

In studying the structure of *E. Whitneyi*, *E. Minganensis*, *E. profundum*, and *E. Rensselaericum* we find in all an outer poriferous wall connected to an inner wall by septa, the double walls forming a figure that is cylindro-conical, clavate, turbinate, or modified forms of all of these; the central space inclosed by the inner wall is usually open, but sometimes filled with a vesicular mass, or it may be a building of wall upon wall, as in the outer walls. This is shown by fig. 1*b* of plate i and fig. 1*c* of plate iv. The outer surfaces of *E. Minganensis* and *E. profundum* show, in large specimens, a concentric corrugation or undulation of the surface, but in the small and slender specimens this becomes less and less prominent, and in one 5^{mm} in diameter it is nearly lost. In *E. Whitneyi* broad undulations begin to show in specimens 10^{mm} in diameter, as seen in fig. 1, plate iv. The species grows much larger, but none of the larger specimens show the outer surface or form.

The longitudinal ribbing of the surface is prominent in young slender specimens of *E. Whitneyi*, and less so in specimens 10^{mm} or 15^{mm} in diameter. This is owing to the increase in the number of septa with the increase in size. The septa of *E. Rensselaericum* vary in number, and the external ribbing varies in a corresponding manner.

The poriferous system of *E. Rensselaericum* appears to be the same as that of *E. Minganensis* and *E. Whitneyi*, as far as known.

The genus *Protoocyathus* was proposed for a specimen having on the outer wall a single row of large pores directly on the line of each septum, the septum opposite a row of pores bending around each pore. In fact they correspond, in position and form, to the pores of the inner wall. We have, from Troy, a specimen with the outer wall removed, that indicates a similar row of larger pores than the width of the septum. The probabilities are that they indicate openings in the outer wall, but of this there is no positive proof. Mr. Ford's type specimen is a cast, nearly all the outer wall being removed, but on a small bit, still remaining, a poriferous surface is shown.

As far as I know the types of the two genera *Archæocyathellus* and *Protoocyathus*, I refer them to *Ethmophyllum*, leaving the question of their specific relations an open one. The variation in the number and in the size of the septa is so great in *E. Rensselaericum* that it will not be surprising to find specimens showing gradational forms between the two species.

A specimen of *E. Whitneyi*, examined since the above was written, shows the poriferous outer wall removed in places and the larger openings on the lines of the septa (fig. 1, pl. iv). Comparing these with fig. 3, pl. ii (*E. profundum*) and other specimens, we find that this is owing to the openings in the septa just within the outer wall, as shown in a restoration (fig. 2, pl. iv). In fig. 2*b*, pl. v, the outer wall is removed and the openings look like pores leading into the interior. Fig. 2 also shows the same feature.

Mr. Billings, in describing the characters of the genus *Archæocyathus*