

cauldron, and pouring through the mouth of this in the Bahama channel, forms the gulf stream, which, widening out like a fan, forms a vast expanse of warm water, from which the prevailing westerly winds of the North Atlantic waft a constant supply of heated moist air to the western coasts of Europe, giving them a much more warm and uniform climate than that which prevails in similar latitudes in Eastern America, where the cold Arctic currents hug the shore, and bring down ice from Baffin's Bay. Now all this might be differently arranged. We shall find that there were times, when the Isthmus of Panama being broken through, there was no Gulf Stream, and Norway and England were reduced to the conditions of Greenland and Labrador, and when refrigeration was still further increased by subsidence of northern lands affording freer sweep to the Arctic currents. On the other hand, there were times when the Gulf of Mexico extended much farther north than at present, and formed an additional surface of warm water to heat all the interior of America, as well as the Atlantic. Geographical changes of these kinds, have probably given us the glacial period in very recent times, and at an earlier era those warm climates which permitted temperate vegetation to flourish as far north as Greenland. These are, however, great topics, which must form the subject of other chapters.

I am old enough to remember the sensation caused by the delightful revelations of Edward Forbes respecting the zones of animal life in the sea, and the vast insight which they gave into the significance of the work on minute organisms previously done by Ehrenberg, Lonsdale and Williamson, and into the meaning of fossil remains. A little later the soundings for the Atlantic cable revealed the chalky foraminiferal ooze of the abyssal ocean. Still more recently, the wealth of facts disclosed by the *Challenger* voyage, which naturalists have scarcely yet had time to digest, have opened up to us new worlds of deep-sea life.