable assistance might be given by other Engineers who have experience of work subject to somewhat similar conditions in other parts of the world.

18. I would beg to suggest that a copy of this report be forwarded for the information of the Government of Madras.

13*th February* 1878.

(Signed) W. PARKES.

No. 200. ORDER THEREON, 17th April 1878, No. 1,887 W.

ORDERED to be recorded.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

(True Copy.)

Major, R.E.,
Under Secy. to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
„ Marine Department.

Exd. C. Howarth:
Spare Copies

1887
3

BUILDINGS AND ROADS.
CIVIL WORKS.

Govt. of (1878) Madras.

PUBLIC WORKS.

To

THE SUPERINTENDENT,
MADRAS HARBOUR WORKS,
&c., &c., &c.

Dated April 17*th*.

Issued

Recd. *Encl.*

G. O., 17*th April* 1878, *No.* 1,887 W.

APRIL.

Nos. 199-200.

Madras Harbour Works.—Despatch from the Secretary of State forwarding Mr. Parkes' report on the progress of the — during the quarter ended 31st December 1877, recorded —.

402

Madras Harbour No 2
1887/4

Report of Progress of the Works for the Quarter ending 31st December 1877.

23, Abingdon Street
13th February 1878

Sir,

I have the honor to forward herewith a plan showing the state of the works on the 31st December, and photographs of the North and South Piers respectively taken on the 7th January 1878.

2. The progress made within the quarter has been, at the North Pier especially, very little, and I should have reported this with a feeling of deep mortification were it not that I can supplement my unsatisfactory report of the quarter's progress by the announcement received by telegram on the 31st January

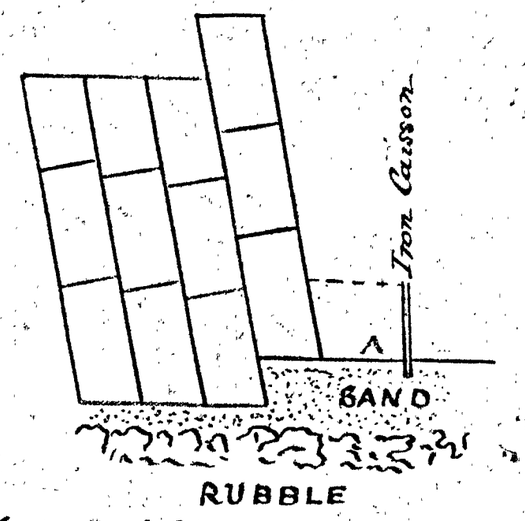
The Under Secretary of State
for India

January that the progress in
the month of January has been
much better and is an evidence
that the obstacles which have
for so many months retarded
the work no longer exists. The
advance in the North Pier
was in the quarter ending 31st December
30 feet. that in the month of
January 8ft feet. At the South
Pier the quarters' advance was
75 feet. that in the month of
January 10ft feet.

3. The cause of the slow progress
was different from that which
previously existed. The sand
accumulation at the North Pier
was at its height during the
month

month of October, and has since
diminished though at the date of
my last intelligence by letter
it had not entirely disappeared.
Mr. Thorowgood had however
after many trials succeeded
in devising a means of sinking
the blocks through the sand
nearly to the rubble below. This
was accomplished by setting
them in the first instance on
the surface of the sand, and
then digging away the sand
immediately in front of them
by means of "Bull's dredger" as
at A. The blocks then sank
by their own weight to within
a foot or 18 inches of the surface

of



of the rubble even if the sea were to draw out this bed of sand so as to allow the blocks to settle down to the rubble. that amount of subsidence would not be injurious but as a matter of fact this has been so far prevented by placing a foreshore of rubble on the sand on either side of the pier which protects it from the wash. The work as constructed has been subject to some heavy seas without movement. By this device Mr. Thorowgood has obviated the necessity of opposing the Coast course of blocks which I had most unwillingly advised him to do if he could not advance in any other way.

4. It was in this way that the length of 30 feet was gained on the quarter and

and much more would have been gained but for a continuance of bad weather during November and December, a season in which interruptions must always be expected, but which this year appears to have been unusually severe. The succeeding three months may be expected to be the most favorable of the year, and the progress in January promises well for a good advance. It will be seen that the mass of rubble and protection blocks on the North side of the pier has decreased since September It has been washed down by the Northerly seas in the way anticipated to below the surface of the water, but remains as a protection to the shallow foundation of that part.

5. At the South Pier I have already reported

reported that the rubble stone surf bank was carried out to its intended termination previous to 30th September - The slopes near the end were flattened down by the sea and covered with a number of 6 ton concrete blocks which were prepared for the purpose. They are placed at random on the slopes and will protect the rubble below them from the action of the sea.

6. The setting of the regular blocks in form by the Titan was commenced on the 19th November and by the 31st December as above stated 75 feet were completed. The work is only two blocks in height and at the commencement these are not of the full depth of 8 feet each but as deeper water was gained full sized blocks have been used. The foundations are now 9 to 10 feet below mean sea Level and this depth will be carried on till it is judged that there is no danger of a deeper foundation being

being obstructed by sand as in the North Pier. 1887

7. The rubble base for both piers is formed by dropping stone from masula boats and catamarans, a plan which answers very well, though at a cost rather greater than that estimated for, until a berth for the steam hoppers can be formed alongside the North Pier - This, of course has been delayed by the want of progress for the last few months, but I hope it will now shortly be accomplished.

8. It will no longer be necessary for me to report on the progress of the preliminary works as they are now substantially completed - Mr Throwgood has lately submitted a statement of their total cost which agrees in a remarkable way with

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exhibited monthly in a statement of accounts but are officially brought before the Government in a separate form whenever the expenditure exceeds the so called estimate of any of these items, no notice being taken of those items in which the balance is on the other side. I can only hope that these one sided reports do not make any unfavourable impression on the minds of the higher authorities of the government.

9. The comparison of estimate and expenditure is equally favourable when applied to other heads. up to the end of November 186.314 Rupees had been expended in making 1140 concrete

concrete blocks, being at a cost of 16½ Rupees per block. My estimate was £16, but £7.10. of this being for cement paid for in England the depreciation of exchange again more than accounts for the apparent excess. The blockmaking will be the largest single item of expenditure, being estimated at £ 200.100 for the whole work.

10. The above two items of preliminaries and blockmaking are not subject to those special uncertainties which are incidental to works carried on in the sea. It would be premature to say that the north Pier has passed through all its difficulties, but as far as it has gone it has had its fair

fair share of them in having been exposed to four monsoons and one cyclone, yet as far as expenditure has been charged to repairs of sea damage. The total amount including extra rubble foreshore, protection blocks, and all other incidental expenses, some rather heavy ones being at present unproductive was up to the end of November 290.492 rupees. If the work had been carried to the same point exactly in the manner assumed in the estimate, and at the same rates, the expenditure would have been £ 33.970. The South Pier will probably show a still more favourable result, but a comparison

comparison with estimate would as yet be premature.

11. The only item which at present shows an expenditure in excess of the estimate is Establishment this as yet is 8 per cent instead of 5. but the obstacles to free productive expenditure for the last 9 months naturally told heavily against this item. The present staff will require no material increase to carry on a much higher rate of expenditure.

12. The total sum carried to account up to the end of November is Rs 14,70,555. the total estimate for the works alone converted at par being Rs 56,50,000 so that about one fourth has been expended. The estimate includes Rs 4,91,370 for contingencies on which item only Rs 20,171 has yet been charged. So far therefore more can be shown for the money expended than my estimate anticipated.

13. In one respect however I have to make a slight

slight correction in a statement made in my last report. I stated on Mr Thorowgoods authority that my original estimate of 200 working days in the year was confirmed by his observations. The very

very unfavorable weather of the following three months has made him wish to modify this estimate. He has recorded only 170 days fit for ordinary sea work in the year 1877. The difference will scarcely affect my anticipations as it is within the margin I had allowed when I gave three years of actual building work as required to complete the Harbor, but it is right to make the correction as the former statement was made on Mr. Thorowgoods authority.

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more successfully than was the case
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North Pier was in April last year,
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15. The plan shows the changes
which have taken place in the shore
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works, and I beg to call especial
attention to them as I think they
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calculations of the possible rate of
advance of the shore line were based
on the supposition that the North

Surf

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water

No 11
1887
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water in which the end of the bank stood.

16. The results of the South West Monsoon of 1877 however furnish the direct evidence which was wanting in 1876. The original High Water Mark before 1876 is shown by a plain blue line, the extent to which it advanced in the S.W. Monsoon of that year is shown by a line with a double shade of brown marked September 1876. The position to which it receded in the following North East Monsoon is shown by the

double

double shaded blue line marked March 1877. A little previous to this the South Surf Bank had been commenced and the South West Monsoon followed. The beach advanced to the dotted brown line in June showing an accumulation against both piers. In the following three months the Surf Bank advanced more rapidly and the beach also advanced against it on the South side, but there was no further advance against the North Pier. The dotted

dotted line for June and the single shaded brown line for September are almost coincident between the piers (except in the acute angle close to the South Surf Bank where it would be locally affected to a great extent by the Surf Bank itself) — Then followed the North East Monsoon which washed the beach south of the South Pier back to where it was in June, and also washed it away from the North Pier driving it along towards the South Pier, but leaving the whole area of sand between the piers the same as it was from June to September though differing in form. I think there could be no better proof that up to June the South Bank was only partially effective in stopping the alongshore movement, but it afterwards became completely so, both as regards the movement from the South and the subsequent counter movement from the North.

17. I must repeat however that this alongshore movement in the immediate vicinity of the coast line is quite distinct from that which has caused us so much trouble during the last few months by burying the foundations of the North Pier in sand. The latter movement is one which was from the first anticipated in some form, but which from general considerations we were justified in concluding would be mainly transverse to the shore and therefore not affected outside the Harbour by the projection of the piers or liable to form a permanent accumulation — The facts which we have lately collected support this general conclusion, but whether they are sufficient to justify a more detailed explanation of the causes of the movement, of its limits, and of the periods of its recurrence, is a question to which I should wish to reserve my full reply, until after further investigation to which

Sir

1887/15

Sir Andrew Clarke's pending enquiry may contribute some materials, and to which I think valuable assistance might be given by other engineers who have experience of work subject to somewhat similar conditions in other parts of the world.

18. I would beg to suggest that a copy of this report be forwarded for the information of the Government of Madras.

I have &c.

(Sd) W. Parkes.

No. 5. 402

Copy Report by Mr Parkes

dated 13th February 1878.

Referred to in Public Works Letter to Madras, No. 5, dated 7th March 1878

457

1887/16

Public Works.

No. 5.

India Office, London.

7th March 1878.

My Lord Duke,

In continuation of my Public Works Despatch of the 20th December last, No. 21, I forward for your Grace's information, copy of a report* by Mr W. Parkes, on the progress of the Madras

* Dated 13th February 1878.

His Excellency
The Most Noble
The Governor in Council
Fort St George.

Madras Harbour Works

during the quarter

ended 31st December, 1877.

I have the honor to be,

My Lord Duke,

Your Grace's most obedient

humble Servant,

[illegible]

No 4.

Public Works
7th March 1878.

The
Secretary to Govt of Bengal
No 5

Go 18 March 1878. No 1386. W.
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" 13 Nov " " 1618 W.
" 6 " " " 1448 W 1447 W.
" 27 Oct 77 " 47. Home Despatch
Go " " " 1321. W.

Circd 15-4-78. Rptd 17-4-78
Circ. Sent to Mpl.
Circ 4

P. W. D.
1887/18

Despatch from the Secretary of State
for India No 5 dated 7th March 1878.

Circulated for perusal of Members.

Ed Bird Col. R.E.
Secy: to Govt: P.W.D.

5th April 1878.

8/4

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Capt

Pte 1887 W. Div Appld.
Recorded.
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Appl
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Sapl h. St. Wks
Marine Engrs

Cir-15-4-78 Rlgd 17-4-78
A.R. Sheil. 1 Appl.
Cu-4 cir to Sam Robinson 20-4-78

Desp-8-5-78

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Govt. of {1878} Madras.

PUBLIC WORKS.

To

Dated

Issued

Recd. Encl.

G. O. 17 April 1878. No. 887 W

Nos.

Mr Parker Report Madras Harbour
Working Progress & Cost of Repairs
executed

Madras Harbour Works

Despatch from the Secy
of State forwarding Mr Parkes
report on the progress of the —,
during the quarter
ended 31 Dec^r 1877 forwarded

D.L. Sheil / Appl.
Encl circ to Mr Robinson 20-4-78

Desp 8-4-