

From our comparisons *Matthevia* appears still more to serve as a connecting link between *Palænigma* and the genera *Conularia* and *Hyalolithes*. If *P. Wrangeli* had chambers running up into the shell, as is suggested by the cross-sections, and a septum that caused the upper portion of the shell to be decollated, as we are led to believe by the natural section shown by fig. 2*b*, pl. xxxiii, and by the fact that each specimen has lost its apex, the relations between *Palænigma* and *Matthevia* are quite close, and *Palænigma* may be, provisionally at least, grouped with the Paleozoic genera *Matthevia* and *Conularia*.

MATTHEVIA VARIABILIS Walcott.

Plate xxxii, figs. 1-12; pl. xxxiii, figs. 1, 1*a-f*.

*Matthevia variabilis* Walcott, 1885. Amer. Jour. Sci., 3d ser., vol. xxx, p. 18, figs. 1-6 of p. 20.

On a side view the outline of the shell varies from broad to narrow conical, and the end view shows an elongate-conical to a broad-conical outline; the cross-section varies from elliptical to oval to rounded quadrangular; aperture varies in outline with the proportions of the shell; a sinus, varying in depth and curvature, extends across the ends of the shell; in the more elliptical apertures the sides are nearly straight and parallel, while in those with a subquadrangular outline they are strongly curved, and the sinus at the ends is very profound. A longitudinal cross-section shows, in the larger number of shells, a section similar to that represented by fig. 1*a* of plate xxxiii; figs. 1, 1*b*, 1*d*, exhibit the variations in section taken at the same place in different shells that vary in outline. The shell thins out at the edges and is not thick over the exterior of the interior chambers, but between them a connecting mass of shell unites the sides and gives strength and solidity; a section crossing the center of the shell at right angles to the preceding shows a solid shell to the outer chamber, where it gradually thins out to the margin. The positions of the two inner chambers vary in relation to each other, as may be seen in the figures, from subparallel to widely divergent; the chamber that is more at right angles to the aperture than the other is usually larger and is always prominent, while the oblique chamber is sometimes filled up by shelly matter and only the outer portion remains; both chambers are usually flattened on the inner side and more or less expanded where they enter the large outer chamber. The septum crossing the inner chambers is thin and varies in shape with the form of the chambers; it is usually slightly concave-convex, concave towards the outer chamber, and marked, usually, by a raised scar of varying character, as is shown in the figures; the septum is usually a short distance from the outer chamber, 1<sup>mm</sup> to 4<sup>mm</sup>.

The substance of the shell is calcareous, and in thin sections appears to be vesiculose, as in figs. 1*e*, 1*f*, of plate xxxiii.