

rest are very common. Other *Pulvinulina*, occurring abundantly in dredgings from great depths, have never been found in the tow-net gatherings.

By reference to Distribution Table II. the extent and character of the Rhizopod-fauna of Globigerina Ooze will be seen at a glance. The number of species contained in the different samples of bottom-mud included in the Table ranges from twenty to ninety-five. Taking three typical examples, each yielding about fifty species of Foraminifera, the average proportion of pelagic to bottom-species is somewhat less than one to four; but in the proportionate number of specimens the pelagic forms are enormously in excess. Inasmuch therefore as the sea-bottom over a very large portion of the world consists of a deposit of which these pelagic Foraminifera form collectively the chief constituent, everything connected with their manner of life possesses a certain amount of importance.

Wide differences of opinion have existed with respect to the actual relation subsisting between the Foraminiferal fauna of the surface, as represented by the species above enumerated, and that of the sea-bottom; <sup>1</sup> the points admitting of debate, however, have been gradually narrowed, and at the present time appear to lie within very small compass. The chief question concerning which naturalists are not agreed is whether the species referred to are exclusively pelagic, and pass the whole of their existence as free swimming organisms, or whether they have also the power of living, and do live, more or less, at the sea-bottom.

In one of the preliminary papers on Challenger Foraminifera <sup>2</sup> I stated briefly the results of my earlier investigations in connection with this subject, together with the inferences they suggested. During the last three or four years, however, I have had the opportunity of examining much more fully the large collection of surface-gatherings obtained during the Challenger Expedition, as well as important material collected by Mr. Murray on the cruise of the "Knight Errant"; and as there are certain points in which my previous experience has not been entirely confirmed, I may be permitted to make a few remarks, both by way of correction and in order to explain more fully, in some respects, what appears to me to be the present aspect of the question. The observations requiring correction are those relating to the comparative dimensions of the surface- and bottom-specimens of the same species, and the thickness of the shell-wall. In the various batches of surface-organisms which had come under my notice at the time I wrote, not

<sup>1</sup> See—Wallich, 1862, *The North Atlantic Sea-bed (Van Voorst)*;  
Major Owen, 1866, *Journ. Linn. Soc. Lond.*, vol. ix. (Zool.) p. 147;  
Wyville Thomson, 1874, *Proc. Roy. Soc.*, vol. xxiii. p. 32;  
Carpenter, 1875, *Ibid.*, p. 234;

Wallich, 1876, *Deep-sea Researches on the Biology of Globigerina (Van Voorst)*,  
as well as numerous other papers and notes, earlier and later, by Ehrenberg, Müller, Bailey, Haeckel, Wallich, Carpenter  
and Thomson, Jeffreys, Murray, Schacko, &c.

I have endeavoured as far as possible to limit the scope of the present remarks to matters within my own observation, and have made no attempt to summarise the labours of previous writers, still less to pass judgment upon them.

<sup>2</sup> *Quart. Journ. Micr. Soc.*, 1879, vol. xix., N. S., p. 292.