them; in many places the number of well-preserved skeletons contained in the red clay is very considerable, so that it passes over gradually into the Radiolarian ooze (*e.g.*, in the North Pacific, Stations 238 to 253, see § 237). Hence it may be supposed that a large part of the red clay consists of decomposed Radiolarian ooze.

The characteristic composition and fundamental significance of the red clay in the formation of the deep-sea bed were first made known by the discoveries of the Challenger (compare John Murray, 1876, L. N. 27, p. 527, and Narr. Chall. Exp., L. N. 53, vol. i. pt. ii. pp. 920–926, pl. N; also Wyville Thomson, The Atlantic, L. N. 31, vol. i. pp. 226–229). The mineral components of the red clay are for the most part of volcanic origin, due to the decomposition of pumice, lava, &c. Among the organic remains found in it, the siliceous skeletons of Radiolaria are by far the most important, and their number is often considerable. A large portion of the red clay appears to me to consist of broken down Radiolarian shells, in which a peculiar metamorphism probably has taken place. Sir Wyville Thomson was of opinion that a considerable proportion of it consisted of the remains of Globigerina ooze, the calcareous constituents of which had been removed by the carbon dioxide in the deep-sea water (L. N. 31, *loc. cit.*). Among these remains, however, the siliceous skeletons of the Radiolaria play a significant and often the most important part. Furthermore, John Murray has called attention to the fact that in many deep-sea deposits yellow and red insoluble particles remain, which unmistakably present the form of Radiolarian shells (L. N. 27, p. 513). At Station 303 he found "amorphous clayey matter, rounded yellow minerals, many Radiolaria-shaped;" at Station 302 there was sediment "consisting almost entirely of small rounded red mineral particles; many of these had the form of both Foraminifera and Radiolaria; and it seemed as if some substance had been deposited in and on these organisms." Similar transitions from well-preserved Radiolarian shells into amorphous mineral particles I have found in several other specimens of Challenger soundings, and consider them a further argument for the supposition that the Radiolaria often take an important share in the formation of the red clay.

240. *List of Stations at which Radiolaria were observed on the Challenger Expedition.* —The 168 Stations recorded below, in soundings or surface preparations from which I found Radiolaria, belong to the most various parts of the sea which the Challenger traversed during her voyage round the world; they constitute about half of the (364) observing Stations contained in the official list published in the Narrative of the Cruise (Narr. Chall. Exp., vol. i. part ii. Appendix ii.).

In addition to the particulars given in the list regarding the geographical position of the Station, depth, temperature, and composition of the bottom deposit, I have added the result of my investigations as regards the relative abundance of the Radiolaria in each. The five letters (A to E) denote the following degrees of frequency:—A, abundant Radiolaria (AI, pure Radiolarian ooze; AII, mixed Radiolarian ooze); B, very numerous Radiolaria (but not a predominating quantity); C, many Radiolaria (medium quantity); D, few Radiolaria; E, very few Radiolaria (as they occur almost always). In using these symbols regard has been had to abundance of the abyssal as well as of the zonarial and pelagic forms (§ 232); sometimes also the estimated number of Radiolaria has been inserted, based upon information given by John Murray in his Preliminary Report (L. N. 27), and in the Narrative of the Cruise (L. N. 53), as well as by Henry B. Brady in his Report on the