1858, and published his famous Sailing Directions embodying these statistics. One important result of Maury's exertions was the maritime conference held in Brussels in 1853, which resulted in international observations being taken on many naval and mercantile ships, thus obtaining several of the advantages of scientific expeditions at very little expense.

Before 1850 the attention of the Norwegian naturalist, Michael Sars, had been directed to the bathymetrical distribution of life on his native coasts, and he published in the following year a list of thirteen species which lived at a depth of about 300 fathoms.[1] His son, G. O. Sars, afterwards assisted him in the work of deep-water dredging, and the result was, in 1864, a list of ninety-two species, which lived between the depths of 200 and 300 fathoms.[2] A few years later these untiring investigators found abundance of life at the bottom under 450 fathoms of water.[3]

A great impulse was given to deep-sea soundings when Brooke, an officer in the United States Navy, invented his sounding machine in 1854. Its principle was that described by Hooke two centuries before; the sinker was detached when the weight struck the bottom, but it differed in that the sounding tube could be drawn up by the line, bringing with it a small sample of the deposit on which it struck. Bailey's description of the micro-organisms found in these deposits, as well as others obtained by the U.S. Coast Survey, excited great interest among scientific men.[4] A few years later the instrument was modified and improved by Commander Dayman, who employed it for his soundings across the Atlantic, when investigating the depths through which the Atlantic telegraph cable would require to pass.[5] The necessity for ascertaining the form and conditions of the sea bed for telegraph purposes was the occasion of considerable increase in the scientific knowledge of great depths.

The samples of "Atlantic ooze" procured from the greatest depths of that ocean by the sounding rods of the telegraph ships were eagerly examined by the leading European and American naturalists. The ooze was found to consist largely, in some cases almost wholly, of the shells of Foraminifera and the siliceous skeletons of Radiolarians and Diatoms. The question soon came to be whether all the Foraminifera naturally lived on the bottom, or whether it was only their dead shells that collected there, the animals living and dying on the surface, or at some intermediate depth. This question was exceedingly difficult to settle from the data possessed by the disputants prior to the Challenger and other exploring expeditions.

[1] Beretning om en i Sommeren 1849 foretagen zoologisk Reise i Lofoten og Finmarken, *Nyt Mag. f. Naturvid.*, Bd. vi. p. 133, 1851.

[2] Bemærkninger over det dyriske Livs Udbredning i Havets Dybder, *Forhandl. Vidensk. Selsk.*, Christiania, p. 54 (1864), 1865.

[3] *Forhandl. Vidensk. Selsk.*, Christiania, p. 248 (1868), 1869 ; translation, *Ann. and Mag. Nat. Hist.*, ser. 4, vol. iii. p. 425, 1869.

[4] *Amer. Journ. Sci. and Arts*, vol. lxxi., 1856.

[5] Depths of the Sea, p. 214.