

the interradians. Wachsmuth¹ expresses this by saying that "the arms are recumbent upon the vault. There are five oral (*cf.* interradian) plates, upon the sutures between which, and raised above the general level, the arm-joints are imbedded, being covered by small alternating plates like the free arms." Here then we have a further development of the abnormal condition presented by *Cyathocrinus* and the Blastoids. For not only ambulacral plates, but arm-joints themselves, extend over the sutures between the interradians towards the opening at the centre of the summit. The two rows of alternating plates which cover in the furrows clearly represent the plates arching over the grooves between the interradians of *Cyathocrinus*; but it is equally clear that they are the covering plates of ambulacra which are borne by the arm-joints. This is very evident in some of Angelin's figures² of the brachial ambulacra, which may be advantageously compared with those of the ambulacra in the Comatulidæ and Pentacrinidæ (Pl. XIII. fig. 16; Pl. XVII. figs. 2, 6, 7; Pl. XXVII. figs. 4, 5, 11, 12; Pl. XLVII. figs. 10-13; Pl. LIV. figs. 4, 7, 8; Pl. LV. figs. 3-7).

The two rows of alternating plates in the dome of the Platycrinidæ have a close resemblance to those on the vault of *Cyathocrinus*, and I have a strong suspicion that they are of the same character, and not radial dome plates homologous with the calyx radials, like those in the Actinocrinidæ. Wachsmuth appears to have been in much doubt about their nature, and to have had considerable difficulty in making up his mind. For he has described them in very different terms at different times. The following general description was written by him as applying to both Platycrinidæ and Actinocrinidæ, as well as to the Rhodocrinidæ. Speaking of the radial dome plates,³ he says "as a general rule, the summit plates increase in proportion to the number of primary arms of a species in the same manner and on the same principle as the plates of the dorsal side. Every radial from the third radial upward has a corresponding plate on the ventral side, and additional interbrachial plates between corresponding brachial plates above the arms."

This description, although true of most of the Actinocrinidæ, does not appear to hold good for any typical Platycrinoid, as far as can be judged from Wachsmuth's accounts of the vault structure in the different genera of the family. The vault of *Coccoocrinus* has been sufficiently discussed already. That of *Cordylocrinus* is not known. The radial dome plates of *Culicocrinus* are as yet unknown, and but little room is left for them, as the apical dome plates occupy the greater part of the summit. In the next genus, *Marsupiocrinus*, however, the condition of the vault is entirely different. Wachsmuth and Springer⁴ describe it as follows: "vault low, hemispherical, composed of a larger number of plates than usually found in this family. These are generally formed into

¹ Revision, part i. p. 91.

² *Op. cit.*, tab. xxvii. figs. 1c-1g; tab. xxix. figs. 75d, 76a.

³ *Amer. Journ. Sci. and Arts*, vol. xiv. p. 187. This passage appears again with a slight alteration in the Revision, part ii. p. 15.

⁴ Revision, part ii. p. 64.