

Pentacrinidæ and Comatulæ; and I see no reason to believe that the minute interradians of *Reteocrinus* are in any way different from those of the Neocrinoids. But I regard them as perisomic plates continuous with those of the disk above, which was in no sense a "vault" like that of the Actinocrinidæ. Meek's figure of *Reteocrinus nealli*¹ illustrates this point admirably, and after examining disks like those of *Pentacrinus wyville-thomsoni*, *Pentacrinus alternicirrus*, *Pentacrinus naresianus*, and *Pentacrinus mollis*, together with similar disks in numerous Comatulæ (Pl. XVII. fig. 6; Pl. XXVI. figs. 1, 2; Pl. XXX. fig. 2; Pl. XXXIII. fig. 7; Pl. LIV. fig. 10; Pl. LV.), and also (thanks to the kindness of Mr. Wachsmuth) that of *Reteocrinus nealli*, I find it difficult to believe that the so-called vault of *Reteocrinus* was anything but the true oral surface of the animal.

Miller's genus *Xenocrinus*² is in this respect essentially similar to *Reteocrinus*. "The azygos area is remarkably large and covered in the central part by a vertical series of plates having about the same size as the regular radial series; and upon each side of the vertical series there is a depressed area covered by small plates having a tubercle in the central part, as in the regular interradian areas. There are seven plates, each having a length about twice as great as its width, in the vertical series, from the basal plate, upon which the series rests to the top of the vault. This vertical series is continued to the top of the proboscis, and contains in its entire length more than fourteen plates. It has such strong resemblance to the radial series, except as to the branching at the secondary radials, that the general appearance of the body is that of a species having six radial series." Miller figures the specimen with fourteen plates in the vertical series, and remarks that we learn from it that "the proboscis extends as high as, and probably beyond the extremity of the arms." He also says that the small plates between the rays and their subdivisions "continue over the margin of the vault, and undoubtedly cover it, and also more or less of the long proboscis." I do not see, however, that this so-called but unknown proboscis is anything more than an anal tube covered by perisomic plates, as in *Extracrinus* and so many other Neocrinoids. I also doubt whether Miller is right in stating that the vertical series is continued to the top of the proboscis, for (to judge from his figures) he does not seem ever to have met with a specimen perfect enough to show the top as it is shown in Meek's figure of *Reteocrinus nealli*.³ But I think it quite possible that, considering the size of this vertical series, it may have become free at the top of the calyx as the anal appendage of *Thaumatoocrinus* does (Pl. LVI. figs. 4, 5), instead of tapering away quickly and ending on the lower part of the anal tube as in *Reteocrinus nealli*.

The ventral sac or proboscis of *Cyathocrinus* is usually much larger and more

¹ Palæontology of Ohio, vol. i. pl. ii. fig. 3c.

² Description of some New and Remarkable Crinoids and other Fossils of the Hudson River Group, *Journ. Cinc. Soc. Nat. Hist.*, vol. iv. pp. 72, 73, pl. i. fig. 3; pl. iv. fig. 6.

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