foundland, and Valentia. These deposits were described by Bailey,[1] who, from the fact that the mineral particles were angular, concluded that there is little movement at the bottom in deep water, otherwise the mineral fragments would be rounded. He observed the abundance of calcareous matter due to the accumulation of microscopic shells, which fall to the bottom after the death of the organisms. Bailey also observed the presence of volcanic ashes in the deposits, and remarked that the Gulf Stream had spread these "plutonic tallies" over thousands of miles. Some doubt having arisen as to whether these ashes might not have been thrown overboard from passing steamers, Bailey compared the two, and arrived at the conclusion that the substances found on the bottom of the Atlantic were really of volcanic origin; Maury supposed that this dust might have been carried by the wind from volcanoes in Central America or from extinct volcanoes in the Western Islands. By treating the deposits with acid, Bailey showed that there is always a small quantity of mineral particles in organic calcareous sediments, though veiled by the preponderance of the calcareous element, and that the calcareous organisms increase in abundance as the Gulf Stream is approached. He found only imperfect casts of Foraminifera in the deposits off the northern coasts, the green casts being generally met with in the more southerly soundings.

Lieut. Maury, in the latest (9th) edition of his "Sailing Directions," 1858, gives an abstract of the knowledge of marine deposits possessed up to that time. He estimated the part taken by calcareous or siliceous microscopic organisms in pelagic deposits, based upon Bailey's observations. He agrees with Bailey that the animalculæ, whose remains are found at the bottom of the sea, lived in the surface waters; but he carries the idea too far when he asserts that the absence of light, low temperature, and pressure preclude the possibility of life in very deep water. Ehrenberg held the opposite opinion regarding the habitat of these microscopic organisms, based upon the presence of organic substances in the shells dredged from the bottom of the sea, and argued that he distinguished forms in the deposits to be found nowhere else; but tow-net observations have since proved that forms identical with the most abundant of these shells from the bottom live in the surface waters.

In 1857 Captain Dayman sounded across the North Atlantic in H.M.S. "Cyclops," along the great circle between Valentia and Trinity Bay, Newfoundland, a little to the north of Berryman's line of soundings. He states that in his deepest sounding the deposit consisted of a plastic floury substance or ooze, which stuck to the line when drawn up.[2] Dayman's soundings were examined and reported on by Professor Huxley,[3] who found the samples obtained between 1700 and 2400 fathoms to be remarkable for their uniformity; in the bottles containing them Huxley observed a viscous substance, and

[1] *Amer. Journ. Sci.*, ser. 2, vol. xxi. pp. 284–285.

[2] Deep-Sea Soundings in the North Atlantic, made in H.M.S. "Cyclops," in June and July 1857, London, published by the Admiralty, 1858.

[3] Appendix to Dayman's Report.