

temporary condition due to turgidity in the specimens observed, or the plates we see may be themselves connected with each other by a finer incrustation. Fig. 2, D, E, represents another Rhabdosphere with trumpet-shaped projections; D, being an optical section, and E a surface view. We have hitherto been unable, partly from the rarity of the objects, to define microscopically the bed-plates to which the trumpets are attached, if such exist. The wall of the cell, probably composed of such plates, presents, in optical section, indications of their existence. At 2 F there is shown the outer end of one of the trumpets.

As to the cell-contents, we have been unable to discover more than the existence of a granular material inside the Coccospheres and Rhabdospheres of both types—a granular material which, under ordinary circumstances, no one would hesitate to call protoplasm. On decalcifying the Coccospheres with very dilute acid, there is left a small gelatinous-looking body which slowly swells up. There is no trace of colouring matter in our

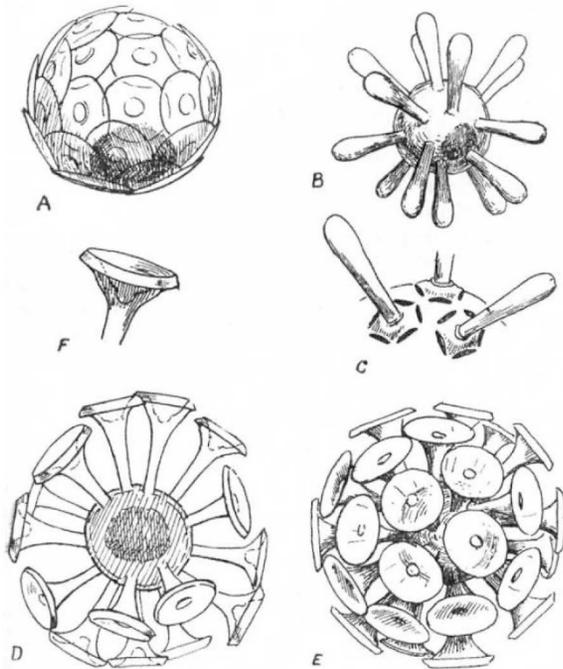


FIG. 2.—A, Coccosphere  $\times 1300$ ; B, Rhabdosphere  $\times 900$ ; C, portion of the same  $\times 1300$ ; D, Rhabdosphere of another type, in optical section,  $\times 1900$ ; E, the same, in surface view,  $\times 1900$ ; F, end of trumpet-shaped projection  $\times 2500$ .

specimens, and Dr. John Murray, who has seen them, tells us this is frequently the case with specimens examined immediately after capture. They all came from three fathoms, and not from the surface itself. It may be that the living, coloured cell is most abundant at the surface itself, and that our specimens are those which have already begun to sink.

The importance of the part probably played by Coccospheres and Rhabdospheres in the economy of marine life entitles them to a large claim on our interest. They abound in regions of the ocean, out in blue water, and far away from coastal waters, where diatoms and *Peridinieæ* are comparatively scarce; and here their occurrence is in such plenty that their shells on sinking to the bottom constitute nearly 20 per cent. of some deep-sea deposits. Of a like geological history with the diatoms, first appearing in the ancient Cretaceous seas, Coccospheres and Rhabdospheres probably share with them,

with the *Peridinieæ* and with the pelagic *Oscillatorieæ*, the rôle of food providers to the animal life of the ocean.

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#### M. ANTOINE THOMSON D'ABBADIE.

THE name of Abbadie has been long and honourably known in the history of science in France. Three brothers of the name have all played a worthy part in geography, in physics, or in ethnography, but the best known is the subject of this short note. The family, which is of ancient descent, appears to have temporarily left their home in the South of France at the time of the political troubles at the end of the last century, and to have settled in Ireland, where, in 1810, Antoine d'Abaddie was born. On the restoration of the Bourbon dynasty, his father returned to France, and it is entirely as a French man of science that Abbadie has won his reputation.

At a time when travelling into and opening-up of the less known and inaccessible parts was not so common as it has proved since, M. d'Abbadie's tastes marked him out as an early explorer. His first journey was made to the Brazils, in 1835, under the auspices of the French Academy; and on his return from South America he started, in 1837, in company with his brother Michel, for Ethiopia, as it was then known. In Abyssinia and in Central Africa the two brothers made a prolonged stay, returning to France in 1848, and their ethnographic and linguistic studies had much interest at the time. The principal results of the voyage were communicated to the French Geographical Society, and were published under the title "Notes sur le haut fleuve Blanc," 1849. The early date at which this exploration was made is of equal importance with the results gathered. If the accuracy of some of these results has been questioned, they at least indicated the necessity for further investigation. The journeys of Richardson and Barth were some years later. Burton and Speke began their travels in 1853. Livingstone returned to this country with his first results in 1856; so that M. d'Abbadie is certainly entitled to be remembered as a pioneer in African research.

Though M. d'Abbadie gave much attention to linguistic work, he applied himself to astronomical pursuits with some eagerness. In 1857, he visited Norway, with the view of observing the total solar eclipse of that year. The point to which he directed his attention was the examination of the light of the solar prominences for the detection of polarisation. With the view of still further satisfying himself on this point, he took advantage of the eclipse of 1860 to go to Spain, where, accompanied by M. Petit, of the Toulouse Observatory, he made some further observations at Briviesca. Observing with a quartz plate and double-image prism of small angle of separation, no trace of polarisation was detected. The account is given in the *Ast. Nach.*, No. 1290. Later, in 1882, and notwithstanding his advanced age, M. d'Abbadie took charge of one of the French stations selected for the observation of the transit of Venus. The position occupied was at Port au Prince, in Saint Domingo, a station well adapted for observing the effects of both retarded ingress and accelerated egress. The observations were successful.

M. d'Abbadie was elected Chevalier of the Legion of Honour in 1850, and became Member of the Academy in 1867. He has occupied a seat at the Board of Longitude since 1878. He was elected a Fellow of the Royal Astronomical Society so recently as 1895, his interest in astronomy having probably quickened in the later years of his life. This is shown by the disposition of his property, which is handed over to the Academy of Sciences on the condition that the Society publishes a catalogue of half a million of stars within the next fifty years.