

epitheca enveloping the whole. Between the two walls are numerous radiating septa, the interseptal spaces being filled with poriferous or cellular tissue. It is highly probable that the inner wall is permeated by pores communicating with the interseptal tissue."

As Mr. Billings included in this genus the species now placed under the genus *Ethmophyllum*, it is necessary to emend the above description.

Description as emended: Body of sponge simple, elongate, cylindro-conical, concentrically corrugated; cup deep. Both surfaces with irregularly-disposed round or oval pores, some of which penetrate a short distance and others communicate with the canals of the interior. Interior structure a more or less irregular system of rounded and irregular passages or canals, many of them terminating as cul-de-sacs or little chambers in the mass of the skeleton.

On a longitudinal section the skeleton is seen to be arranged on arching transverse lines and vertical, slightly-radiating lines. The minute structure of the skeleton is unknown. If spiculae existed they have been destroyed by the crystallization of the calcareous matter now forming the skeleton in *A. Atlanticus*; but in *A. Billingsi* spiculae occur in the interseptal spaces, the cup, and about the specimens, as seen in thin sections, that I think belonged to the species.

ARCHÆOCYATHUS ATLANTICUS.

Plate ii, figs. 1, 1a: pl. iii, figs. 1, 1a, b, 2, 2a.

Archæocyathus atlanticus Billings, 1861. Pamphlet; Geology of Vermont, vol. ii, p. 945; Pal. Foss., vol. i, p. 5.

Original description.—"The only specimen of this species in the collection is a fragment $4\frac{1}{2}$ inches in length, 14 lines in diameter at the larger and 9 lines at the smaller extremity. Where the diameter is 11 lines the cavity of the cup is $4\frac{1}{2}$ lines across, and the space between the walls 3 lines. Of the radiating poriferous septa there are about 60; they are so irregular that it is only in certain places in finely-polished sections that the radiated structure can be detected. On one side where the specimen is weathered the structure presents the appearance of a rather compact cellular tissue. The form appears to be elongate conical, gradually tapering, the surface marked by wide shallow encircling oblique annulations, from 3 to 6 lines distant from each other. The outer wall does not seem to be poriferous, but this appearance may be due to the crystalline condition of the rock into which it is converted."

On studying the type specimens, I observed a small projecting growth from the inner wall (pl. ii, fig. 1a) which had begun to show a central cavity and an inner and outer wall. None of the sections shows the fine vesicular structure so prevalent in *E. profundum*, but, in place of the regular septa and dissepiments, we find an irregular system of thick arched septa and vertical partitions, the openings between them forming an irregular system of passages or canals, many of which ter-