

investigations are forthcoming, indicate a very rich development of Radiolarian life. Probably it approaches more nearly the fauna of the Pacific than that of the Atlantic, both as regards the abundance and the morphological characters of its species. The researches of the Challenger are very limited and incomplete as regards the Indian Ocean, for the expedition only just touched upon this great ocean basin (2000 to 3000 fathoms deep) at its two extremities (westwards at the Cape of Good Hope and eastwards at Tasmania), its course lying for the most part south of lat. 45° S. and extending beyond lat. 65° S. (from Station 149 to 158, south of lat. 50° S.). It is true that this portion of the South Indian Ocean was shown to contain Radiolaria everywhere, but these were more plentiful in individuals than in species. Only from Station 156 to Station 159 (between lat. 62° and 47° S., and long. 95° and 130° E.) was the bottom, which consisted partly of Diatom ooze and partly of Globigerina ooze, richer in species (see note A). The gaps left by the Challenger in the investigation of the Indian Ocean, have, however, been to some extent filled from other sources. As early as 1859 the English "Cyclops" expedition had shown that the bottom of the Indian Ocean to the east of Zanzibar (lat. $9^{\circ} 37'$ S., long. $61^{\circ} 33'$ W.) is covered with pure Radiolarian ooze (see note B). Also since the Tertiary rocks of the Nicobar Islands are for the most part of the same composition, and since a great abundance of Radiolaria has been shown to be present both in the east part of the ocean, between the Cocos Islands and the Sunda Archipelago (see note C), and in the northern part or Arabian Sea between Socotra and Ceylon (see note D); it may be assumed with great probability that the greater part of the basin of the Indian Ocean, like that of the Pacific, is covered either with Radiolarian ooze or with the characteristic red clay. With this agrees the richness of the surface of the Indian Ocean in Radiolaria of the most various groups, which has been more extensively demonstrated.

A. The Radiolarian fauna collected by the Challenger on the voyage from the Cape to Melbourne, shows in part, namely, from Station 156 to Station 158, very peculiar and characteristic composition; in particular, the Diatom ooze of Station 157 passes over in great part into a Radiolarian ooze, mainly composed of *Sphaerellaria*. This is worthy of a more thorough investigation than I was able, owing to lack of material and time, to give it.

B. The remarkably pure Radiolarian ooze of Zanzibar, discovered by Ehrenberg in 1859, was the earliest known recent example of that deposit. It was brought up by Captain Pullen of the English man-of-war "Cyclops," from a depth of 2200 fathoms, between Zanzibar and the Seychelles, and "under a magnifying power of 300 diameters, showed at the first glance a mass of almost pure Polycystina, such as no sample of a deep-sea deposit has hitherto shown. It is very noticeable that in the whole of this mass of living forms, no calcareous shells are to be seen" (Ehrenberg, L. N. 24, pp. 148, 149).

C. For the most important material from the Indian Ocean, I am indebted to Captain Heinrich Rabbe of Bremen, who during many voyages in the Indian Ocean, in his ship "Joseph Haydn," made numerous collections in different localities with the tow-net and the trawl, and admirably preserved the rich collections thus made. The greatest abundance of Radiolaria was found in those