Bailey on Deep-Sea Deposits.

In 1856 Professor J. W. Bailey made known the nature of the soundings collected by Brooke in the Sea of Kamchatka in depths of 900 to 2700 fathoms.[1] He remarks that in all the samples mineral matters diminished with increase of depth, and that while the mineral particles decreased the organic remains increased. Of organic remains Diatoms predominated, Sponge spicules and Radiolarians being also present, while the calcareous tests of Foraminifera were absent. These deposits of microscopic organisms, in their richness, extent, and high latitude, resemble the siliceous deposits of the Antarctic already noticed by Hooker. Bailey's researches proved that localised deposits were formed in the high seas, in which not calcareous, but siliceous, remains predominated. The excellent state of preservation of these siliceous organisms, and the fact that many of them still retained the soft parts, led him to conclude that they must have been living up to a very recent period, not necessarily at the great depths where they were found, but probably drifted from shallower deposits. He always maintained this opinion, convinced of its importance from a zoological point of view. He extolled the good example set by Brooke, saying that "soundings from any part of the ocean are sure to yield something of interest to microscopic analysis, and it is as yet impossible to tell what important results may flow from this study."

Greensand Deposits.

Bailey.

Ehrenberg.

About the same time Bailey published his work on the origin of greensand and its formation on the bottom of modern seas.[2] Ehrenberg had long before observed a pseudomorphism of the calcareous shells of Foraminifera in the Chalk into silica. As early as 1845 Bailey had called attention to the casts of Foraminifera in the Eocene marls of Fort Washington.[3] Dr. G. A. Mantell[4] stated in 1846 that casts of Foraminifera and their soft parts were preserved in flint and limestone, and that the chambers of the Foraminifera were often filled with calcite, silica, or silicate of iron. But Ehrenberg was the first to show the connection between greensand and the Foraminifera, and to throw light on a point which had long puzzled geologists. In 1855 he said that, judging from all the examples he had examined up to that time, greensand must be considered as due to the filling up of organic cells of Foraminifera, like a lithoid mould.[5] Bailey verified Ehrenberg's results from the examination of a number of Cretaceous and Tertiary rocks of North America.

Pourtalès.

L. F. de Pourtalès in 1853[6] announced that he had obtained from a depth of 150 fathoms, in lat. 31° N., long. 79° W., a deposit formed of almost equal parts of *Globigerinæ* and black sand, probably greensand. Bache showed these, and similar samples taken in the region of the Gulf Stream, to Bailey, who found in them casts of organisms, some of which were "well-defined greensand, others reddish, brownish, or almost

[1] *Amer. Journ. Sci.*, ser. 2, vol. xxi. pp. 284-285, 1856.
[2] *Proc. Boston Soc. Nat. Hist.*, vol. v. pp. 364-368, 1856.
[3] *Amer. Journ. Sci.*, ser. 1, vol. xlviii. p. 341, 1845.
[4] *Phil. Trans.*, p. 466, 1846.
[5] *Monatsb. d. k. Akad. Wiss. Berlin*, 1855, p. 172.
[6] Report U.S. Coast Survey for 1853, App. p. 83.