twenty-two days that we spent off that continent, we never effected a landing but twice, and then, with the greatest difficulty, on two small volcanic islets, without a particle of vegetation on them, of which one was Possession Island (Jan. 13), *a mere rock*. The ship was hove to two miles off; with the greatest risk a landing was effected, on a beach of large loose stones and stranded masses of ice. It was no sooner done than the recall flag was hoisted in the ships, which were reached just as a terrific fog came on, followed by a gale of wind; ten minutes more and all hands in the boats would have been lost, for the currents ran like sluices between the land, islets, and icebergs. So much for Possession Island. (Read Ross's account of the landing, i. 188, and especially the paragraph at p. 190.)

Take a glance at the meteorological registers in Ross's voyage for the month of January 1841, which was passed between S. lat. 66° 32′ and 78°. The mean temperature was 29°·02, max. 41°·5, min. 19°·5. It snowed on sixteen days; overcast, squally and misty was the usual weather, blue sky was rarely seen over more than a quarter of the heavens for a very few hours of the day, and for many days not seen at all.

In March between lat. 77° and 69½°, the mean temperature was 24°·28, max. 34°, min. 13°. Sky as in January.

In the following year our vessel went to the same seas. We "took the pack" December 17, and after being all but wrecked, penetrated it after fifty-six days of great peril, and proceeded to 78° S., never once seeing land.

During that January within 66° 32′, and 67° 21′ the mean temperature was 30°·46, max. 40°·5, min. 24°. It snowed on seventeen days, and we hardly ever saw blue sky.

In February between lat. 67° 18′ and 78° 12′, the mean temperature was 26°·68, max. 35°, min. 16°·5, and it snowed on twenty days. Blue sky was seen only on thirteen days. In 1842 the weather was worse than ever. In that year we tried to get south in the meridian a little east of Cape Horn, but never got beyond lat. 71½°, and then not till March 6th, having left the Falklands on the 18th December. In January of that year (1842) we were between lat. 63° 58′, and 64° 44′. The mean temperature was 30°·9, max. 45°, min. 23°·5. It snowed on sixteen days —sky as before.

February—between lat. 61° 37′ and 66° 01′. The mean temperature was 30°·50, max. 35°·5, min. 27°·5. It snowed on twenty-four days out of the twenty-eight! Blue sky was seen only on seven days, and this on six days over one-eighth of the sky, and on the 7th over one-fourth.

With such a midsummer climate I leave you to guess the position of a party in lat. 72°, cooped up through a winter on a rock a few yards long, covered with snow.

During the third year's cruise to the southward, Captain Crozier never once went to his cot, and we passed day and night with our hearts at the top of our throats.

The fact is, there is no summer or clear weather to be had, except by the rarest chance. For days and days we worked by Dead Reckoning alone. Storm, wind, and snow, are the prevalent summer phenomena. Still some seasons are not so bad as others, and Weddell got to 74½° in an open sea in the meridian where we barely reached 66°. (Signed) J. D. HOOKER

Royal Gardens, Kew, March 6

The following is the account of the landing alluded to by Dr. Hooker: —

"We found the shores of the mainland completely covered with ice projecting into the sea, and the heavy surf along its edge forbade any attempt to land upon it; a strong tide carried us rapidly along between this ice-bound coast and the islands amongst heavy masses of ice, so that our situation was, for some time most critical; for all the exertions our people could use were insufficient to stem the tide. But taking the advantage of a narrow opening that appeared in the ice, the boats were pushed through it, and we got into an eddy under the lee of the largest of the islands, and landed on a beach of large loose stones and stranded masses of ice. . . . . The island is composed entirely of igneous rocks, and only accessible on its western side. We saw not the smallest appearance of vegetation, but inconceivable myriads of penguins completely and densely covered the whole surface of the island, along the ledges of the precipices, and even to the summits of the hills, attacking us vigorously as we waded through their ranks, which, together with their loud coarse notes, and the insupportable stench from the deep bed of guano, which had been forming for ages, made us glad to get away again, after having loaded our boats with geological specimens and penguins. Owing to the heavy surf on the beach, we could not tell whether the water was ebbing or flowing; but there was a strong tide running to the south, between Possession Island and the mainland, and the *Terror* had some difficulty to avoid being carried by it against the land-ice. Future navigators should therefore be on their guard in approaching the coast at this place."

EARTHQUAKE WAVES

THE self-registering tide-gauges maintained by the United States Coast Survey at different points on the sea coast frequently exhibit, superimposed upon the tidal fluctuation, a succession of long waves, the origin of which is ascribed to distant earthquakes. In two notable instances, viz., the earthquake of Simoda in 1854, and that of Arica in 1868, the great ocean waves caused by the disturbance were distinctly registered in that way by the tide-gauges on the Pacific coast, and have been made use of for estimating the average depth along the lines of transmission. (See Coast Survey Reports for 1855, 1862, and 1869.)

Similar fluctuations were registered on the morning of November 17, 1872, shortly after local midnight, on the tide-gauge at North Haven, on the Fox Island, in Penobscot Bay, Maine. The fluctuations continued from midnight until nearly six o'clock in the morning, at somewhat irregular intervals of about seventeen minutes from crest to crest, with an average vertical range of nine inches, the greatest wave being at three o'clock, with a height of twenty inches.

No corresponding earthquake phenomena have come to the knowledge of the Coast Survey Office, and it is probable that if such was the case, the shock occurred somewhere under the Atlantic Ocean.

THE CHALLENGER EXPEDITION

H.M.S. *Challenger* cast off from the jetty at Portsmouth at 11.30 A.M. on December 21, with a low barometer. A strong south-westerly breeze was blowing, and the drum up; so that, especially in a season like the present, the prospect was not promising for the first few weeks of her voyage round the world.

The result justified the drum, and for a week we were knocking about the mouth of the Channel, and the Bay of Biscay, making slow progress southwards. It was perhaps as well to get a good shaking at first. It showed at once where there was a screw loose, and gave a chance to tighten it up. A sharp cyclone which caught the ship on her way from Sheerness to Portsmouth had already tested pretty fully the stowing of the apparatus, and although the *Challenger* rolls considerably when she is put to it (over 35°), not a single instrument shifted, and not a glass was broken, either in the zoological workroom, or in the chemical laboratory. Just before we got to Lisbon the weather improved a little, and we got some soundings and took one or two trial hauls with the dredge.

After leaving Lisbon on January 12 the wind was again fresh, but between Lisbon and Gibraltar we made some important experiments, and found, among other things, that we could work easily and successfully with the common trawl down to 600 fathoms. I am now writing about 100 miles north of Madeira, and since leaving Gibraltar the weather, though at first breezy, has been on