

“Porcupine” by a highly interesting series of soundings and dredgings in the Mediterranean and current observations in the Strait of Gibraltar. Dr. Carpenter resumed the study of this region in the following year in the “Shearwater,” commanded by Captain G. S. Nares, afterwards Captain of the Challenger, and this expedition was no less interesting or important than those that went before.

The chemical and physical work of the “Porcupine” expeditions was not so satisfactory as might have been expected. Marine chemistry was so entirely new, that a great deal of preliminary work had to be done in order to gain the experience necessary for further more accurate experiments; and it was in the way of suggesting improvements for future use that the chemical work of the “Porcupine” was most valuable.

In December 1871 and early in 1872 the U.S. Coast Survey steamer “Hassler,” under the scientific direction of Professor Louis Agassiz, dredged in considerable depths off the coast of South America.

About this period appeared an important work by Delesse on the lithology and distribution of marine deposits,¹ in which the littoral formations of the coast of France are described in detail, and our knowledge of the deeper deposits of the North Atlantic are reviewed.

This introductory chapter is not intended as a history of marine scientific research; its purpose is merely to trace the gradual growth of knowledge of the physical and biological conditions of the ocean up to 1872, and to recall some of the more important of the earlier researches which have been allowed to fade from the attention of the scientific public. More emphasis is laid on the beginning of the various enterprises than on their subsequent development, and prominence has been given throughout to the work carried on by British investigators. It is not on account of any notion that the expeditions despatched by other countries were less important at the time, or productive of less permanent results, that the older cruises of the “Astrolabe,” of the “Venus,” and the “Bonite,” and the more modern ones of the “Eugenie,” the “Novara,” the “Magenta,” and other vessels have not been dwelt upon. It is because the line of researches which had a direct bearing on the despatch of the Challenger could be indicated sufficiently clearly without entering into greater detail.

The cruises of the “Porcupine” proved that there was life at vast depths in the sea, and that, with a little care, this life could be investigated by ordinary and well known means. The results, taken in conjunction with the conclusions of the contemporary German North Sea Expedition, also showed the great importance of a careful study of the physical, and especially the chemical, as well as the biological, conditions of the sea.

¹ A. Delesse, *Lithologie du Fond des Mers*, Paris, 1871.