

coals. The perforated character of the outer wall, and also of the septa, suggest a comparison with corals of the division *Zoantharia perforata*. The *Favosites* have also their walls perforated. Dr. J. W. Dawson, who has examined a number of the slices of *A. atlanticus* and *A. profundus*, which have been prepared for the microscope, is of opinion that the structure of these two species is similar to that of the Foraminifera (Can. Nat. and Geol., April, 1865). My own opinion is that all three species belong to one generic group closely related to *Calathium*. This latter passes into *Eospongia*, which, in its turn, gradually merges into other genera that occur in more recent formations, such as *Rhysospongia*, *Scyphia*, *Siphonia*, and others. The resemblance between the whole structure and that of the palæozoic corals seems also to show that in the Lower Silurian seas organic forms existed combining the characters of the Protozoa and the Cœlenterata."

Sir J. W. Dawson compares the genus with Eozoön and gives additional particulars resulting from his study of the genus. He says (Dawn of Life, pp. 151-156, 1875): "To understand Archæocyathus let us imagine an inverted cone of carbonate of lime from an inch or two to a foot in length, and with its point buried in the mud at the bottom of the sea, while its open cup extends upward into the water. The lower part buried in the soil is composed of an irregular acervuline network of thick calcareous plates, inclosing chambers communicating with one another. Above this, where the cup expands, its walls are composed of thin outer and inner plates, perforated with innumerable holes, and connected with each other by vertical plates, which are also perforated with round pores, establishing a communication between the radiating chambers into which they divide the thickness of the wall. In such a structure the chambers in the wall of the cup and the irregular chambers of the base would be filled with gelatinous animal matter, and the pseudopods would project from the numerous pores in the inner and outer wall. In the older parts of the skeleton the structure is further complicated by the formation of thin transverse plates, irregular in distribution, and where greater strength is required a calcareous thickening is added, which in some places shows a canal system like that of Eozoön. (On the whole these curious fossils, if regarded as foraminifera, are most nearly allied to the Orbitolites and Dactyloporæ of the early Tertiary period, as described by Carpenter). As compared with Eozoön the fossils want its fine perforated wall, but have a more regular plan of growth. There are fragments in the Eozoön limestones which may have belonged to structures like these, and when we know more of the deep sea of the Primordial we may recover true species of Eozoön from it or may find forms intermediate between it and Archæocyathus. In the mean time I know no nearer bond of connection between Eozoön and the Primordial age than that furnished by the ancient cup Zoöphytes of Labrador, though I have searched very carefully in the fossiliferous conglomerates of Cambrian age on the Lower St. Lawrence, which contain rocks of