the cup and the arms cannot be better described than in the words of Sir Wyville Thomson.[1] "The second tier consists of five radials, which are thin, broad, and spade-shaped, with a slight blunt ridge running up the centre and ending in a narrow articulating surface for an almost cylindrical first brachial.

"The arms are five in number, they consist of long cylindrical joints deeply grooved within, and intersected by syzygial junctions. The first three joints in each arm consist each of two parts separated by a syzygy; the third joint bears at its distal end an articulating facet from which a pinnule springs. The fourth arm-joint is intersected by two syzygies, and thus consists of three parts; and so do all the succeeding joints; and each joint gives off a pinnule from its distal end, the pinnules arising from either side of the arm alternately. The proximal pinnules are very long, running on nearly to the end of the arm; and the succeeding pinnules are gradually shorter, all of them, however, running out nearly to the end of the arm, so that distally the ends of the five arms and the ends of all the pinnules meet nearly on a level." In all cases the first pinnule is on the left side of the arm. I can say nothing as to the total number of pinnules, the longest arm remaining having six of these appendages on each side. Owing to the large size of the pinnules in comparison with the arms, the epizygal joints to which they are articulated have the appearance rather of axillaries than of ordinary brachials. This is also the case in *Rhizocrinus*, but to a less extent (Pl. IX. figs. 4, 5). But as these appendages are simple and contain the genital glands like the pinnules of other Crinoids, they are undoubtedly of that nature, and must not be regarded as branches of the arms.

The mouth is protected by a very perfect, five-sided pyramid of triangular oral plates, the outer surfaces of which are deeply hollowed along the median line (Pl. VI. figs. 1–4), while the inner surface slopes away rapidly on either side from a strong central keel (Pl. VI. fig. 5). Sir Wyville Thomson described it as marked with deep impressions for the insertion of muscles; but I believe him to have been mistaken in this point. There is no trace whatever of any such muscles being attached to the inner surface of the oral plates in the mutilated specimen represented in fig. 5; while the orals of *Rhizocrinus* and of the Pentacrinoid larva of *Comatula* are certainly not so provided with muscles, and there are no *a priori* reasons whatever for invoking their presence in *Hyocrinus*.

About half the diameter of the disk is occupied by the oral pyramid which covers up the central mouth. Between its base and the edge of the cup there is a pavement of closely set, thin plates belonging to the anambulacral system, which have no regularity either of form or of arrangement. Some of these extend upwards on to the anal tube, which is situated near the edge of the disk in one of the interradial spaces. As in *Rhizocrinus* the oral plates are pierced by the ciliated water-pores which lead downwards into the body-cavity (Pl. Vc. fig. 6, *wp*). But the pores are more numerous than in *Rhizocrinus*, which has only one in each oral plate. In both the specimens of *Hyocrinus* which I have

[1] *Journ. Linn. Soc. Lond.* (Zool.), vol. xiii. p. 52.