

and thence cross the Atlantic to the island of St. Thomas, one of the Virgin Islands, where you would probably arrive about the middle of March.

From St. Thomas you would go to Bermuda, and in this neighbourhood perhaps a fortnight might be devoted to deep-sea researches. A bank of 11 fathoms has recently been discovered by the "Ariadne," nearly four miles east of the Kitchen Shoals, which should be further examined.

Having completed what supplies you require, a line of soundings should be carried to the edges of the bank, in about 600 fathoms, which extends off the American coast in the neighbourhood of Long Island. You would then recross the Atlantic to the Azores, and having completed your researches in the neighbourhood of these islands, you will send to England from Fayal a tracing of the soundings you have obtained since your departure.

The time of your leaving the Azores for the south will probably be about the 1st July, and if it is convenient to stand to the eastward in the direction of Madeira as far as the 20th meridian, and to ascertain the depth and nature of the bottom there, it will be desirable. Thence a course should be steered for the Cape Verde Islands, where, at St. Vincent, you will be able to replenish fuel, if nothing else, and, should time permit, it would be well to make a new survey of that part of Porto Grande which is used as an anchorage, for the present plan is imperfect and the soundings are not very exact. Leaving the Cape Verde Islands, you will carry a line of soundings between St. Vincent and St. Antonio, and proceed to the southward, endeavouring to reach the equator between the meridians of 10° and 15° west longitude, working out that region thoroughly from east to west as far as St. Paul's Rocks, or about 30° W. ; here you will be in the focus of the great westerly current, and with the calm weather which may be looked for, you will probably be able to set at rest many points of special interest. There is reason to believe that the depth of the Atlantic equatorial region does not exceed 2000 fathoms, which is easily within the reach both of the sounding lead and the dredge, and it is hoped that by means of anchoring a boat or beacon you will be able to ascertain to what depth the surface current extends, and what are the conditions of the circulation in the lower strata of the ocean. Any reasonable amount of time devoted to this inquiry will be most profitably spent. From St. Paul's Rocks you will proceed to Fernando Noronha, where the ship should be anchored. This is one of the spots especially recommended by Dr. Hooker as a field for the botanist, and the survey of the anchorage may be improved with advantage.

Bahia should be the next place of call, where you would probably arrive about the middle of September, and, if you are able to obtain the necessary supplies there, it will be well not to call at Rio de Janeiro on your outward voyage, but, after refreshing your crew, to proceed on to the Cape of Good Hope.

You will probably be able on your way to ascertain the depth of the bank which unites the coast of Brazil and the Abrolhos Shoals with Trinidad and Martin Vas, and to examine the submarine base of Tristan da Cunha, as well as to ascertain its correct elevation, bearing in mind while on this ground that none of the soundings shown on the chart of the South Atlantic, with the exception of those obtained by Captain Shortland in the "Hydra," can be considered reliable.

You will probably reach the Cape about the 1st November, and here you should remain a month to refit the ship and for the rest and refreshment of your crew prior to proceeding on the second stage of your voyage into the high latitudes of the Southern Ocean.

Leaving the Cape, Marion and Crozet Islands should be next visited, and subsequently Kerguelen's Land, and it is unnecessary, I am sure, for me to impress upon you the extreme caution and vigilance which will be necessary in navigating this boisterous and little known region with a single ship, even in the middle of the summer season.

Kerguelen's Land will be a fertile field of exploration in every department of science, and acquires additional interest as one of the stations selected for the observations of the transit of Venus in December 1874. What is known of it will be found in the published account of the voyage of Ross, who visited it with the "Erebus" and "Terror" in 1840. A memorandum from the Astronomer-Royal will furnish you with the nature of the information required for the guidance of the transit party, which will probably proceed there towards the close of 1874, and as it is possible you may not be able to transmit this information to England in time for them before they leave, I should wish you to forward a copy of it to the astronomer at the Cape observatory from the first point you touch at in Australia, for the information of the officer in charge, who will certainly take his final departure from that place. It is desirable that the longitude of the transit station at