

and above these fifteen or twenty small plates in each depressed intertertiary area. Intersecondary radial areas have one rather large plate in each axil, and a dozen or more smaller ones filling the depressions between the tertiaries. Intertertiary areas have in like manner one plate in each axil, and several smaller ones above. . . . The vault is somewhat convex in the central part, and undulates towards each intertertiary area. It is composed of numerous polygonal plates. Those in the central part are the larger ones, and each of these bears a central tubercle, which is sometimes prolonged so as to be designated a spine toward the margin, or rather following the undulations toward the intertertiary areas, the plates are smaller and possessed of slight convexity. They unite in the depressions in the intertertiary areas with the plates of the calyx, or rather the interprimary radials graduate through the intersecondaries and intertertiaries to the plates of the vault without any line of separation. The plates become smaller as they approach the inner face of the arms, over the swelling undulations of the vault, and continuing to decrease in size, form a somewhat granular continuous integument, that covers the ambulacral furrows."

Except as regards the larger central plates (orocentral and orals), this description would apply equally well to the disk of many *Pentacrinidæ* and *Comatulidæ*. The vault of *Glyptocrinus* would appear to have been more or less flexible as in the *Ichthyocrinidæ*; and the so-called "continuation of the vault up the inner side of the arms" seems to me to be nothing but the extension on to the arms of the ambulacral skeleton, together perhaps with some of the anambulacral plates at its sides, just as in *Pentacrinus asterius*, *Pentacrinus alternicirrus*, *Pentacrinus naresianus*, and *Metacrinus murrayi* (Pl. XVII. fig. 7; Pl. XXVI. figs. 1, 2; Pl. XXVII. fig. 13; Pl. XXX. fig. 2; Pl. XLI. fig. 13).

The vault of *Retocrinus nealli* is thus described by Meek¹ "Interradial areas occupied by numerous (70 to more than 100) small pieces of very irregular size and form, and without any definite arrangement. . . . Axillary areas each occupied by about fifty to sixty very small, irregularly arranged, unequal pieces. Vault composed of numerous minute pieces, generally of hexagonal form; highest on the anterior side, with a ridge radiating to each arm-base, and a corresponding sulcus between; opening minute, penetrating a small tubercle situated behind the middle, and directed backward."

Wachsmuth says that the plates in the median part, which probably include the apical plates, are somewhat larger than the rest; while he further states that "the peculiar depressed state of the interradial and interaxillary areas, the irregularity with which their plates are arranged, suggests the possibility that they were adapted to expansion by the animal."² Here again, then, he admits the possibility of the "vault" having been pliant and flexible. Thanks to his kindness, I have had the opportunity of examining specimens of all three genera, *Glyptocrinus*, *Reteocrinus*, and *Xenocrinus*, while Meek gives an excellent figure of the summit in *Reteocrinus nealli*.³ I am sorry,

¹ Palæontology of Ohio, vol. i. p. 35.

² Revision, part ii. p. 192.

³ Palæontology of Ohio, vol. i., pl. ii. fig. 3c.