HYPOTHESIS ON THE FORMATION OF BANKS AND DEPOSITS OF DIATOMS.

In 1876 Mr Murray read before the Royal Society of London a Preliminary Report [1] on Oceanic Deposits, appended to which is a map in which the existence of a bank formed almost exclusively of the siliceous remains of Diatoms is indicated; and further details have been more recently given by Mr Murray in the Narrative of the Cruise.[2] This bank extended between lat. 60° 52′ S., long. 80° 20′ E., and lat. 53° 55′ S., long. 108° 35′ E. It therefore measured not less than 1700 miles in length.

Such accumulations lead one to inquire how it is that Diatoms which vegetate in all seas should accumulate in this manner in particular localities which are in all probability few in number, since similar formations were not recorded by the naturalists on board the Challenger in any other region.

A Diatom as soon as it ceases to live is no longer supported by the globules of oxygen which it evolves and which adhere to it, but is left to the mercy of the waves, and in virtue of its own weight, it sinks to the bottom, which it will reach in a relatively short space of time, notwithstanding the disturbing tendencies exercised by oceanic currents, as the density of the water is but little affected by the constantly increasing pressure. It is, moreover, not improbable that the cooling and consequent descent of the surface waters in the neighbourhood of the Antarctic ice, facilitate to some extent the sinking of the dead frustules and their accumulation on the bottom in these regions.[3]

It is a matter of very considerable importance from a geological point of view to determine exactly the conditions under which diatomaceous deposits like those discovered by the Challenger are laid down, inasmuch as what is now taking place in the Antarctic supplies a clue to the elucidation of the phenomena which took place in remote epochs when similar marine diatomaceous banks were laid down.

Italy affords a very interesting example of such formations. For several years it has been known to the scientific world that, in the celebrated sulphur mines of Sicily, siliceous schists occur which not unfrequently contain specimens of fish. These schists have been found to consist very largely of Diatoms and Radiolaria, so that their marine origin cannot be doubted.

More recently the curiosity of palæontologists has been attracted to a locality in Central Italy called Mondatino, in Montefeltro, where, among the strata of siliceous marl, a number of fishes were found in schists, which, like the former, were extensively formed of the remains of marine Diatoms and of the skeletons of Radiolaria and Polythalamia.

This formation lies along the spurs of the Apennines, extending on the one side as

[1] *Proc. Roy. Soc. Lond.*, vol. xxiv. p. 471, 1876. [2] Narr. Chall. Exp., vol. i. p. 432.
[3] Exploration of the Antarctic Regions, *Scottish Geographical Magazine*, vol. ii. p. 537.