1854.

VICTORIA.

PORT OF PORTLAND.

RETURN TO ADDRESS—Mr. COLE, 9th SEPTEMBER, 1853.

LAID upon the Council Table *by the* Surveyor General, *by Command of* His Excellency the Lieutenant Governor, *and ordered by the* Council *to be printed, 28th November*, 1854.

[copy.]

Assistant Engineer's Office,
Portland, 3rd March, 1854.

Sir,

I have the honor to acknowledge the receipt of your letter of the 25th ultimo (54 | 280), desiring me to proceed with the survey of Portland Bay, and indicating on a tracing the extent to which the soundings are to be taken.

In reference thereto, I would beg permission to draw your attention to the fact, that in squally weather, no boat in this bay is capable of standing out, without a great risk of life, the distance which you have pointed out beyond the Lawrence Rocks, in confirmation of which opinion, I beg to enclose a letter from the Harbor Master, in which he refers particularly to this point. It will therefore be necessary that a decked vessel be furnished for the work, supplied with one of Massey's patent logs. I would also beg to refer you to the Harbor Master's offer of assistance, but as he states the interruptions during the progress of the work are likely to be frequent and sudden, I may suggest the hiring a boat and crew of six men, whose services can be obtained at the rate of £7 per day. I would further beg to request, that I may be supplied with funds to enable me to pay all necessary expenses attending this work.

I have the honor to be,

&c., &c., &c.,

(Signed) JOHN BARROW,
Assistant Engineer,
Western District.

The Honorable the Surveyor General.

[copy.]

Harbor Master's Office,
Portland, 3rd March, 1854.

Sir,

In reply to your letter of to-day's date, requesting to know whether it would interfere with my duties as Harbor Master, to render you the assistance of my boat and boat's crew, for the purpose of surveying the bay, I beg leave to state, that the boat and boat's crew are at your service, as also my personal assistance if required, when not employed with the duties of piloting vessels to and from sea, and other professional duties connected with the Harbor Department, which cannot be dispensed with. Therefore it might be advisable, in order that the work may not be delayed, to engage a boat here to supply the place of the Harbor Master's boat, as it will doubtless be often required for Harbor purposes, during the time occupied in taking the survey contemplated.

I have also to express my opinion, that an open boat is by no means fit to survey the coast between Cape Nelson and Cape Grant, neither is it a proper means to survey as far as the Surrey and Fitzroy Rivers, but I would strongly recommend that a decked vessel be employed for the purpose.

(Signed) JAMES FAWTHROP,
Harbor Master.

[COPY.]

No. 54 | 605.

Surveyor General's Office,
Melbourne, 22nd April, 1854.

SIR,

In reference to your recent communication, I must remark, that there are two objects to be embraced in undertaking the survey of Portland Bay—one, to ascertain what can be done to afford Harbor and Wharf accommodation to the vessels trading directly with Portland—the other, more extensive in its character, involving as it does the important question of how Portland can best be formed into a harbor of refuge, an asylum so urgently required by the shipping on the southern coast of Australia, and for which Portland Bay at first sight seems pre-eminently adapted to become, art of course being brought to aid the natural advantages.

1. To determine these points your attention should be, in addition to the ordinary survey of coast line, directed to carefully ascertaining what shelter and protection is afforded, as well as the extent of exposure to which the bay is subject.
2. The extent and capacity of a safe anchorage, as well as the character of the anchorage ground at the bottom.
3. Tide, spring and neap, and also extremes.
4. High water, full and change.
5. Rate of any streams or currents in the bay, as well as the effect of freshes.
6. Character of river.
7. The amount of rain falling in the year.
8. Tending or otherwise to silt.
9. Is there a bar, and of what it is composed, and does it shift?
10. Can any scouring power be secured by the river and its extent.
11. Influences of freshes and floods on the river, as well as on the bay.
12. Is there much stone on the shore, or in the immediate vicinity; its nature, and what effect salt or fresh water has on it, or is it acted on by any natural cause.
13. The same information as to timber.
14. Is there lime, and will it set in water.

To ascertain this varied information will of course occupy a considerable portion of your time: to it, therefore, your attention can be first directed, and which will enable me to employ the survey vessel *Lælia* on completion of the work on which she is immediately engaged in Gipps' Land, to aid you in your survey of the outer portion of the bay.

Should you, however, at once require the aid of a boat and crew, I hereby authorise their employment, with full confidence that you will use every means to economise their labor consistent with rendering your work complete and perfect.

I have the honor to be,

&c., &c., &c.,

(Signed) ANDREW CLARKE,
Surveyor General.

John Barrow, Esq.,
Portland.

[COPY.]

Engineer's Office,
Portland, 9th November, 1854.

SIR,

In accordance with the instructions contained in your letter of the 3rd instant, I have the honor to inform you, that I have forwarded to you by the hands of the captain of the steamship *Hellespont*, which is expected to leave this bay for Melbourne to-morrow, my original plotting of the survey of Portland Bay, together with a report on the same in compliance with your directions dated the 22nd April (54 | 605). I would beg to observe that in my report I have endeavoured, though imperfectly, to represent faithfully both the characteristic features and the engineering capabilities of Portland Bay.

I am fully aware that many matters in relation thereto, such as sub-strata of the bay and bed of the creek, are not the result of practical operation; the various notes in relation to tides, winds, rain, &c., are not based on given data, and have therefore only been cursorily alluded to in my report.

I have, however, since learned that the Harbor Master has kept for some months back a meteorological table of the atmosphere, but not a rain gauge.

I would also beg to observe, that the procrastination of the survey has been caused by interruptions in attending to my legitimate duty as Assistant Engineer, and the survey occurring during the winter months has also operated in retarding its progress. I trust, therefore, that these considerations will weigh with you in estimating the length of time necessarily involved in the survey.

(Signed) JOHN BARROW,
Assistant Engineer.

The Surveyor General.

[COPY.]

No. 54 | 2007.

Surveyor General's Office,
Melbourne, 17th November, 1854.

SIR,

I have to inform you that I have received the original plotting and report of the survey of Portland Bay, referred to in your letter of the 9th instant.

As far as I can ascertain from the plan, this work is very creditable; but to enable me fully to determine on its merits, I must be furnished with all the observations and notes on which your plans are grounded.

(Signed) A. CLARKE,
Surveyor General.

John Barrow, Esq.,
Assistant Engineer, Portland.

[COPY.]

Portland,
20th November, 1854.

SIR,

I have the honor to acknowledge the receipt of your letter of the 17th instant, (No. 54 | 2007), desiring to be furnished with all the observations and notes appertaining to my survey of Portland Bay.

In reply I beg respectfully to state that I very much regret that I had not anticipated your desire to be furnished with my field and marine notes when I began the survey, as many circumstances have conspired to confuse them to such a degree that I should be at a loss to recapitulate them myself; some are lost, and all the calculations having been on loose paper cannot be found: under these circumstances, I am unable, and much regret that it is totally out of my power, to comply with your directions. I may, however, be permitted to mention that my base line measured three-quarters of a mile, and that it was gone over four times with chain and rods, and at each of the stations, 29 in number, angles were taken on every conspicuous and ascertained point; thus obtaining lines from every station which intersected each other. The greater portion of these angles were calculated, others, when ascertained to be true, were plotted; by this means the relative positions of the stations have been fixed; between these principal stations intermediate angles were taken to form the intervening line of coast.

The soundings were taken, as a whole, on a similar principle—fixed points, such as buoys and landmarks, governed the course of the boat, which dipped the lead at three and sometimes four minute intervals, as previously arranged before commencing the day's work.

The angle and time of dip were taken by the theodolite on shore.

I believe my plan of survey is not usual, but it has this manifest advantage, that the exact spot where the sounding is taken is unerring, so far as constant attention to the instrument can make it.

This method of survey accounts for the buoys marked on the plan, which I omitted to mention were only laid down for this particular purpose. Occasional soundings, when out of reach by the telescope, have been taken by time between two fixed objects, but only where necessity compelled such a course.

I trust this short exposition of the principle on which the work has been conducted will meet your approbation.

(Signed) JOHN BARROW,
Assistant Engineer.

The Surveyor General.

SURVEY OF PORTLAND BAY.

REPORT.

Introductory Remarks.

The general trending of the South Coast of Victoria, between the Capes of Otway, in longitude 143° 33′ east, and Northumberland, in 140° 37½′ east, a distance of about 200 miles, is a direction bearing west north-west.

This line of coast is indented with a number of bays, all more or less exposed to the south-westerly swell of the ocean—the one most sheltered* being that of Portland Bay, which is essentially different in respect to exposed aspect from any other along this seaboard, on account of the protection afforded to it by a line of coast extending six miles in a north-east direction against all south-westerly weather.

Between the bights of Portland and Discovery Bay a promontory extends about twelve miles in a south-westerly direction, having at its terminus three remarkable capes, viz., Bridgewater, to the eastward, forming the western point of Discovery Bay; Cape Nelson, the most southern headland along this coast; and Cape Sir William Grant; Point Danger, being another termination at the extreme north-east angle of the mainland of the bay—distant from which in a south-easterly direction one and a half miles, is the Lawrence Rock. This promontory forms the safeguard in a nautical view to Portland Bay.

The headlands just referred to exceed in height 200 feet, and are conspicuous features from their almost perpendicular and rugged appearance. The bays (three in number), which these headlands, semi-enclosed, are all open about eight points to the south, and from their exposed aspect to the most violent and prevailing winds and swell, during the greater portion of the year, are totally unsuited as anchorages. In southerly weather the sea in these roadsteads is a sheet of foam, extending more than a mile to seaward.

General Description.

The anchorage of Portland Bay lies in latitude 38° 21′ 11″; longitude 141° 37′ 45″ east, the magnetic variation being nearly 8° east. It may be estimated to contain an area of protected shipping ground of about eighteen square miles—assuming the bay proper to be a line drawn from the Lawrence Rock, and terminating on the coast under the highland of Mount Clay, on its northern side in length eleven miles.

The limit of the actual bay, however, is generally understood to be comprised between Lady Julia Percy Island on its eastern, and the Lawrence Rock on its western side—distant from each other seventeen miles in the direction of east half north. The former island lies in latitude 38° 25′ 45″; longitude 142° 2′ 35″ east; is separated from the mainland by a channel four miles in width, and is distant from Portland in the direction of south 77° 15′, east twenty-five miles. This island, being situate at the outskirts of the bay, may be supposed to afford a certain amount of protection against the heavy sea rolling in during easterly gales, although the extreme point of the mainland (visible) in the direction of 4° north of east, distant twenty-seven miles from the anchorage is the prescribed limit of the bay.

The direction of the Lawrence Rock from the same focus is south-east, giving an angle of 49°, approximating to nearly 4½ points of exposed aspect, leaving a circuit of 27½ points of the bay landlocked.

The Lawrence Rock has three hillocks, conspicuous from any point except that of north-west, from which quarter its appearance is that of a single flat-topped rock, with a scabrous abrupt outline. There is good evidence of this rock having once formed the extreme south-east angle of the promontory.

Lady Julia Percy Island is also flat-topped, with perpendicular sides, and is discernable from a ship's deck a distance of ten leagues.

From Point Danger, distant from the town of Portland four miles, the shore begins to slope gently to Blacknose Point one and a quarter miles, from whence to Observatory Point (on which a flagstaff has lately been erected), the coast assumes an abrupt, rocky aspect. Between these two points, having Point Blacknose as its south-east boundary, has been fixed the quarantine ground.

* There appears to be no place of shelter from westerly gales, with the exception of Portland Bay, between Bass' Strait and Kangaroo Island.—*Australian Directory*, vol. i.

From Observatory Point, which is 110 feet high, the shore falls down to a sandy beach, and trends to the main bight or indent of the bay half a mile in a westerly direction, upon which the town of Portland is situated. It then trends northerly along a sandy beach for half a mile to a bluff point, known as "Whalers Look-out," passing another bluff 123 feet high; it curves round at a like elevation to the north-west for another half mile to Double Corner, a second elbow in the bay, from whence it trends in a north-easterly direction, on a low sandy beach to opposite Lady Percy Island, being a circuit of thirty-six miles—this point being barely visible from the town of Portland.

Rivers.

Several rivers disembogue at regular intervals of about ten miles apart into the bay; near the town of Portland Wattle Hill Creek empties itself; skirting the base of Mount Clay, on either side are the Surrey and Fitzroy, and opposite Lady Julia Percy Island the Eumerella River flows into the sea.

In addition to these, the Darlot Creek, a perpetually running stream, runs into the Fitzroy, and the Shaw River into the Eumerella. These rivers find exit for their waters only during the winter months, at other seasons they are comparatively dry, and when the rains cease, become barricaded at their mouths with the drift of the sea currents.

Immediately inside the bars of the Surrey and Fitzroy Rivers, reservoirs of some capacity exist all the year round, capable of holding vessels of moderate tonnage, but as the sea sand greatly overpowers their scouring force, no advantage can be taken to make available these basins.

Wattle Hill Creek is a small watercourse entirely dry during the summer season, with barely sufficient water flowing down its channel in the winter to force a way through its mouth. The tidal water ascends the creek to a weir, one mile up, built some few years since to back up the water in a lagoon, to afford a supply to the town. This desirable object is now obtained by a well, which is excavated through a crust of the earth for forty feet on the level of the lagoon.

Soundings.

Deep water is found close under Cape Nelson and Cape Sir William Grant. About midway between the latter cape and the Lawrence Rock is a dangerous sunken reef, in from four to seven fathom water, over which the sea is continually breaking. Between this reef and the Lawrence Rock are found depths varying from eight to eleven fathoms, on a rocky bottom, with ample space in good weather and under favorable winds, for a ship to steer through.

Surrounding the Lawrence Rock is a platform extending a short distance on all sides, only accessible at a spot, in moderate weather. On the north-west side, bordering on this level rock, is a depth of water varying from six to ten fathoms. The water continues at this depth towards the main land for three quarters of a mile, when a sunken rock, in from four to five fathoms, appears about half a mile off Point Danger. This reef is not at all times distinguishable by breakers, and therefore ships making into Portland Bay through this passage should be kept well off the point until it can be rounded in nine fathoms water.

The depth of water along the coast towards the anchorage is apparently of an even character, considering that the bottom is composed of an alternation of sand and rock the whole distance. As a rule, six and a half fathoms may be found one half mile from the shore, very gradually deepening into the bay.

The portion appropriated as the Quarantine Ground indicates seven fathoms water one mile from the shore, to which it gradually shelves on a bottom of sand, slightly intermixed with rock. This situation appears well adapted for the purpose, both on account of the protection afforded by Blacknose Point, from which also a short reef juts out, and there being two small rivulets discharging themselves into the bight. A buoy has lately been placed at this indent to indicate the anchorage ground.

The Port anchorage, the centre of which is distant from the jetty five-eighths of a mile, has a bottom of sand on a bastard limestone (the débris of the cliffs north of the town), resembling marl. It is a calcareous sand—Captain Stokes states it to be mud—Mr. C. J. Tyers clay. The former material may exist in a small ratio compared with sand, and its presence may be accounted for by the abrasions frequently taking place along the cliffs, and also to the alluvion brought down in the winter by the rivers. This substance, intermixed with sand, may possess the quality of good holding material, coupled with what is stated by masters of ships, that the flue of the anchor, in getting through the upper stratum, takes a grip of the limestone underneath, and thus secures a retentive hold.

In speaking, however, of the holding ground of Portland Bay, I am inclined to think that it is not so tenacious as that of either Port Fairy or Lady Bay, Warrnambool; but in the absence of any amount of undertoe which causes the sudden shock to vessels anchored in these two bays, and its unassailable position in respect to the heaviest and most frequent ocean swells, may be considered, as it is now proved to be by experience, a safe, ample, and good anchorage ground.

The ordinary anchorage is comprised within a radius of about seventy acres, inclining gradually from three and a half to seven fathoms water.

At "Whalers Look-out" visible reefs extend a short distance from the shore, and detached about a quarter of a mile easterly from the point is an isolated rock in eleven feet water at low tide, with three fathoms surrounding it, over which a buoy to indicate its position has lately been placed.

The indent at Double Corner affords good and safe anchorage on a sand bottom in five fathom water, one mile from the shore.

Between Double Corner and the Surrey River a long dangerous rocky ground exists, called the Minerva Rocks, from half a mile to one mile from the shore, with a variable depth of from one and a half to four fathoms only in southerly weather, discernible by breakers. Beyond this along the coast the bottom is sand with a very gradual inclination to the bay. Opposite the Minerva Reef, and extending about three miles into the bay, and trending in the direction of "Whalers Look-out," the bottom alternates in rock, pebbles, and sand; the depths, however, appear regular, seldom varying half a fathom in a sounding taken every ten minutes. The whole centre of the bay consists of a coating of sand, with an uniform surface throughout, varying not more than one fathom in a mile.

Having sounded at intervals of four minutes over the whole area of the bay, no rocks have been discovered except those previously known and mentioned in these notes.

Materials.

Stone.—The geological characteristic of the coast of Portland Bay presents no great variety of stone. That of volcanic origin, distributed along the hilly ground between the Quarantine Ground and Observatory Point, is commonly designated "trap" or "whyn," neither of which terms seems applicable to the bluish grey boulder rock here occurring. On close examination this stone appears to be a compact crystallized quartz, so minute in its particles as to be hardly discernible, and intermixed with which appear some of the varieties of substances which compose granite. Its weight averages 130 lbs. per cubic foot, and is well adapted, although expensive to work, as a building material. It does not occur in layers but large blocks, and the cleavage is generally found to be uniform and direct. As yet only a small portion of the rock has been excavated, but what has been done gives sufficient evidence of the ground containing large masses adaptable to marine works.

Amalgamated with this rock is a material commonly called "honeycomb," from its being cellular. It appears to contain a greater variety of minerals in its composition, and is of a much tougher nature than its associate stone, and is very difficult to work. It seems to occur in patches, and is invariably avoided by the quarrymen when met with.

These two descriptions of stone have cost, in Portland, scappled into square blocks and delivered, 70s. per cubic yard. As road metal it has been contracted for at 26s. per cart load equal to three-fourths of a cubic yard; in this cost the item of carting has added at least two-thirds of the amount. It can be quarried on the spot at from 7s. to 9s. per perch. From the variety of hues which this stone presents along this cliff different kinds would appear to exist, but this diversity may be solely attributed to atmospheric influence.

From "Whalers Look-out" to Double Corner the lower portion of the cliff presents a chalky appearance, which, on examination, is found to be a soft calcareous sandstone. The elevation of this material averages 60 feet, on which reposes an aggregation of soapy stone, boulders, and soil, much impregnated with oxide of iron, averaging a depth of 50 feet, many portions of this part of the coast is fast crumbling away.

This underlying bastard limestone has been proved to be useful as a building material, having a tendency to harden on exposure. In its bed its quality is so soft as to be easily cut with a knife. I venture to maintain that the whole bottom of the bay is composed of this substance, the upper crust being in a progressive state to rock. Fragments of this material are found along the shore partially submersed, which are now as tenacious as flint, fully evidencing its concreting property, and the value of the stone as an agent for marine operations.

In addition to these two species of rock, the first of which occurs in beds in a variety of places in the neighbourhood of Portland, may be mentioned pure limestone. These deposits occur under Mount Clay, and again at the various capes of the promontory.

Timber.—Along the whole range of coast, from Cape Bridgewater to Portland, a large extent of country abounds without available timber. To the north and west of Portland extends a tract of timber land called the Nine Mile Forest. In this space is met with almost every variety of indigenous forest tree, of a lofty kind and large girth. The Stringy Bark, as a tree of general utility, abounds in the gullies about Mount Clay. Its elevation, in a straight stem, can be seen exceeding seventy feet. The different kinds of gum growing in this forest are also useful as timber; and other varieties are met with which have been converted into various scantlings for building and fencing—in fact vessels have been built in Portland Bay with timber from this forest—Portland Jetty is entirely constructed of it. The only drawback to the full development of the use of these timbers is the cost of carriage over bad roads, and to this circumstance may be attributed the scarcity of sawyers, and the large importation of building timber into Portland, although species of the most available kind are close at hand.

Winds.

In the absence of any meteorological table to give data on the subject of the winds in this latitude, I can only approach the subject very generally by a few cursory remarks.

The westerly and southerly quarters are those from whence issue the most prevailing as well as the strongest winds. These winds do not in the least affect Portland Bay, however violent the gales may be during their continuance. The shipping is in perfect security, and the cargo boats in full work.

Easterly winds occur periodically, mostly during the spring and autumn. As a general rule they are considered a moderate wind; no damage to the shipping, as far as I can ascertain, ever having happened during their continuance, although on several occasions within my know-

ledge it has set in the bay with great violence, seldom, however, of more than twelve hours duration.

Northerly winds blow periodically, sometimes very strong, but generally light and variable. These do not affect the bay.

Portland Bay may be considered to be protected from the winds which roll the heaviest seas into the bays along this coast.

Tides and Currents.

The tides in Portland Bay appear to be very irregular, being more or less influenced by the prevailing ocean swell and wind. The rise at springs is about four feet, high water being generally at midnight and noon at the time of the moon's fulness. Sometimes only one tide happens in the twenty-four hours; at others, days have intervened without any perceptible rise.

A general current appears to be always setting into the bay from the westward. The rocks and shoals at the southern terminus of the bay, and the coast line trending at right angles with the current, affect its direction so far that it may be supposed that on its impinging on the Lawrence Rock and the mainland to feather out across the bay, leaving a counter current to wind itself along the coast towards the bight at the anchorage. This feature of its course is apparent, the result being evidenced by the stones and other material which this under current is perpetually depositing on the tongue of land which guides the course of Wattle Hill Creek and forms the bar at its mouth.

At Observatory Point a short reef juts out into the bay, giving a slight check to the direct progress of the current passing this barrier; it whirls itself in inflected lines to the mouth of the creek, where the sediment it bears along is deposited. The rate of this under current may be estimated at from one to two miles per hour, as affected by the wind outside the bay.

Having now essayed to follow out your instructions so far in respect to a description of the general and particular characteristic of Portland Bay, I will conclude this part of the subject by remarking that its sheltered position from the most prevailing winds and swell of the sea, the gradual shelving of the bottom of the bay, its quality as a holding ground, the comparative absence of any undertoe, and its safe and ample space for egress and ingress, render it a commodious, accessible, and safe port for shipping.

Engineering Capabilities.

In compliance with the first paragraph of your instructions, viz., "To ascertain what can "be done to afford harbor and wharf accommodation to vessels trading directly with Portland." I have the honor to submit my views in relation to the capabilities which Portland Bay presents for improvement.

At present the only useful public work is a jetty extending 550 feet into the bay, at the termination of which there is $12\frac{1}{2}$ feet at low water. The structure contains an open shed 50 x 30 feet, two lines of tramway and two cranes.

Unfortunately this structure has been placed in a wrong position, being about 30 degrees out of the line, which from the general direction of the surf should have been adopted. This error has caused a premature detriment to the jetty, and also to the approach, owing to the lateral concussions it receives from the lighters than would otherwise have taken place. The existing fender piles are useless as such, as they impinge directly on the jetty, and communicate all the thumps they receive to the jetty. These objections ought to be obviated in the construction of any future building of this description.

As this jetty is totally inadequate to the requirements of the business transacted, causing from want of accommodation much delay, loss, and inconvenience to the mercantile community, I considered it my duty when preparing the estimates for public works for this district, for the year 1855, to represent the great want of a new jetty.

A more intimate acquaintance with the advantages and capabilities of this port enables me to offer additional suggestions to the plan for a new jetty, which I submitted to the Colonial Engineer, by order, in September, 1853. The proposition would be to give ample space within the haven of the jetty to seaward to enable steamers to load and unload as at a wharf.

To strengthen the structure, advantage could be taken of the material abounding at the cliffs, which I have before represented as possessing the qualities of a cement, by filling up the interstices between the piles, thus rendering the space intersected by the new and old jetties a basin of comparatively smooth water.

Breakwater.

The facilities for the construction of a breakwater in Portland Bay are eminently great; material suitable for the purpose, and easily attainable, is close at hand; and a moderate depth of water, from five to seven fathoms, are considerations of no slight importance in estimating for work of this nature.

Observatory Hill has been considered the point from which such a work should commence. This point is the termination of a rocky line of coast, material may therefore be had in abundance.

By the preparatory arrangement of a sufficient platform to give room for the shunting of branch tramways, several operations could be going on at the same time, and the work gradually extended by two lines of way on an inclined plane, which the waggons would descend to the

"tip" by their own gravity, and simultaneously haul up the empty cars. I conceive it to be unnecessary to enter into any detail of the plan for a Breakwater in this report, as my original plans and notes were forwarded to the Colonial Engineer in 1853 (July).

I may, however, venture to remark that a place of refuge for ships is much needed along this coast; and in that term may be comprised all the advantages afforded by a commodious and safe shipping ground. In this view such a work may be considered a national rather than a local undertaking.

Reference has also been made as to the practicability of improving, that is, to deepen the channel for a stated length of Wattle Hill Creek. Advantageous to the district as it would be to open a channel up this creek, I consider that, without mechanical appliances be adopted, which are objectionable on the score of expense, of wear and tear, and constant attention, any works having the improvement of the river as their object would be futile.

It is evident that if the flushing power of the stream is inadequate to keep open the mouth of the creek, that artificial means must be adopted to secure a channel. These appliances would involve continual expense of whatever nature they were, and the utility of them being questionable, it may be concluded that any interference with the creek would result in failure.

Docks.

It was proposed to the Government by some of the inhabitants of Portland to convert a lagoon (a sheet of water through which Wattle Hill Creek runs, near the town), about half a mile from the sea, into a dock for ships of large burthen. Doubtless this could be effected, but the cost which such a stupendous work would entail would be so out of proportion to its demand as to throw the proposition out of consideration.

Independent of the immense cost of such a work, the utility of which would be purely local, whereas a breakwater would, from offering easy ingress and egress, afford the immeasurable advantage of a harbor of refuge.

(Signed) JOHN BARROW,
Assistant Engineer.

Portland, 6th November, 1854.

By Authority: John Ferres, Government Printer, Melbourne.

PORTLAND BAY

Notes

Longitude of Anchorage 141° 37' E.
Latitude of Do. 38° 21' 0" S.
Variation 6° E.
Rise of Spring Tides 4ft
Current runs Westerly.
The dotted Line indicates the direction of the counter Current.
** Indicates Rocks Invisible at Low Water.
† Anchoring Ground.
Soundings in Fathoms.

John Darroch Assistant Engineer, Portland, Oct. 1854.

Saw Mill
Low Sandy Beach
Old Whaling Buildings
Convincing Ground
Surry River
Point Clay Ridge
Village Reserve
Coast trees from Portland to Belfast & Warrnambool
Stockade
Double Point
Suburban Ground
Portland
Whaler's Look Out
Reef Buoy
Lagoon
Gaol
Bridge
Wappan Hill Fence
Flag Staff
Good Anchorage
Buoy 1
Extreme S. Point of Main Land visible 27 17/20 Miles
Centre of Lady Julia Percy Island bears N. 77 E. True Distance 24 Miles
Rocky Bottom with Gravel and Sand
Buoy 4
Buoy 5
Sand Bottom
Rock & Gravel Bottom with Sand Intermixed
Quarantine Buoy
Buoy 2
Quarantine Station
Quarantine Ground
Sand and Rock
Blacknose Point
Head and Scrub
Cape Sir Will.m Grant
Point Danger
Channel
Lawrence Rock
True Meridian & Var.
Magnetic

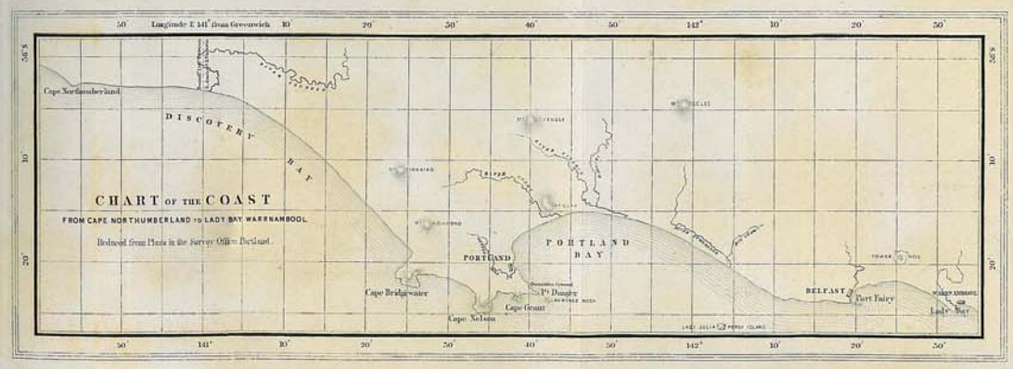

CHART OF THE COAST
FROM CAPE NORTHUMBERLAND TO LADY BAY WARRNAMBOOL
Reduced from Plans in the Survey Office Portland.

Scale
Furlongs 8 7 6 5 4 3 2 1 0 1 2 Miles

Melbourne, Engraved by order of the Legislative Council of Victoria.

Engraved by Tulloch & Brown, Melbourne.