

few other fossils. They are also abundant in the Dolomite of the Guelph Limestone; and it is perhaps not accidental that both here and in the Laurentian, fossils of this structure are associated with magnesian rocks. They occur also in the Lower Silurian, though less abundantly; and the oldest specimen I have seen is in the Potsdam Sandstone; and this, its structure not being preserved, may have belonged to *Eozoon* rather than to *Stromatopora*. The Lower Silurian species have usually very thin and continuous walls. In the great Niagara Limestone, as seen at Niagara Falls, the masses of *Stromatopora* occur precisely as *Eozoon* occurs in the Laurentian limestones, and are mineralized with quartz and dolomite, and often almost entirely converted into crystalline masses, though occasionally showing their structure in great perfection.

Certain beds of the Niagara formation, near Hamilton, contain not only *Stromatopora*, but multitudes of sponges; and through the kindness of Lieutenant-Colonel Grant, of that place, I have been enabled to examine a number of specimens of these, and to compare them with *Stromatopora*. These sponges are all siliceous and spiculate, and belong chiefly to two or three species of *Astylospongia* of Römer, and to *Aulocopina* of Billings, of which his *A. Grantii* is the type. The species of *Astylospongia* present a most regular and beautiful hexactinellid structure, as perfect as that in the sponges of the Cretaceous, showing even the hollow nodes, which have been supposed to be absent in the Palæozoic Hexactinellidæ. *Aulocopina* has a different structure, presenting series of hexagonal tubes built up with interlaced spicules, and giving off bundles of spicules in a radiating manner. These sponges are thus entirely distinct, both in material and structure, from the contemporary *Stromatopora*, and there is no link of connexion whatever.

The species included in the genera *Caunopora* of Phillips and *Cænostroma* of Winchell, and in part in *Syringostroma* of Nicholson, and which may be represented by the *Stromatopora polymorpha* of Goldfuss, have the horizontal canals largely developed in laminæ thickened by supplemental deposit, and traversed by an infinity of minute canaliculi or ramifications of the canals opening at their surfaces. The horizontal canals radiate from central points where they are connected with vertical tubes or groups of tubes penetrating the whole thickness of the mass (Pl. IV. fig. 9, and Pl. V. fig. 10). The whole organism thus becomes divided into a series of vertical systems, which often very much obscure the concentric lamination, and in different states of preservation give very perplexing appearances. They may all be explained by bearing in mind that the horizontal canals, like those of *Stromatopora* proper, pass in the substance of the laminæ, now much thickened, and that at the centres of the systems they descend through the chambers by vertical tubes or groups of tubes which correspond to the hollow pillars of *Stromatopora*.

A great number of specimens of *Caunopora*, *Cænostroma*, and allied forms, both European and American, have passed through my hands; but I was unable to decide, except inferentially, as to their minute structure, till I was so fortunate as to obtain, through the