

Naval Harbour Department Report

1907-08

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COLONY OF NATAL

REPORT

OF THE

ENGINEER, NATAL HARBOUR DEPARTMENT,

FOR THE

Year ended 31st December, 1908.



PIETERMARITZBURG :

"TIMES" PRINTING AND PUBLISHING COMPANY, LTD.

1909.

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Report of the Engineer, Natal Harbour Department, for the Year ended 31st December, 1908.

Engineer's Office,
Harbour Works, Port Natal,
6th May, 1909.

THE HONOURABLE THE MINISTER OF RAILWAYS AND HARBOURS,
PIETERMARITZBURG.

SIR,—I have the honour to lay before you the following Report on the progress of the Harbour Works of the Colony and the work of the Department for the year ended 31st December, 1908.

The plans accompanying this Report are as follows :—


No. 1. The usual Annual Survey, which includes soundings along Beach northwards to a line off Winder Street, at and seaward of entrance, behind South Breakwater, in Channel and in the Bay, also high and low water lines along the Beach in black as compared with those for 1907 in red.

No. 2. Plan of reclamation of low-lying ground north of N.G.R. line on Congella Flats, showing area reclaimed to end of 1907 and that reclaimed during 1908.

No. 3. Diagrams of average monthly depths at Entrance for the past three years, showing also the greatest and least depths recorded during each month in 1908.

Plan No. 1.—General Survey. Two and three fathom lines and High and Low Water.—To show clearly the difference which has taken place since the survey for the 1907 Report, I have shown both on the plan, and it will be noticed that although there is a slight encroachment, it is very small in any case. Taking first the three-fathom line, this has encroached most, the worst place being roughly 200 feet nearer the shore than in 1907. There is, however, an evident slight encroachment all along, varying from 20 to 200 feet, and in a line with West Street the soundings show it to be about 80 feet. The two-fathom line has also come shorewards practically to the same extent as the three-fathom, the least difference being near the Addington Hospital, where the lines remain practically the same—the greatest difference being somewhat to the north of Vetch's Old Pier, where the soundings show the line to have encroached considerably, though in a zig-zag form. This two-fathom line may be generally taken as 700 feet from high water mark or 550 to 600 feet from low water mark, although at one spot where the low water mark has gone out, the distance is only about 450 feet. Taking the high and low water marks, both have advanced shorewards to some extent, 50 to 60 feet being the average in the former case, and perhaps a little more in the case of the low water line, which shows rather more off the line of Smith Street and the vicinity of Vetch's Pier than elsewhere. These lines are levels, not soundings, and may therefore be taken as correct, whereas the soundings taken in broken water, though fairly correct, cannot, of course be so accurate. (High water mark is taken as 6 feet plus zero or low water mark, and does not represent the *wash* but the level of the Beach. In times of heavy seas the water, of course, reaches much further).

Depths Outside, at Entrance, and in Bay.—The soundings show that excellent depths are being maintained, and that vessels of practically any draught can enter or leave the Harbour at any tides. As an instance of this, it is only necessary to refer to Sir Percy Scott's entrance after a heavy storm, and to the fact that his Squadron left the Harbour at dead low water of springs without any hitch whatever. Deeper draught vessels, however, have been inside, the S.S. "Gouldsmouth" in December last having been brought into the Harbour drawing 32 feet 1 inch. A few average spot soundings taken from the corresponding survey for 1907 are given in red on this plan, to show relative depths existing then and now. The depths prevailing speak for themselves, and I do not think it necessary to enlarge upon them in this report. That wonderful results have been achieved at the Entrance and inside, far exceeding the most sanguine anticipations of anyone, is a fact of which the Colony may be justly proud.

Plan No. 2.—Congella Reclamation, Corporation Area.—This plan shows the area of ground reclaimed to end of 1908 and the area still to be filled up. The ground finished to end of 1907 is shown hatched thus , whilst that dealt with during last year is given in plain full lines,

the sections reclaimed in each month being shown. The sand hills at Point, referred to on plan as "East," were exhausted in May, 1908, since when the whole of the spoil has been drawn from Shortt's at Bluff. During the year 1908, 25,091 truck loads of spoil were conveyed from Point and Shortt's in connection with this undertaking—the approximate weight being 552,000 tons. (See Congella Reclamation elsewhere). In addition to this about 3,000 tons have been taken and used for other work, viz., filling behind Congella Wharf and N.G.R. washaways, etc.

Plan No. 3.—Average monthly Bar depths.—From this it will be seen that a steady increase in depth is going on, the average depth for the twelve months being 33 feet 7 inches, that for 1907 being 32 feet 8 inches, an increase of 11 inches, the greatest average monthly depth recorded in 1908 being 35 feet 1 inch for August, the lowest being 30 feet for October, after the storm.

WORKS UNDER LOAN FUNDS.

Construction of Wharf Shed "D."—This has been allowed to stand down until next financial year, when it is proposed to erect a large shed on the area adjoining Shed "E," instead of putting up a smaller shed as originally suggested.

Dredging for Extension of Congella Wharfage.—Dredging for extension of above wharfage by 240 feet commenced with the "Pelican" in October; 68,000 tons were dredged and carried to sea by end of year. The spoil dredged is the same as was encountered in the former dredging at this wharf site, and can only be dealt with by the patent cutting arrangement attached to the "Pelican." The spoil is afterwards picked up by one of the large suction dredgers and carried away.

Extension of Congella Wharfage.—Tenders for the supply of material were called for in July last, but owing to the decision of Government to postpone this work *pro tem*, no tender was accepted at that time.

Reclamation Low Lying Lands, Congella, for Durban Corporation.—This undertaking, which was started in February, 1907, has gone on practically without a hitch ever since. There have, of course, been a few mishaps and temporary stoppages from various causes, but in so large a job I consider these stoppages have been few. Rain has been the general cause of delay, either directly or indirectly, and the only accidents which might have been serious were caused through the water being "locked in" and the ground suddenly giving way during shunting operations. There have been frequent "washaways," which, however, have generally happened at times when cessation from work was necessary owing to the weather, or at night when nobody was about. This is probably, if not the largest, at any rate one of the biggest works of reclamation undertaken by manual labour in the country, and great credit is due to the Railway Department, and to the Police and Gaols Department, for assistance rendered in carrying out the work so successfully. At the commencement, the area to be reclaimed amounted to 127.74 acres, and the filling required to reclaim this area 1,027,041 cubic yards. Of this, 55.99 acres were reclaimed in 1907, and 49.05 in 1908, making in all 105.04 to end of December, 1908, and leaving 22.7 acres still to be done. Of the 1,027,041 cubic yards of filling, 388,631 yards were completed at the end of 1907, and 410,701 were deposited during 1908, thus making a total to the end of 1908 of 799,332 cubic yards, leaving 227,709 still to be done, and which I estimate should be finished at the latest by August next. An allowance of $3\frac{1}{2}$ per cent. however, for wastage amounts to no less than 27,976 cubic yards, or say $117\frac{1}{2}$ train loads of 14 wagons apiece to end of last year.

Coaling Plant Bluff, Additional Plant for Coaling Appliances.—An order for two new skip wagons and 12 new dump buckets was placed with the N.G.R. in 1907. These were completed and delivered about the end of 1908. A repeat order was put in the hands of the Locomotive Superintendent in November, 1908, and a portion of this plant has also been delivered.

Coaling Plant Bluff (Balance of Contract Price—Revote).—The question of the final payment for the Coaling Appliances was brought to a satisfactory conclusion in December, when the Fulham Company agreed to accept £6,850 in full settlement of their claims. The original claims, which the Government firmly refused to entertain, amounted to £15,384 10s. 0d.

Sale of Dredging Plant.—In September the Bucket Dredger "Teredo" was purchased by Mr. Leon Cohen through the Portuguese Consul, for work at the Port of Lourenço Marques. A sum of £20,600 was realised by the sale of this vessel and certain spare parts, of which £19,428 16s. 1d. was placed to the credit of Loan Vote "E."

Harbour Development—Congella.—The wharf, total length of which is 1,502ft. 9in. was completed in January, steps being fixed at both ends for use of boatmen, etc. The main Quay Road was completed in April, a few days only before the Easter Flood, when about 300 feet of this wharf and road were damaged.

Roads.—The approximate area of road hardened at Congella to end of 1908 equals 34,000 square yards, 18,360 yards of which had been finished in 1907. This leaves a balance of 15,640 square yards for the year's working, but of this some 4,340 square yards were already partly laid. The levelling and ballasting of portions of Blocks "E" and "F," unfinished in 1907, was completed early in the year, thus bringing the work of reclamation of this area, approximately 94 acres, to a close—1,140 cubic yards of quarry refuse being used in finishing this off. Owing to want of

rain at certain seasons, portions of the hardened roads when brought into constant use broke up badly, more particularly so the one leading to Mr. Johnstone's area. These particular patches, however, were remade as far as was necessary. A 9in. drain was laid from the road near Messrs. Hunt Leuchars & Hepburn's Lots, through an opening in the Retaining Wall, to carry away the water from their buildings, etc.

WORKS UNDER REVENUE.

Electric Light and Power Working.—Since August, 1907, both light and power have been supplied to the Harbour from the Railway Power Station, and Maintenance of all the electric plant undertaken by them. About the middle of the year, Mr. Mills, the Chief Electric Engineer, was made responsible to the Locomotive Superintendent, since when no reports from him have come to me. Generally speaking, the light and power supplied have been eminently satisfactory both at the Point and the Bluff, the cables laid across the Channel having given no trouble whatever. Some trouble was experienced at the Pumping Station through the silting up of the area in that vicinity after heavy rains, and it was necessary to dredge this spoil away. Later on this occurred again and necessitated the dredging of a deep channel from the Cold Storage. This "silt" comes from Milne's drain, which drains the Eastern Vlei. The Pump House has been painted all over and is in good condition. Many of the electric light standards have been cleaned and painted (a frequent necessity owing to corrosion), and considerable work has been done to buildings and plant by this Department upon requisition from the Chief Electrical Engineer.

Maintenance of Coast Lights.—The lights at the four Stations, Bluff, Green Point, Port Shepstone and Cape St. Lucia, have all burned satisfactorily throughout the year, and, with the exception of a few small details, have required but little attention beyond what the Keepers could undertake. The Green Point Lighthouse was painted inside and out, and the triangular beacon on the shore was also painted and repaired. A second Lightkeeper was appointed in May to the Station at Cape St. Lucia, but after a few months' work resigned owing to ill health, and his place was filled by W. H. Tremlett, for whom extra quarters were erected, a building from Kwambonambi Station being taken over from the Railway for this purpose. At this outlying Station considerable difficulty has been experienced in the matter of transporting stores, but this has been satisfactorily arranged by giving the contract to Mr. H. H. Green, living in that district, who has so far carried out his undertakings promptly.

Conservancy.—Conservancy, during the past year, has been heavy and to detail all the items would occupy too much space. The principal heads of work undertaken are as follows:—Upkeep of rails, Point and Congella, including also all hydraulic crane rails, Point, and transporter rails at Bluff. Owing to the subsidences a great quantity of the former, and the whole length of the latter, have had to be lifted. Cleaning and painting of Electric Gantry, Point. Goliaths at Bluff, repairs and painting wholly and in part all the Wharf Sheds, renewal of 125 feet of Shed "B," destroyed by fire on the morning of 3rd January, 1908. (This renewed portion of the Shed has been roofed with Malthoid over boards, and should last for many years if painted occasionally). Repairs to Bluff Wharf and Main Wharf at Point, both of which have required extensive repairs, Timber Jetties (Cato's Creek), fixing new bollard in Quay Wall at Shed "H" to replace one broken off, cleaning and painting Electric Light Standards, work in Electric Light Station, Point, repairs to floors of Wharf Sheds, remaking portion of Stone Retaining Wall, north end of Quay, repairs to Dumper House, Bluff, fence to enclose convicts working in Blockyard, Point, repairs and painting Rocket Stations, Back Beach and Bluff, heavy repairs to area between Shed "E" (Mail Boat Berth) and face of wall. Quantities of new fenders and repairs to old ones for Port Department, concrete foundations for arc lamps, Point and Bluff, dismantling of Mahomedan Plague Hospital at Salisbury Island, slipping and repairing coal barge, extensive repairs to Quayside Road and Wharf areas, &c., laying of drains, erection of new platforms (coal dumper), repairs to European quarters at Bluff, Fish House Creek, Hydraulic Cabins, building of 830 feet run of Retaining Wall between the Old Whaling Station site and root of South Breakwater (a great improvement), the dismantling of 1,280 feet of Quay Wall staging at west end of Bluff Wall, repairs to boats, repairs to walls of small Boat Dock (Shed "C"), painting Pier Head Lighthouses, Hydraulic Station roof, Pumping Station, slipping and overhaul of pile driving punt, repairs, &c., to Wharf latrines, forming open drains at Congella, and heaviest item of all was the work necessary to rectify the damage done to the completed Wharf and area at Congella during the exceedingly heavy rains of Easter, 1908, when over 300 feet of the Wharf were damaged very badly. This was a very heavy task to overcome, but I am glad to say it has been successfully carried out, and, with the exception of one place where blasting would have been necessary, with probable further damage, the whole structure is back to its original position and a concrete Retaining Wall on stone foundation substituted for the sheet piling backing which was forced out and carried the Wharf with it, in the worst place, 5 ft. 3½ in. beyond the straight. I acknowledge, with pleasure, the assistance given by all hands engaged on this work, and especially by Foremen Stephenson and Askew. Convict labour was utilised to a great extent here, as in fact in most of the work going on now.

MAINTENANCE OF OUTER WORKS.

North Pier.—Roughly 1,550 tons of large handstone and boulders from Quarry put in apron of North Pier landwards of the bend. In September 40 7-ton blocks put in apron on channel

side near end of Pier, and 683 pockets of concrete rammed under wall where foundation stones had been washed out.

South Pier.—In May 86 7-ton blocks were deposited at extreme end by means of 50 feet radius steam crane. In October 46 old Quay Wall blocks of the 23 feet section (never used) were taken from Stack Yard and lowered near the end of Breakwater on south side. A heavy storm occurred on 7th October which was specially reported on at the time. No damage, however, of any importance was done to either of the works. The extreme end of the Pier, for some time damaged by heavy seas, was repaired during this month by means of a heavy concrete slab built over bolts let into the concrete below. This has stood well and shows no sign of giving way. The seas had also torn away some lengths of rails upon which the Crane travels—these were made good at same time and are perfectly fast. The crown of tunnel leading from the land to the light at extreme end of Pier, showing small longitudinal cracks, evidently from the impact of the seas beating upon it, has been strengthened by “cross bolting” through the old bolt holes left when being built. Seventy of these ties have been put in where required, making a good sound job. In November two heavy bolts for holding the end block of all, upon which the light is fixed, were put in as there were signs of a movement here. These bolts were about 7 ft. 6 in. in length by $2\frac{1}{2}$ in. diameter. Levels have been taken periodically at different spots on this Pier with a view to ascertaining if any sinking is taking place, but everything is satisfactory in this respect. Two photographs, taken from North Pier, showing force of the waves during the storm of 7th October, are put up with this Report as interesting records of what took place on this occasion. During the year 200 blocks of 7 tons each were built in yard for use or “standbys” for these Outer Works. This is roughly equal to 780 cubic yards.

Maintenance of Official Residences, etc.—The principal work under this head was not started until November, when extensive repairs were undertaken at the ten semi-detached houses facing the sea, where the roofs generally had suffered severely from the effects of the sea air. This work, partly let out to contract, was not completed by the end of the year. The balcony roofs of these 10 houses had to be renewed entirely, the corrugated iron having rusted away. “J.M.Oid” (a prepared roofing felt), on boards was substituted for the corrugated iron, a contract also being accepted for this work, which was also only partly finished at close of the year. Repairs to the twenty-five houses on Block “G” were also started and part of the work completed only, the principal items done being extensive repairs to all the valley gutters and painting of one of the houses internally. At nine houses on Block “D,” Point, extensive repairs were carried out, the work of putting new guttering to seven of these buildings being given out to contract. The house occupied by the Port Health Officer was painted inside and out, and seven of the remaining houses on Block “D” are being similarly treated by contract. The Quarry Foreman’s House on Umgeni Road has been painted inside and repaired also by contract.

Surveying.—A complete water survey, from line of West Street, including the Outer Anchorage and back of South Breakwater, was made for Annual Report. This survey also included the whole of the water area inside the pier heads to Salisbury Island and Congella Wharf. The usual monthly surveys of Entrance Channel, taken early in each month, as weather permitted. Monthly surveys taken on or near the first of each month to ascertain area reclaimed at Congella on behalf of Durban Corporation, and complete set of levels taken over remaining unreclaimed ground in February. Survey made, and diagrams prepared, for Whaling Site at Bluff. Site at Umbilo River surveyed and diagrams prepared for Mr. Spence. Complete survey made for fixing positions of the two beacons erected at Point Durnford. Survey and diagrams for Messrs. Sparks and Young’s Fish House site at Cato’s Creek. Special survey of entrance prior to entrance of Squadron (after the storm of October 7th). A series of soundings taken on both sides of North Pier by means of 50 foot radius Crane with extended jib. Survey made of water area between Training Wall and shore at Bluff in connection with proposed additional Whaling Site. Twenty-four borings made to a depth of 50 feet below low water over proposed new site at Cato’s Creek for Floating Dock. Eleven lots surveyed and pegged at Salisbury Island for leasing and other surveys in connection with work on hand.

Sanitation, Bluff.—This was not put in hand during the year, although a sum of £550 was voted for the work.

Alteration of Current Conveyors, Bluff.—The new overhead Trolley System for conveying current to transporters at Coaling Appliances was completed in December, Messrs. Etlinger Bros. being the contractors for this work. All foundations, etc., were put in by this Department. The new method of conveying current has worked remarkably well, and since its inauguration there has been no trouble experienced. The removal of a complete siding was necessitated by this alteration to make room for the poles carrying the cables, but as this was a spare line the work has not suffered in any way.

Erection of Beacons at Point Durnford.—At Point Durnford, two beacons have been erected, each 30 feet in height, of obelisk shape, the bases being about 13ft. across. Some considerable difficulty was experienced in arranging for transport owing to the swampy nature of the ground to be crossed, and the heavy “drift sand” hills some three miles across before reaching the beach. It was, therefore, decided, to attempt floating the bulk of the material ashore, which, after spending a whole day in experiments, was safely accomplished, when several bundles of material, weighing upwards of three tons apiece, were dropped overboard from the “Harry

Escombe," and, after being conducted by a rowing boat to the breakers, were let loose and washed ashore at high tide close to the sites chosen for their erection. These beacons are built of heavy wooden framing, and covered entirely with Asbestos Sheets. The foundations are heavy section double-headed rails driven deep into the sand and bedded in concrete, the structures being "guyed" with four siezed steel guy ropes to rail posts driven securely into the ground and concreted. Although from the sea the cliffs appear suitable for the erection of buildings, it was extremely difficult to find sites in conspicuous places whereupon to erect these structures owing to the chasms and cracks formed by water rendering the ground unsafe. The North Beacon, which is painted black and white alternately, in horizontal bands, is erected on a base 57·07 feet above high-water mark, the position being as follows:—South Latitude, $28^{\circ} 54' 30''$, East Longitude, $31^{\circ} 59' 30''$, and stands on a sand-hill slightly to the north of Port Durnford. The South Beacon, which is painted all white, is erected on a base 112·09 feet above high-water mark, in $28^{\circ} 55' 30''$ South Latitude, and $31^{\circ} 56' 15''$ East Longitude, and stands near the edge of the cliff. Both are clearly distinguishable from the sea, and can be readily known from the broad black belt, 10 feet in depth, around the centre of the Northern Beacon.

Port Shepstone.—With the exception of ordinary conservancy of Outer and Inner Works, and buildings belonging to Government, nothing of importance has taken place here. There is only one European now employed and two free coloured people, the rest being prisoners. Since the heavy storm in August 1906, when the end blocks fell away, nothing further has happened to the Outer Works, which have withstood all sorts of gales. Some damage was done in April to the Inner Training Wall owing to the floods. Large drain pipes have now been put in to carry flood water into the river, and the damaged wall is being repaired. The buildings have been painted and repaired, some of them let and some disposed of, together with certain material of no further use to the Government. The entrance, which remains practically the same, is unsafe even for small craft, except on rare occasions after heavy floods when the "spit" is temporarily washed back, but this does not last and reforms again very quickly.

MISCELLANEOUS.

Bluff Spur.—Early in November, a subsidence of some of the blocks forming the "spur" at east end of Bluff Wharf was noticed, which upon examination by a Diver was found to be due to undermining caused through "scour" around the outer end. Two tiers were affected and had to be removed whilst the foundation was made good, these blocks being then replaced by means of the Floating Workshop. The whole of this "spur" is built loose, simply one block being laid down upon another in order that if needs be it can be removed.

Model of Harbour.—This was finished and forwarded to the Agent-General in London for placing on exhibition at the Imperial Institute early in May, 1908.

Repairing Quay.—Water was laid along this Quay in October from main running behind Workshops.

Mr. Johnston's Siding at Congella.—A railway line about 1,400 feet in length was laid in connection with Mr. W. F. Johnston's Lots at Congella.

I have the honour to be,

Sir,

Your obedient Servant,

D. C. DAVEY,

Engineer-in-Charge.

SCHEDULE OF MATERIALS, &c., USED IN VARIOUS WORKS.

Harbour Development, Congella:—

2,884	tons	handstone.
1,089	"	broken stone.
583	"	binding.
3,581½	"	rubble.
264½	"	refuse.
2,825	"	crushed stone.
433¼	"	broken stone.

Conservancy :—

4,217	tons handstone.
500	„ binding.
415	„ rubble.
205	„ refuse.
1,695 $\frac{1}{2}$	„ crushed stone.
349 $\frac{3}{4}$	„ binding.
496	„ broken stone.
339	cubic yards Bluff sand.

Maintenance of Outer Works :—

1,307	tons handstone.
877	„ boulders.
504 $\frac{1}{2}$	„ crushed stone.
213	„ broken stone.
460 $\frac{3}{4}$	cubic yards Bluff sand.

Maintenance of Official Residences :—

10 $\frac{1}{2}$ tons blinding.

Coaling Plant, Bluff :—

22 tons crushed stone.

Re-construction of Burnt Portion of Shed " B " :—

5 $\frac{1}{4}$ tons blinding.
5 $\frac{1}{4}$ cubic yards Bluff Sand.

Supplied to Natal Government Railways :—

1,813 $\frac{1}{4}$	tons crushed stone.
90 $\frac{3}{4}$	„ binding.
97 $\frac{1}{4}$	„ blinding.
19 $\frac{3}{8}$	„ broken stone.
5 $\frac{1}{4}$	cubic yards Bluff sand.

Supplied to Public Works Department :—

35 $\frac{3}{4}$ tons crushed stone.
106 $\frac{1}{2}$ „ blinding.
11 $\frac{1}{2}$ cubic yards Bluff sand.

Umgeni Quarry :—

24,471 $\frac{3}{4}$ tons of stone quarried Departmentally and supplied to works direct.
2,170 „ of stone supplied to Durban Gaol.

Stone Crushers :—

8,948 $\frac{1}{4}$ tons of stone crushed during the year and used on various works.
7,762 „ of stone stacked for crushing.

Durban Gaol :—

2,108 tons of broken stone sent into works.

Bluff Sand :—

821 $\frac{3}{4}$ cubic yards brought over to Point and used on various works.

LABOUR RETURNS (DAILY AVERAGE).

	Europeans	Natives	Indians	Convicts
Point	29	79	4	155
Bluff	6	17	2	128
Congella	13	18	...	178
Umgeni	3	6	2	42
Port Shepstone	2	2	2	12
Coast Lights	7	1	6	...
	<hr/> 60	<hr/> 123	<hr/> 16	<hr/> 515

Average number of Rebels employed for three months ... 492

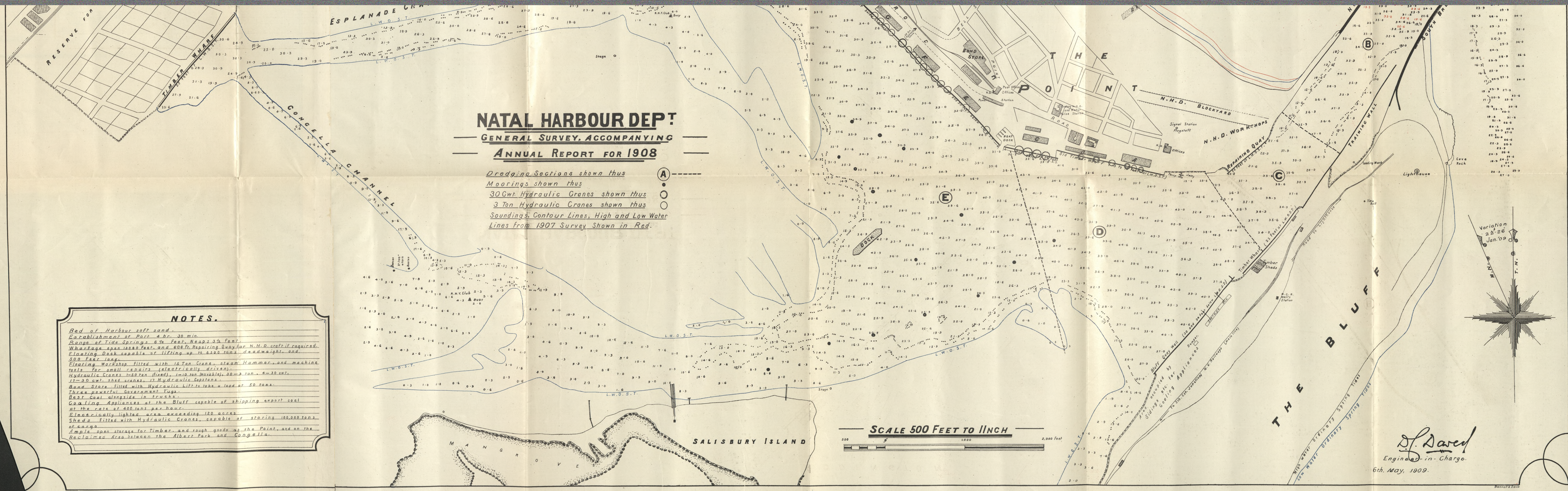
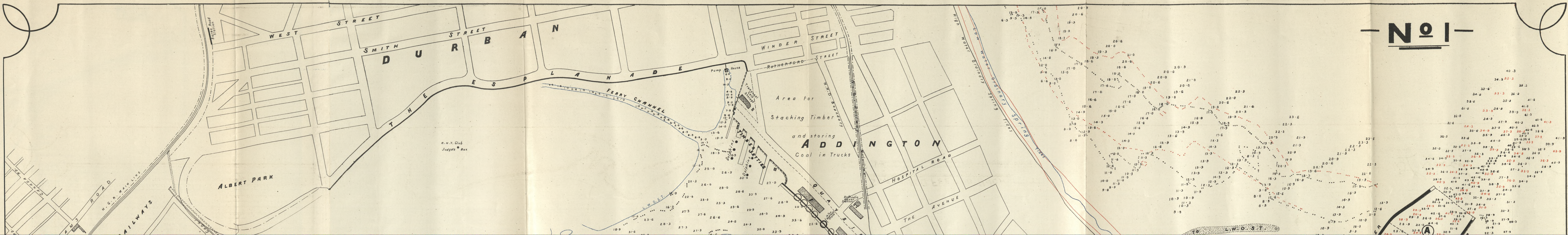
Average number of men employed daily during 1907 :—

Europeans ... ..	...	...	...	154
Natives ... ..	...	...	...	257
Indians ... ..	...	...	...	36
Convicts ... ..	...	...	...	325
Rebels ... ..	...	...	...	1,121
" Unemployed " ... ..	...	...	..	76

D. C. DAVEY,

Engineer-in-Charge





NATAL HARBOUR DEPT.
GENERAL SURVEY, ACCOMPANYING
ANNUAL REPORT FOR 1908

Dredging Sections shown thus A
Moorings shown thus ○
30 Cwt. Hydraulic Cranes shown thus ○
3 Ton Hydraulic Cranes shown thus ○
Soundings, Contour Lines, High and Low Water Lines from 1907 Survey Shown in Red.

NOTES.
 Bed of Harbour soft sand.
 Establishment of Port 4 hr. 30 min.
 Range of Tide Springs 6 1/2 Feet, Neaps 3 1/2 feet.
 Wharfage space 1200 feet, and 600 ft. Repairing Quay for N.H.D. craft if required.
 Floating Dock capable of lifting up to 200 tons deadweight, and 300 feet long.
 Floating Workshop fitted with 15 Ton Cranes, steam Hammer, and machine tools for small repairs (electrically driven).
 Hydraulic Cranes 1-50 ton (fixed), 1-10 ton (movable), 30-3 ton, 4-30 cwt., 17-30 cwt. shed cranes, 17 Hydraulic Capstans.
 Band Store fitted with Hydraulic Lifts take a load of 50 tons.
 Three powerful Government Tugs.
 Best Coal alongside in trucks.
 Coaling Appliances at the Bluff capable of shipping export coal at the rate of 400 tons per hour.
 Electrically lighted area, exceeding 120 acres.
 Sheds fitted with Hydraulic Cranes, capable of storing 100,000 tons of cargo.
 Ample open storage for Timber, and rough goods at the Point, and on the Reclining Ais between the Albert Park and Congella.

SCALE 500 FEET TO 1 INCH
 500 1000 2000 feet

J. S. David
 Engineer-in-Charge.
 6th May, 1909.

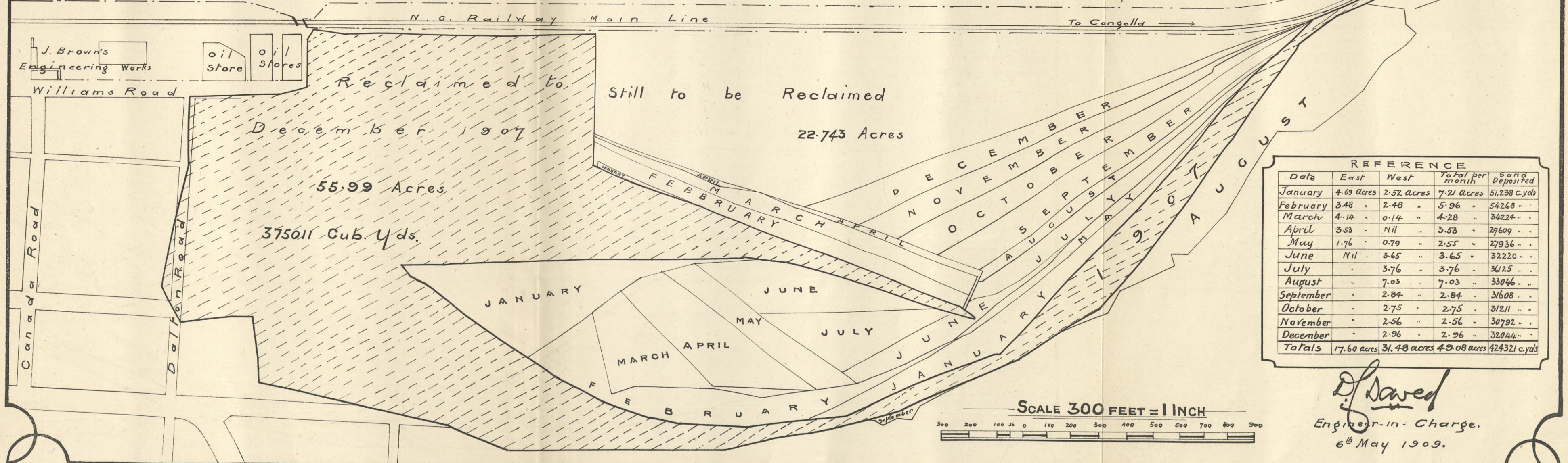
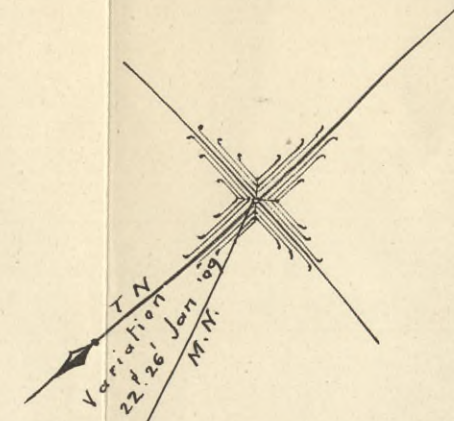


NATAL HARBOUR DEPARTMENT

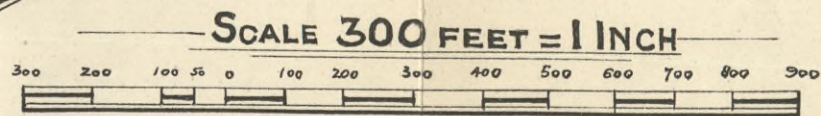
PROGRESS PLAN OF RECLAMATION FOR DURBAN CORPORATION

To ACCOMPANY ANNUAL REPORT FOR 1908

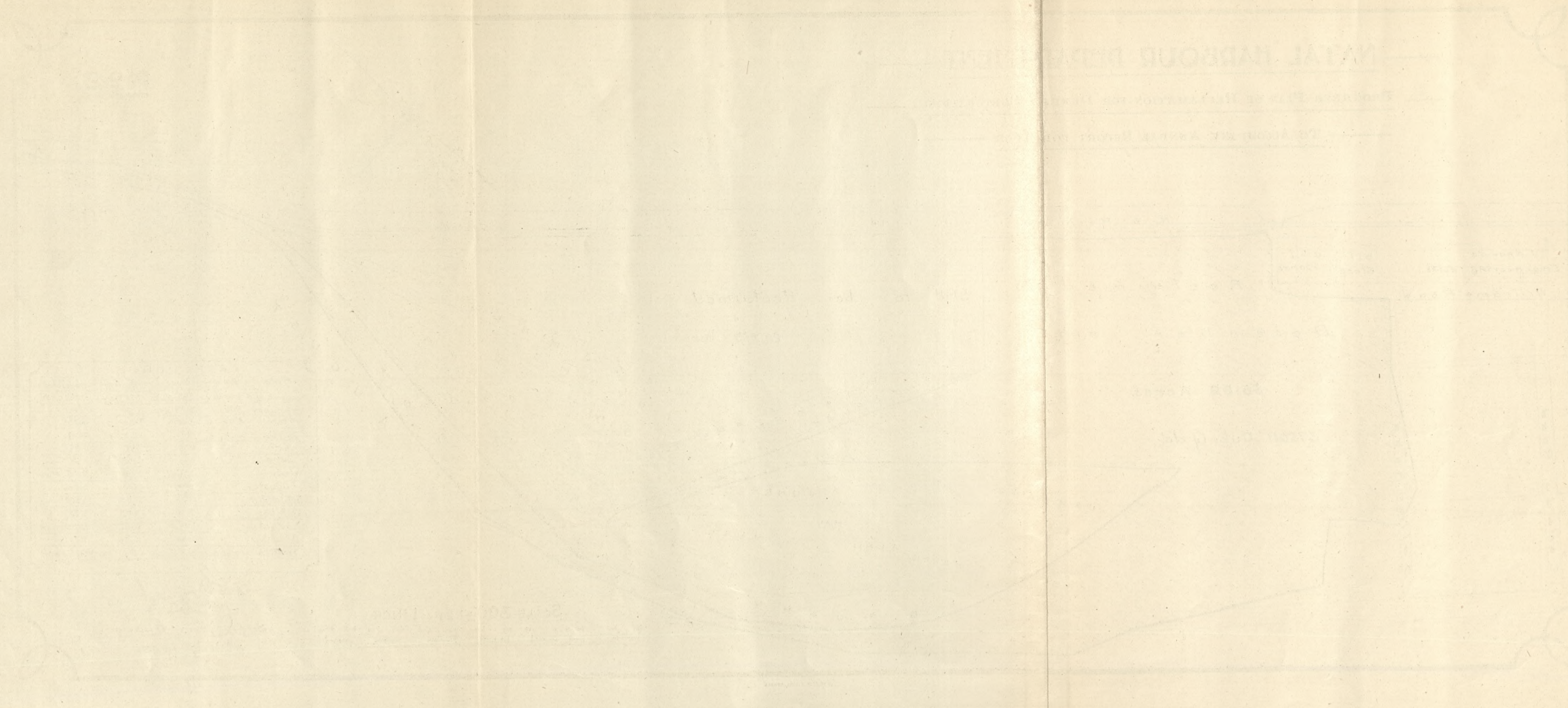
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REFERENCE				
Date	East	West	Total per month	Sand Deposited
January	4.69 Acres	2.52 Acres	7.21 Acres	51,238 c.yds
February	3.48 "	2.48 "	5.96 "	54,268 "
March	4.14 "	0.14 "	4.28 "	34,224 "
April	3.53 "	Nil	3.53 "	29,609 "
May	1.76 "	0.79 "	2.55 "	27,936 "
June	Nil	3.65 "	3.65 "	32,220 "
July		3.76 "	3.76 "	31,25 "
August		7.03 "	7.03 "	33,046 "
September		2.84 "	2.84 "	31,608 "
October		2.75 "	2.75 "	31,211 "
November		2.56 "	2.56 "	30,792 "
December		2.96 "	2.96 "	32,044 "
Totals	17.60 acres	31.48 acres	49.08 acres	424,321 c.yds



D. S. Dawed
Engineer-in-Charge.
6th May 1909.



NAVY HARBOR DISTRICT

TO THE ADMIRALTY AND THE ROYAL NAVY

NAVY HARBOR DISTRICT

NAVY HARBOR DISTRICT

Scale 50 miles

NATAL HARBOUR DEPARTMENT

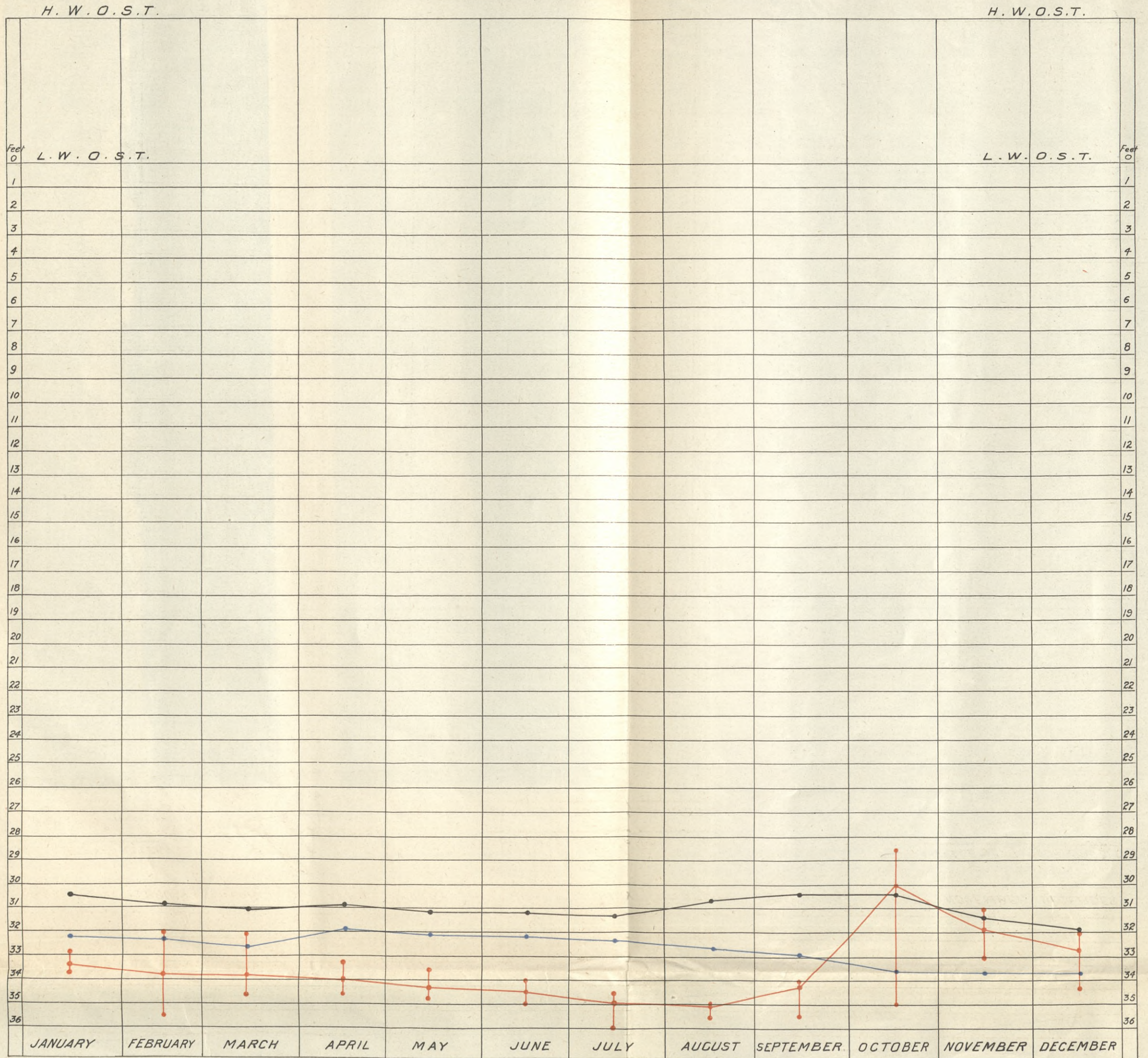
Nº 3

DIAGRAM

SHEWING AVERAGE MONTHLY DEPTHS AT ENTRANCE FOR THE THREE YEARS 1906, 1907, 1908.

WITH GREATEST AND LEAST DEPTHS RECORDED IN EACH MONTH FOR 1908.

ACCOMPANYING ANNUAL REPORT FOR 1908.



1906 SHEWN IN BLACK

1907. SHEWN IN BLUE

1908 SHEWN IN RED

D. Sawer
 Engineer-in-Charge.
 6th May 1909.

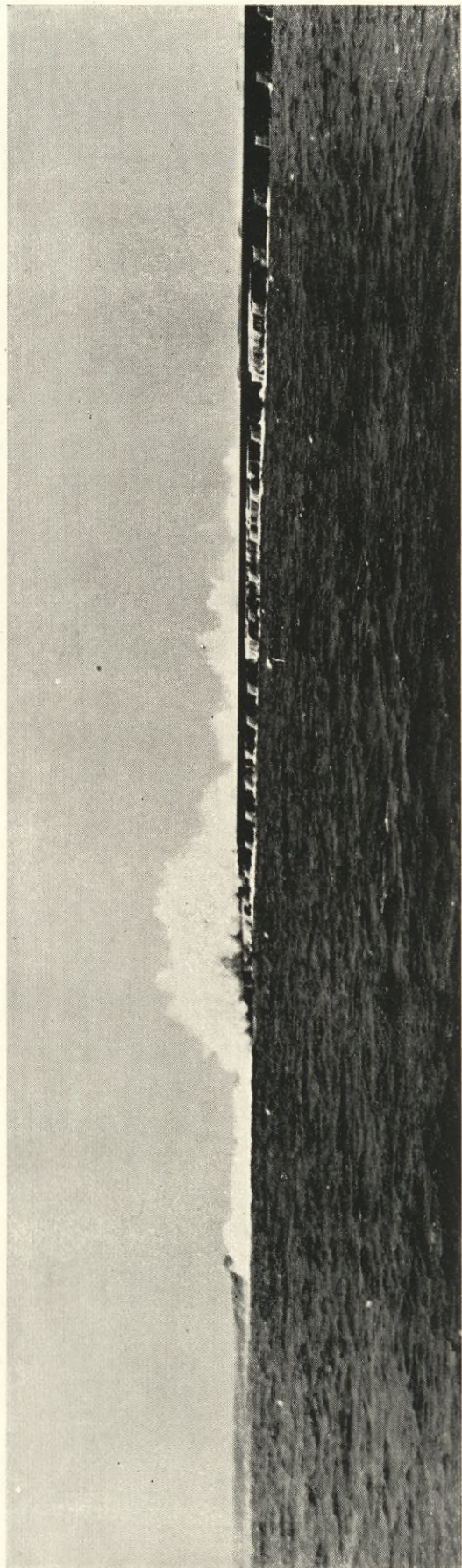
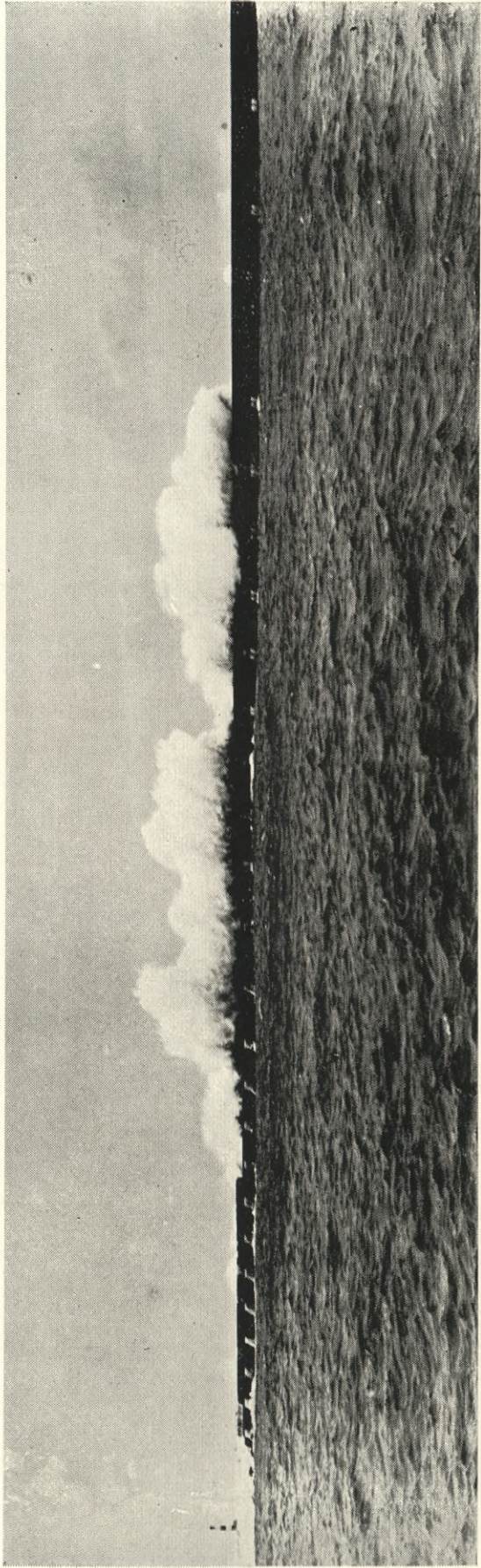
HORIZONTAL SCALE $\frac{1}{32}'' = 1 \text{ DAY.}$

VERTICAL SCALE $\frac{1}{4}'' = 1 \text{ FOOT.}$

AVERAGE DEPTH FOR 1906 31' 0"

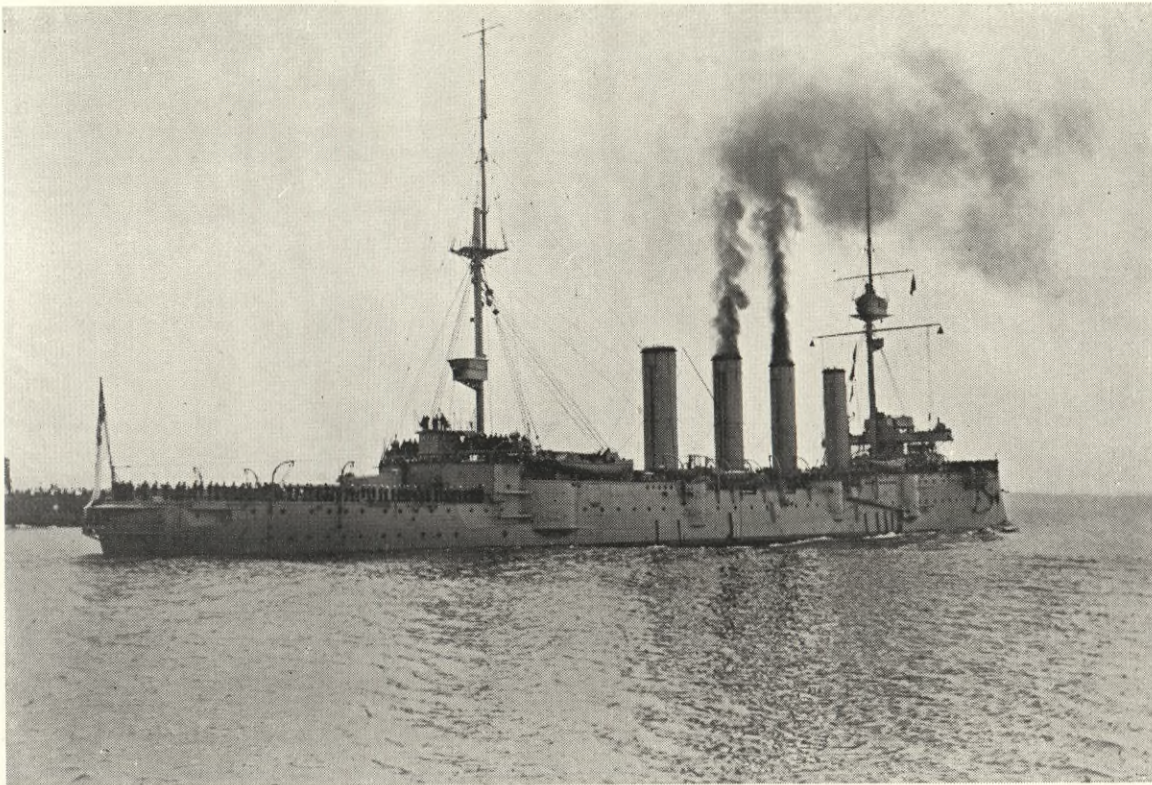
AVERAGE DEPTH FOR 1907. 32' 8"

AVERAGE DEPTH FOR 1908 33' 6"



Heavy Seas on South Breakwater, 7th October, 1908.





H.M.S. "Good Hope" (14,100 tons), leaving Port Natal, 26th October, 1908.



H.M.S. "Devonshire," "Carnarvon" and "Antrim" anchored in Port Natal, 12th October, 1908.

100


S. 61

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