

The bed of the deep Atlantic is covered, for the most part, by a mud or ooze, largely made up of the *débris* of foraminifera and other minute organisms mixed with fine clay. In the North Atlantic the Norwegian naturalists call this the *Biloculina* mud. Farther south, the *Challenger* naturalists speak of it as *Globigerina* ooze. In point of fact it contains different species of foraminiferal shells, *Globigerina* and *Orbulina* being in some localities dominant, and in others, other species; and these changes are more apparent in the shallower portions of the ocean.

On the other hand, there are means for disseminating coarse material over parts of the ocean beds. There are, in the line of the Arctic current, on the American coast, great sand banks, and off the coast of Norway, sand constitutes a considerable part of the bottom material. Soundings and dredgings off Great Britain, and also off the American coast, have shown that fragments of stone referable to Arctic lands are abundantly strewn over the bottom, along certain lines, and the Antarctic continent, otherwise almost unknown, makes its presence felt to the dredge by the abundant masses of crystalline rock drifted far from it to the north. These are not altogether new discoveries. I had inferred, many years ago, from stones taken up by the hooks of fishermen on the banks of Newfoundland, that rocky material from the north is dropped on these banks by the heavy ice which drifts over them every spring, that these are glaciated, and that after they fall to the bottom sand is drifted over them with sufficient velocity to polish the stones, and to erode the shelly coverings of Arctic animals attached to them.¹ If, then, the Atlantic basin were upheaved into land, we should see beds of sand, gravel and boulders with clay flats and layers of marl and limestone. According to the *Challenger* reports, in the Antarctic seas S. of 64° there is blue mud, with fragments of rock, in depths

¹ "Notes on Post-Pliocene of Canada," 1872.