

to 20 per cent. of the deposit, the whole of the remainder consisting of the frustules of Diatoms and the skeletons of Radiolarians. The dredgings in these deposits yielded, in addition to all the varieties of rocks mentioned in the blue muds farther south, several fragments of pumice stone, basaltic volcanic rock, palagonite, and one or two fragments of a compact limestone and sandstone.

Between lat.  $53^{\circ}$  and  $47^{\circ}$  S. two soundings were obtained in 1800 and 2150 fathoms. The deposit in each case was a whitish Globigerina ooze, containing respectively 85 and 89 per cent. of carbonate of lime, which consisted chiefly of Coccoliths, Coccospheres, and pelagic Foraminifera belonging to the species *Globigerina bulloides*, *Globigerina inflata*, *Globigerina dubia*, *Pulvinulina micheliniana*, and *Orbulina universa*, together with other Foraminifera and fragments of Echinoderms. The mineral particles appeared to make up 2 to 4 per cent. of the deposit, and consisted of hornblende, magnetite, felspar, vitreous fragments, and a few quartz grains. There were 4 or 5 per cent. of Diatoms and Radiolarians in these Globigerina oozes.

The remaining variety of deposit (red clay) was obtained in lat.  $42^{\circ}$  S. at a depth of 2600 fathoms. It contained 18 per cent. of carbonate of lime, consisting of fragments and perfect shells of *Globigerina bulloides*, *Globigerina inflata*, *Globigerina rubra*, *Pulvinulina micheliniana*, *Orbulina universa*, a few other Foraminifera, Coccoliths, and fragments of Echinoderms. The mineral particles made up 19 per cent. of the deposit, and consisted of felspars, hornblende, augite, magnetite, pumice, and fragments of volcanic glass, grains of peroxide of manganese, with a mean diameter of about 0.05 mm., while a few rounded fragments of quartz reached a diameter of 0.5 mm. The remainder of the deposit consisted essentially of argillaceous matter with very minute fragments of crystals and pumice. There was a larger percentage of carbonate of lime in the upper layers of the deposit than in the lower ones. The trawl brought up 10 or 12 litres of manganese nodules, pumice stones, fragments of palagonite, ear-bones of Cetaceans, and Sharks' teeth.

From the foregoing description it appears that the deposits forming at the most southerly points reached by the Challenger are composed chiefly of continental debris carried into the ocean by the floating ice of these regions, and that this material makes up less and less of the deposit as the distance from the Antarctic Circle increases until it completely vanishes about lat.  $46^{\circ}$  or  $47^{\circ}$  S. The deposits along the Antarctic Ice Barrier, which have been called blue muds, resemble in many respects the deposits formed at similar depths off the Atlantic coast of British North America. The nature of the rock fragments dredged in these latitudes conclusively proves the existence of continental land probably of considerable extent within the Antarctic Circle. One of the fragments of gneiss dredged from a depth of 1950 fathoms measured 50 by 40 centimetres, and weighed more than 20 kilogrammes. In the region occupied by the Diatom ooze, northward of the blue muds, the predominant feature of the deposit is due to the innumerable frustules of Diatoms and skeletons of Radiolarians which have fallen from the surface and sub-