ummit plates be made out. One of the figures[1] of the "perisoma ventrale" in *Cyathocrinus alutaceus* shows a central plate with seven others round it; while in the other, three large plates meet in the centre of the vault, but no one of them could be considered as an orocentral. The same may be said of the vault of *Cyathocrinus lævis* represented in tab. xxvi. fig. 3*b*.

As regards the Blastoids I have never been able to trace any definite grouping of the summit plates, although I have examined a very large number of picked specimens of *Pentremites*, *Granatocrinus*, *Schizoblastus*, and *Orophocrinus*.

In *Eleacrinus*, however, the case is different. There are comparatively fewer plates over the peristome, and they certainly often do have a definite grouping, five surrounding a central one as was first described by Roemer.[2]

No more need be said about the Blastoids, as their ambulacra are in many ways abnormal, though they have strong points of resemblance to those of the Cyathocrinidæ. This family is one of special interest, for Wachsmuth[3] says that in the structure of their vault they "bear closer resemblance to the recent Crinoids than almost any other group, and seem to hold an intermediate position between modern and Palæozoic types. If the alternating plates, covering the furrows, could be turned back at the vault by the animal, as the Saumplatten of the arms, then the food-groove of these Crinoids was open throughout, as in recent forms." It is possible therefore that although the mouth and peristome were subtegminal, *i.e.*, covered in by the apical dome plates, yet the food-grooves of the body may have been just as much external as those of the arms, and in no way different from those on the disk of a *Pentacrinus*. As regards the Cyathocrinidæ, therefore, one of the characters on which Wachsmuth relies as separating the Palæocrinoids from the Neocrinoids would then have no existence, *i.e.*, the absence of external food-grooves. I am not prepared to assert, however, nor indeed is Wachsmuth, that these alternating plates in the radial areas of the vault of *Cyathocrinus* were movable, like the covering plates of the disk in recent Crinoids. For it seems to me quite possible that the closure of the peristome may have been continued outwards on to the very short calyx-ambulacra, which would then first become open to the exterior at the bases of the arms. But I have no question as to the homology between the radial vault pieces in *Cyathocrinus*, and the covering plates of recent Crinoids, each set passing continuously into the covering plates of the brachial ambulacra.

According to Wachsmuth's descriptions of the vault of the Actinocrinidæ the arrangement of the radial dome plates is the same as that of the radial calyx plates; and he is obliged to admit[4] that the alternating radial dome plates which he finds in *Cyathocrinus* are "not so readily distinguished as in the Platycrinidæ and forms with free rays, in

[1] *Op. cit.*, tab. xxiii. figs. 10*b*, 11.

[2] Monographie der fossilen Crinoideenfamile der Blastoideen und der Gattung Pentatremites im besondern, *Archiv f. Naturgesch.*, Jahrg. xvii., Bd. i. pp. 377, 378, Taf. v. figs. 1*b*, 1*c*.

[3] *Amer. Journ. Sci. and Arts*, vol. xiv. p. 184.

[4] Revision, part ii. p. 30.