

(1) Number of pages 46
 (2) Date of repair 17. 12. 86
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TAMIL NADU ARCHIVES

GOVERNMENT OF TAMIL NADU

PUBLIC WORKS DEPARTMENT

G.O. No.	256	Press.
B.P. No.	257 W	Mis.
Dated	31. 1. 1881	197.

Not to be folded or roughly handled

N. J. Ram

256-257

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

31st January 1881, No. 257 W.

Buildings and Roads.
Civil Works.

Read the following paper:—

No. 164. From W. PARKES, Esq., M. INST. C.E., Engineer-in-Chief, Madras Harbour Works, to the Secretary to Government, Public Works Department, dated Madras, 14th January 1881.

I HAVE the honor to transmit herewith copy of a report I addressed yesterday to the Under Secretary of State for India on the progress of the Madras Harbour Works during the quarter ending 31st December 1880.

From W. PARKES, Esq., M. INST. C.E., to the Under Secretary of State for India, dated Madras, 13th January 1881.

Report of Progress on the Madras Harbour Works for the Quarter ending 31st December 1880.

I HAVE the honor to inform you that I arrived here on the 6th instant, and having made a general inspection of the works and examined the records of the past three months, I think it will be the most convenient course for me to submit to you my ordinary report of progress during the quarter, thus preserving the continuity of these reports and enabling me to base any further recommendations I may have to make on facts independently recorded in the ordinary way.

2. I therefore beg to submit a plan of the harbour showing the extent of the works on the 31st December, and I hope to forward in a few days a photograph and a statement of the expenditure to that date compared with the estimate.

3. It will be seen that the progress during the quarter has been small. In the early part of October the setting of blocks was retarded for a few days in consequence of the unprecedentedly rapid progress of the previous month having exhausted all the blocks of sufficient age to be placed in the works. Immediately upon the renewal of work a threatening of bad weather necessitated a further suspension to allow of the end blocks and machinery being secured, and since then there has been an almost continuous succession of bad weather rendering sea work generally impracticable.

4. The superstructure of the north pier advanced 94 feet, and is now within 275 feet of its extreme end. The south pier advanced 167 feet and is within 810 feet of its extreme end. The former will be almost certainly carried to its full extent in the ensuing favorable season, though perhaps the special work of the head may not be quite completed; the latter will be brought to a similar state in the favorable quarter from July to September.

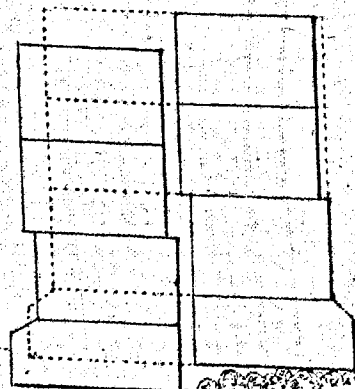
5. The rubble bases have advanced in greater proportion than the superstructures, and the north pier base will be completed this month. The discrepancy to which I alluded in my last report has been explained satisfactorily. The July to September records showed a tonnage of stone much more than sufficient to form the length of bases shown on the plans and sections. It appears that a considerable proportion of this tonnage was used in making up deficient width in other portions of the banks, of which no advice was sent to me. This explanation makes the tonnage and measurements quite consistent.

6. The past quarter, though not one of great importance in respect of the progress of the works of construction, is of more than ordinary importance in respect of the tests of stability to which they have been exposed, and also as affording the first definite evidence of the value of the works for the purposes intended.

7. The north-east monsoon burst with rather more than ordinary violence in the last day of October, and the sea carried away 50 feet of railway on the north pier, the repair of which of course caused some delay. It was, however, repaired and a few days' work executed, when a further interruption occurred on the 21st November by a heavy sea from an unusual quarter, S.E., evidently the disturbance propagated from a severe cyclone which caused much damage to shipping at Negapatam, about 150 miles south of Madras. At Madras the sea was accompanied by very little wind, thus affording another illustration of the law that the limits of sea disturbance and atmospheric disturbance are not coincident.

8. This day will be especially memorable as the occasion of a lamentable accident by which seven lives were lost. Mr. James Duffy, Foreman of the South Pier, and H. P'atoling, a European Diver, accompanied by nine native coolies, attempted to pass along the pier with a trolley for some purpose unknown. A heavy wave swept them all off, and four natives alone escaped. No bodies have been found. Mr. Duffy's loss is much felt as he was a valuable man who had been employed on these works from the commencement, and previously at Kurrachee. Patching was also a useful man.

9. This sea is also especially noteworthy, because by it, for the first time, have some blocks fairly set at the proper depth and on a clean rubble foundation been disturbed, thus affording some direct evidence of the limits of stability of the work. At the north pier the rush of water round the end was so violent as to scoop out a hole in the rubble at the foot of the blocks into which the end blocks dropped down about 3 feet, being at the same time laterally displaced slightly as shown in sketch. The iron clamps by which they were attached to the third row behind them were not broken, and that row and the one intermediate between them were not disturbed.



10. The most obvious effect of the sea on the completed portion of the North Pier was to strip off the railway from the top, but this effect only extended for the length built since the last heavy sea in November 1879. In the older portions it was not disturbed. The cause of this difference was apparent on examination of the blocks themselves. They had evidently been subjected to a very severe shaking for the surfaces were found to be abraded by rubbing against one another to such an extent as in some cases to form indentations 4 inches deep. To produce this result the whole structure must have been in a state of violent vibration, and this would break the connection between the tops of the individual blocks and the continuous rigid railway laid upon them. When the block-work has once been subjected to this vibrating action it becomes consolidated and rigid, and the railways maintain their connection with it. The sea does not appear to have caused any general subsidence.

11. Reverting to the subsidence of the end blocks, it may be well to point out how this bears on the sufficiency of the design for the permanent pier head. The weak points in the temporary termination are evidently the following:—

- 1st.—Rubble stone at 22 feet below the surface is not proof against the scour of a wave rushing round the abrupt end of the pier.
- 2nd.—The abruptness of the end increases the force of the scour.
- 3rd.—The blocks have a hold of only 4 feet 6 inches, their own thickness, in the solid work.

Now, though the exact form of the whole of the permanent pier head is not yet determined, yet some features have been long settled on:—

- 1st.—The depth of foundation of the blocks on the rubble will be 28 feet instead of 22.
- 2nd.—There will be no sharp corners to aggravate the scour, the corners being formed of blocks in the quadrant of a circle 12 feet radius.
- 3rd.—All the blocks exposed to the end between these curved angle blocks will be set as "headers" with their ends instead of their sides exposed, so as to have a hold in the work of 12 feet instead of 4½ feet.

With these additional elements of stability it is clear that the permanent pier head will be proof against a much heavier sea than the temporary one.

12. The south pier head did not suffer in the same way. This may have been due to its having been provided with a protection which had been intended at the north pier, but which could not be carried out on account of the sudden rising of the sea, viz., the foundation blocks of the next row having been set so as to protect the foot of the work from the scour. This naturally suggests the propriety of giving a similar protection to the permanent pier heads, and this will be further considered.

13. In other respects the effects on the south pier were very similar to those on the north. The roads were washed off and the new parts of the work settled down. A very considerable disaster, however, was rather narrowly escaped. The strongly-framed base on which the Titan was standing was seriously strained, and would have given way if the sea had continued much longer. This is a contingency which I have always looked upon as possible, and it would no doubt involve considerable expense and much delay if it were to occur, but it could only be provided against by precautions which would involve as a certainty expenses and delays equal to those of which there is now only a risk, so that I have thought it better to face the risk than the

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certainty. We are now pretty safe so far as the north Titan is concerned, and we have, I hope, only one more season of possible risk for that on the south pier.

14. It may be as well to mention that the washing off of the roads does not involve the loss of the materials (rails and sleepers). The roads are in the first instance relaid with spare materials, but the old ones are picked up from the bottom of the sea almost without loss by the divers and are used again.

15. With respect to the changes of the shore line, a portion of the accumulation formed to the south of the Harbour in the late south-west monsoon is now being washed away, and the year 1880 shows a strip of accretion about equal in width to that formed in 1879; but as the action is still going on, the present is not a good time for making a definite comparison. All local misgiving as to the injurious result of this accretion on the Harbour appears to have subsided, and the land gained is now being utilized in various ways, especially by the Commissariat Department, and should be a source of revenue to the Harbour.

16. Within the Harbour the remarkable accumulation formed by the wave reflected from the north pier between the screw pile pier and the south harbour pier during the south-west monsoon has been carried northward again by the wave reflected from the south pier. The line of beach is now parallel to what it was in December 1879, but about 80 feet further seaward. This additional width of beach, formed as it has been by a corresponding deepening of the neighbouring water, is rather a gain.

17. The shore line north of the Harbour has rather recovered since the northerly seas set in, but there has been some extension of the rough stone revetment formed for protection, and a further extension is under consideration, upon which I shall have to report specially to the Government of Madras. The revetment itself stood well in the late heavy seas.

18. The Harbour now forms a considerable shelter from northerly seas and some from due southerly seas, but in the easterly and south-easterly seas lately prevalent it is as yet quite useless. The distance between the pier heads is about 1,600 feet, and the wave entering this spreads to 3,000 feet, which would produce some reduction were it not from the waves being reflected from the faces of both piers and thus forming a confused sea in the Harbour, quite as troublesome as the rather higher but more regular seas outside. These evils will be materially reduced when the entrance is reduced to one-third its present width, but seas from this direction will always be the most troublesome. Fortunately they are comparatively rare.

19. Notwithstanding this drawback all steamers now, as a rule, anchor within the piers, and find a considerable advantage in the saving of time in landing and shipping cargoes. Native sailing craft also anchor inside, but as a rule European sailing vessels anchor outside, and unfortunately too often in the fairway of the entrance, thus seriously incommoding the steamers. There is an urgent call for the fixed moorings, which I hope will soon be complied with.

20. I am glad to find that the important questions of exercising an efficient control over the shipping and cargo boats, and of the best means of obtaining a revenue from the Harbour are under serious consideration, and it seems likely that practical steps will shortly be taken.

21. I am submitting a duplicate of this report to the Government of Madras.

No. 165. ORDER THEREON, 31st January 1881, No. 256 W.

ORDERED to be recorded and copies furnished to the Government of India.

(True Extract.)

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

To the Superintendent, Madras Harbour Works.
" Secretary, Harbour Works Committee.

No. 166. (DOCKET No. 257 W., dated 31st January 1881.)

Forwarded.

(Signed) R. H. SANKEY, Colonel, R.E.,
Secretary to Govt., P.W.D.

Exd. S. T. Austin.
Spare Copies



BUILDINGS AND ROADS,
CIVIL WORKS.

Gobt. of (1881) Madras.
PUBLIC WORKS.

To

THE SECRETARY TO THE
GOVERNMENT OF INDIA.

Dated January, 31st.

Issued

Recd.

Encl.

G. O., 31st January 1881, No. 257 W.

JANUARY.
Nos. 184-188.

FORWARDING Mr. Parkes' Progress Report
of the Madras Harbour Works for quarter
ending 31st December 1880.

From

W. Parkes Esq^r M. Inst. C. E.
Engineer in Chief
Madras Harbour Works

To

Colonel R. M. Sankey C. B. R. E.
Secretary to Government
Public Works Department

Madras 14th January 1881

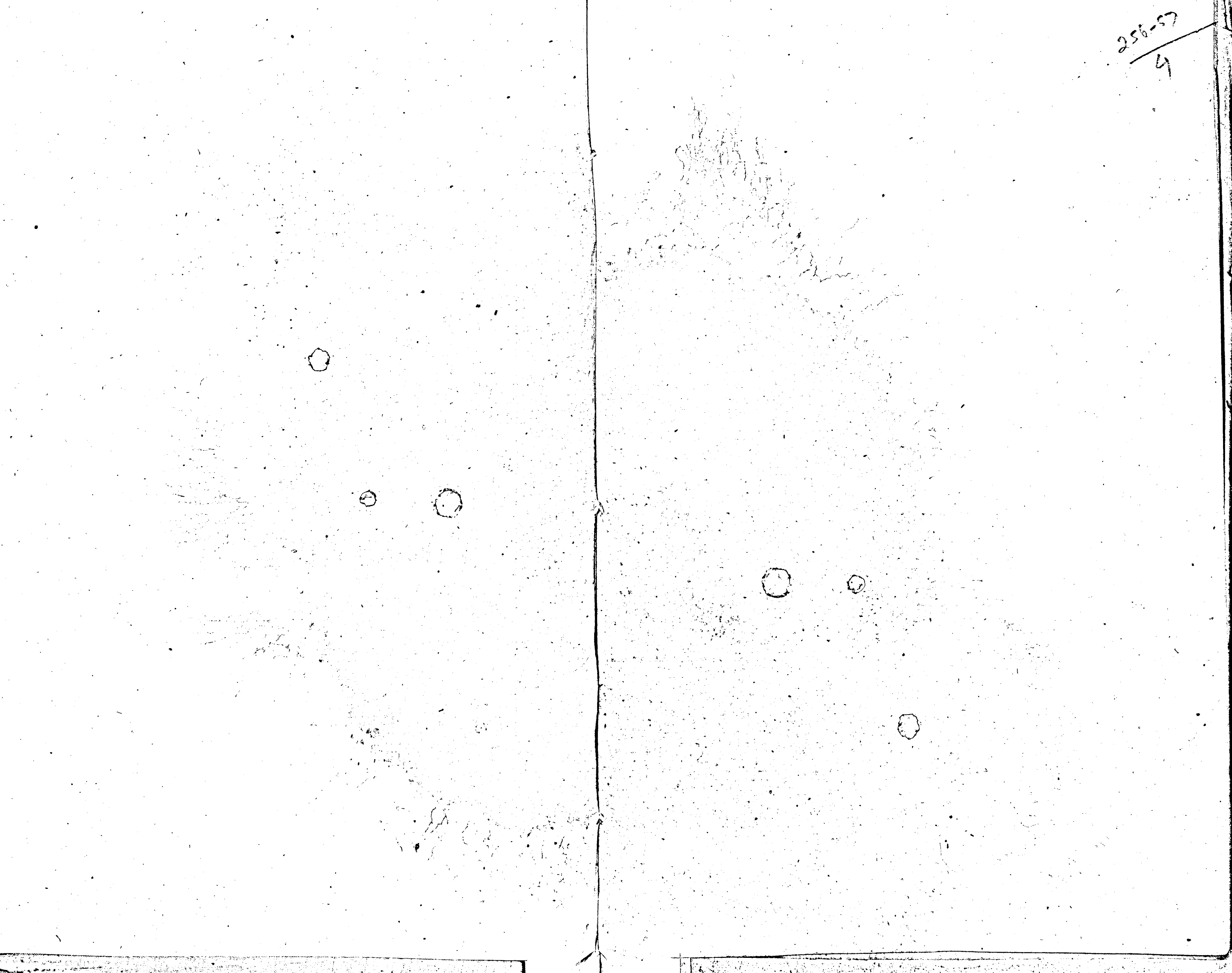
Sir

Enclosure

I have the honor to transmit
herewith copy of a report I addressed
yesterday to the Under Secretary of
State for India on the Progress of
the Madras Harbour Works during
the quarter ending 31st December
1880.

I have the honor to be,
Sir,

Your most Obedt^t Servant,
W. Parkes M. Inst. C. E.
Engineer in Chief
Madras Harbour Works



P. T. Chetty

S.O. No. 2299 W. 4-10-80.

P. T. Chetty

Report of Progress for the Quarter ending 31st December 1880
Madras 13th January 1881
187 W
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1872
256-57
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Madras Harbour

Report of Progress for the Quarter
ending 31st December 1880

Madras 13th January 1881

Sir,

I have the honor to inform you that I arrived here on the 6th instant and having made a general inspection of the works and examined the records of the past three months I think it will be the most convenient course for me to submit to you my ordinary report of progress during the quarter thus preserving the continuity of these reports and enabling me to base any further recommendations I may have

The Under Secretary of State
for India

C. 17.1. 1881

11/3/6
to make on facts independently
recorded in the ordinary way.

2. I therefore beg to submit
a plan of the Harbour shewing
the extent of the works on the
31st December and I hope to
forward in a few days a photo-
graph, and a statement of the
expenditure to that date compared
with the estimate.

3. It will be seen that the
progress during the quarter has
been small. In the early part of
October the setting of blocks was
retarded for a few days in
consequence of the unprecedentedly
rapid progress of the previous month
having exhausted all the blocks of
sufficient age to be placed in the
works. Immediately upon the
resumption of work a threatening
of bad weather necessitated a
further suspension to allow of
the end blocks and machinery
being secured, and since then
there has been an almost continuous
succession of bad weather rendering

AP 4 256-57
sea work generally impracticable.

4. The superstructure of the North Pier advanced 94 feet, and is now within 275 feet of its extreme end. The South Pier advanced 167 feet and is within 810 feet of its extreme end. The former will be almost certainly carried to its full extent in the ensuing favorable season, though perhaps the special work of the head may not be quite completed; the latter will be brought to a similar state in the favourable quarter from July to September.

5. The rubble bases have advanced in greater proportion than the superstructures and the North Pier base will be completed this month. The discrepancy to which I alluded in my last report has been explained satisfactorily. The July to September records showed a tonnage of stone, much more than sufficient to form the length of bases shown on the

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2/8
plans and sections. It appears that a considerable proportion of this tonnage was used in making up deficient width in other portions of the banks, of which no advice was sent to me. This explanation makes the tonnage and measurements quite consistent.

b. The past quarter though not one of great importance in respect of the progress of the works of construction is of more than ordinary importance in respect of the tests of stability to which they have been exposed and also as affording the first definite evidence of the value of the works for the purposes intended.

y. The North East monsoon burst with rather more than ordinary violence in the last days of October and the sea carried away 50 feet of railway on the North Pier the repair of which of course caused some delay. It was however repaired and a few days work executed.

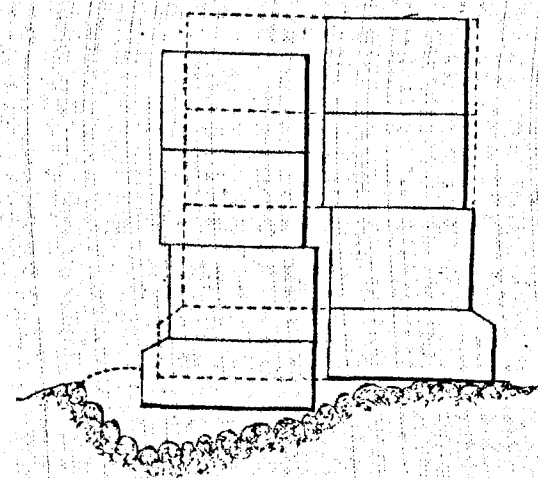
when a further interruption occurred on the 21st November by a heavy sea from an unusual quarter S.E. evidently the disturbance propagated from a severe cyclone which caused much damage to shipping at Negapatam about 150 miles South of Madras. At Madras the Sea was accompanied by very little wind - thus affording another illustration of the law that the limits of sea disturbance and atmospheric disturbance are not coincident.

8. This day will be especially memorable as the occasion of a lamentable accident by which 11 lives were lost. Mr James Duffy Foreman of the South Pier and H. Patching a European diver accompanied by nine native coolies attempted to pass along the pier with a trolley for some purpose unknown a heavy wave swept them all

117 ²⁶⁵/₁₀

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into which the end blocks dropped



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being at the same
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slightly as shewn in
sketch - The iron

46-57
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219. 22. 12
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256-1
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12. The South Pier head did not suffer in the same way. This may have been due to its having been provided with a protection which had been intended at the North Pier, but which could not be carried out on account of the sudden rising of the sea; viz, the foundation blocks of the next row having been set so as to protect the foot of the work from the scour. This naturally suggests the propriety of giving a similar protection to the permanent pier heads, and this will be further considered.

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1812.10.25/5
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15. With respect to the changes of the shore line a portion of the accumulation formed to the South of the Harbour in the late South West monsoon is now being washed away and the year 1880 shews a strip of accretion about equal in width to that formed in 1879, but as the action is still going on the present is not a good time for making a definite comparison. All local misgiving as to the injurious result of this accretion on the Harbour appears to have subsided, and the land gained

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17. The shore line North of the Harbour has rather recovered since the Northerly seas set in, but there has been some extension of the rough stone revetment formed for protection and a further

18/10/50
Extension is under consideration upon which I shall have to report specially to the Government of Madras. The pierment itself stood well in the late heavy seas.

18. The Harbour now forms a considerable shelter from Northerly seas and some from due Southerly seas, but in the Easterly and South Easterly seas lately prevalent it is as yet quite useless. The distance between the pier heads is about 1600 feet, and the wave entering this spreads to 3000 feet which would produce some reduction, were it not from the waves being reflected from the faces of both piers and thus forming a confused sea in the harbour quite as troublesome as the rather higher but more regular seas outside. These evils will be materially reduced when the entrance is reduced to one third its present width, but seas from this direction

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comparatively rare.

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drawback all steamers now as a
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117 250
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steps will shortly be taken.

26. I am submitting a duplicate
of this report to the Government
of Madras.

I have the honor to be,
Sir,
Your most Obedient Servt.
(signed) W. Parkes.

True Copy
W Parkes

14.1.81

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the 31st Jan'y/81

Read the following:—

From

The Engineer in Chief

M. H. Works

(No. 14 — of 14th Jan'y/81)

Ordered to be recorded
and copies furnished to
the Gov^t of India.

(No. 257 of 31st Jan'y/81)

Forwarded.

Att

15/1/81

Supt. M. H. Works. ✓

Secy. H. W. Committee ✓

Recd

14-2-81

E. S. S.

R. S.

Deard to G. P. I
with plan referred
to in para 2 of
Mr. Parker's Report
14-2-81.

Mr W. H. H. H. H.
The R. H. H. H. H.

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Govt. of (1881) Madras.

PUBLIC WORKS.

To

Dated

Issued

Recd.

Encl.

G. O., 2/3rd Jan'y 1881, No. 256W.

No. 164 to 165

To Mr. Pankaj
Congress Report of the
Madras Harbour
works for quarter
ending 31st Dec 1880.

Congress Report of the
Madras Harbour
works.

Mr. Pankaj — for the
quarter ending 31st Dec
1880 recorded, and
copies furnished to the
Govt.

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256-57
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