d. Calcareous Organic Remains in Deep-Sea Deposits.

Calcareous Algæ.—Species of Algæ which secrete carbonate of lime are abundant in the shallow waters of the ocean. In the tropical regions especially there are large and massive species of *Lithothamnion*, *Lithophyllum*, *Halimeda*, and other genera that make up a large part of some coral reefs and of the surrounding Coral Sands and Muds. Two hundred fathoms is probably the extreme limit at which any of these organisms live in the ocean, but the broken-down fragments of calcareous Algæ have been found in depths of over 2000 fathoms in the neighbourhood of coral reefs. In the Tables of Chapter II. they are noted in all the Coral Muds and Sands, in six different samples of Globigerina Ooze, and in very many samples of Volcanic Muds and Sands.

Coccospheres and Rhabdospheres.—The precise nature of these minute organisms was for a long time obscure, but they are now regarded, and no doubt rightly, as pelagic Algæ. There is considerable difference in the size and form of both the Coccospheres and Rhabdospheres; three of the principal forms are represented in the annexed woodcuts. The interior of the spheres is filled with transparent albuminoid matter, in which no nucleus was detected by the Challenger naturalists. When the calcareous rods and discs are removed by dilute acid, small gelatinous spheres remain behind, on the outer surface of which the Coccoliths and Rhabdoliths were implanted or embedded. Rhabdospheres are especially developed in equatorial and tropical regions, and are rarely met with in regions where the temperature of the surface water falls below 65° F. Coccospheres, while abundant in tropical waters, are found further north and south than the Rhabdospheres; they are present even where the temperature on the surface is as low as 45° F., indeed, Coccospheres attain their greatest development in temperate regions. These organisms are absent or rare in coast waters affected by rivers; they especially flourish in the pelagic currents of the open ocean, and therefore belong to the pelagic Plankton. In Arctic and Antarctic waters Coccospheres and Rhabdospheres are replaced by similar minute Algæ, which do not, however, secrete rods and discs of carbonate of lime on their outer surfaces.[1] Coccospheres and Rhabdospheres are, then, nearly everywhere present in the surface waters of the tropical and temperate regions

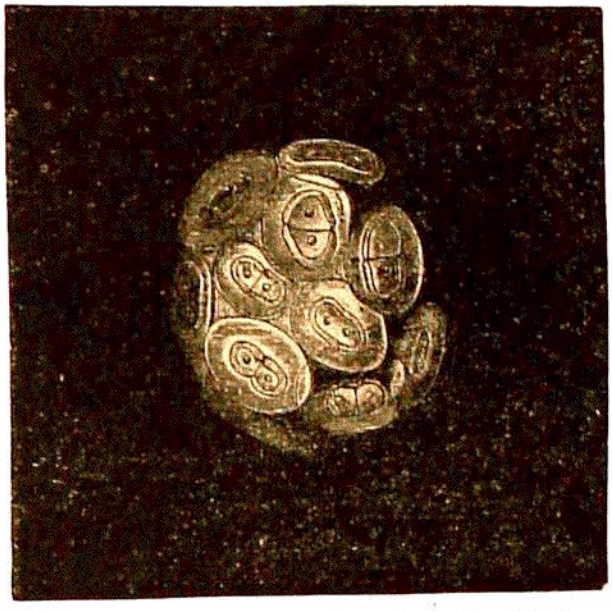

Fig. 19.—A Coccosphere. From the surface ($\frac{1000}{1}$).

[1] Narr. Chall. Exp., vol. i. pp. 436, 938, 939.