

THE GEOGRAPHICAL DISTRIBUTION OF DIATOMS.

Diatoms are to be found at all seasons covering with a mucilaginous coating of an olivaceous green colour the watery surface of fountains and other damp places, and they have been seen by me to live in a small aquarium without the least sign of inconvenience for a space of three days, although all the water remained in a frozen state.

Marine Diatoms flourish in all latitudes and at all seasons of the year in the warmest and coldest seas; it is well known that they are so abundant in the Frigid Zones as sometimes to colour the surface of the sea and to tinge with a peculiar hue the blocks of floating ice. Seeing that they are capable of surviving in conditions so diverse it is difficult to believe that any fixed laws of geographical distribution can be discovered with respect to them; on the contrary, it might rather be supposed that the continuity of adjacent seas, the surface and submarine currents, the movements of tidal waves, the existence of periodical and other winds, the traffic of ships and the movements of fishes, would all tend to facilitate or bring about the mingling of local floras. It is true, indeed, that, since the temperature of the sea is nearly constant at great depths, an actively moving Diatom has only to sink deeper or approach more closely to the surface in order to find the temperature best suited to its nature and most favourable for its development, its vertical range of motion being limited, among other things, by the depth to which sunlight penetrates, this being assumed to be necessary to its existence. Since, moreover, the quality possessed by organic beings of adapting themselves to conditions of life different from those in which they came into existence becomes greater as the position occupied by the organism in the scale of life becomes lower, it is by no means easy to understand how, during the long course of centuries, the different types have not been distributed far and wide and rendered common inhabitants of all seas.

That several distinct floras nevertheless do exist may be confidently affirmed, although it may be premature to determine finally the question of distribution according to the genera and species that inhabit different areas. The distinction, for example, between pelagic and littoral Diatoms has already been clearly recognised, and the importance of the application of this knowledge to geological problems has been fully pointed out.¹

Again, as regards the occurrence of distinct chorological floras it may be noted that, by those conversant with Diatoms, collections from the Antarctic Ocean would not be confounded with those from the Sea of Japan or from the Arctic Sea, nor would the flora of the Adriatic or of the Mediterranean as a whole be mistaken for that of the Indian Ocean, although some of the same genera and species might exist in all.²

¹ See *Atti. Accad. Pontif. d. nuov. Lincei*, Anno xxxii., Sezzion 1°, December 15, 1878.

² See *Narrative of the Cruise*, vol. i. p. 933.