

Lauder.
Cleve.
Wallich.

the shores of England, by Lauder at Hong-Kong, and by Cleve in the North Polar Sea and at Java. A regular gold mine in the way of rare pelagic forms was found by Wallich in the intestinal canals of salpæ, and this source has subsequently been utilised for procuring forms that our apparatus could not capture.

Nitsch.
Claparède.
Lachmann.
Stein.
Bergh.

Pelagic algæ which have no skeletons of durable mineral constituents, such as silicic acid or lime, were in those days neglected. A few, no doubt, of the larger peridineæ were described by Nitsch, Ehrenberg, Bailey, Claparède, and Lachmann; but there was very little progress made, and it was not till 1883 that T. R. von Stein published his first comprehensive monograph, a great deal of the material for which had been taken from the stomachs of salpæ. R. S. Bergh had already issued, two years previously, a text-book on the organisation of these algæ.

“Challenger”
Expedition.

Since 1870 important expeditions have been undertaken, one object of which was to study the pelagic organisms systematically. The “Challenger” Expedition, in particular, collected quantities of material from all the seas of the world; though attention was still chiefly directed to those forms whose coverings are met with in deposits on the sea-bottom, that is to say, diatoms with their silicious coverings, and the remarkable little organisms forming the microscopic calcareous bodies which Ehrenberg had already designated coccoliths and rhabdoliths.

John Murray.

Murray pointed out that coccospheres and rhabdospheres, as they were termed, are really self-existent organisms in the surface-layers. He could obtain them by allowing a glass of sea-water to stand for a few hours, so that they sank to the bottom and attached themselves to threads placed there for purposes of experiment; and he also found numbers of them in the stomach-contents of salpæ, of which they often formed an essential part. It was possible, too, by noting the occurrence of their coverings in the bottom-samples, to obtain definite information regarding their geographical distribution. He observed that, while they are abundant in all tropical and sub-tropical waters in the open ocean, they are not found in arctic and antarctic waters having a temperature below 45° F., nor are they to be found in the deposits of the polar oceans. Murray further ascertained that diatoms are irregular in their occurrence, and that they are more numerous in coastal areas than out in the ocean. Unfortunately Castracane, when examining the diatoms collected by the expedition, was unable to find any conformity in the distribution of the different species.

Castracane.