

interpalmar areas of the ventral perisome. They are continuous over the edge of the disk with the perisomatic plates uniting the rays; and he came to the conclusion that while many of the ventral plates are perforated by water-pores which lead downwards into the body-cavity, these openings are never found in the interradii at the sides of the disk.¹ He termed them "anambulacral" to distinguish them from the "ambulacralen Kelchporen für Füßchen;"² and this name has been conveniently extended both to the plates which they pierce, and also to the remaining imperforate plates of the interpalmar areas. Owing to the large size of the oral plates in *Hyocrinus*, which are themselves pierced by water-pores (Pl. Vc. fig. 6, *wp*), the number of these anambulacral plates on the disk is very small. But in a large *Pentacrinus* or *Comatula* they may be very extensively developed, and the pores are occasionally to be found on the sides of the disk between the rays (Pl. XVII. figs. 6, 10; Pl. XXVI. figs. 1, 2; Pl. XXXIII. fig. 7; Pl. XXXIV. fig. 2; Pl. XXXIX. fig. 2. Pl. LVII. figs. 1, 3, 4; Pl. LIX. figs. 2, 4, 6—*wp*; Pl. LXII.).

At the edge of the disk the anambulacral plates of its upper surface pass gradually downwards into the interradials, which are developed in the perisome uniting the rays; so that in some species both of *Comatula* and *Pentacrinus* the visceral mass is everywhere protected by a continuous armour of plates. Many of the fossil Pentacrinidæ and also some species of *Apiocrinus* show signs of the same structure. It is especially well-marked in the Liassic genus *Extracrinus*, which had a very large and thickly plated "ventral sac." In fact the disk of these Crinoids seems to have borne stouter plates than that of many of the Palæozoic Ichthyocrinidæ; and I do not understand how the ventral disk of this family, which is described by Wachsmuth³ "as composed of a more or less soft or scaly integument, yielding to motion in the body and arms," can be compared to anything else than the oral surface of a recent Crinoid, with which, however, Wachsmuth says that it "cannot in the remotest degree be homologised."⁴

I have not seen any good disk of *Pentacrinus asteria*; but, judging from the condition of its peripheral part in the specimen figured by Müller, I imagine it to have been covered with a continuous pavement of tolerably large plates. This is also the case in *Pentacrinus wyville-thomsoni* (Pl. XVII. fig. 6). The interpalmar areas are covered with a very closely-fitting pavement of polygonal plates, the largest of which may be pierced by four or five water-pores. The anal tube, which is plated almost up to its summit, occupies the greater part of the corresponding interradius; but the anambulacral plates which are between it and the mouth (in the specimen figured) are smaller than elsewhere, and less distinctly defined. In fact they look as if they had fused into two irregularly-shaped plates which abut directly on the peristome. A similar fusion of small plates appears to have taken place on the anal tube of the *Metacrinus nodosus*

¹ Bau des Pentacrinus, p. 49.

² Revision, pt. i. p. 31.

³ Bau der Echinodermen, p. 63.

⁴ Amer. Journ. Sci., vol. xiv. p. 190.