the Pentacrinidæ show very clearly that they are rightly regarded as permanent larval forms of the Comatulæ.

Rhizocrinus and *Bathycrinus*, with their relatively large vegetative system, manifest the same character in another way, viz., the absence of pinnules from the arm-bases; though the ambulacral plating is continued to the end of both arms and pinnules (Pl. VII. figs. 2, 7; Pl. VIII. figs. 1, 3, 5; Pl. VIIIa. fig. 1). There is good reason to believe that the late appearance of the basal pinnules (excepting on the second brachial) is a marked developmental character among the Comatulæ;[1] and in one genus, *Atelecrinus*, the first pinnule is as far out as the twelfth brachial, the lower pinnules not developing at all. In *Rhizocrinus rawsoni* it is on the epizygal of the third syzygial pair, or the sixth primitive joint, and in *Rhizocrinus lofotensis* on the epizygal of the fourth pair (Pl. IX. figs. 1–3); while in *Bathycrinus* it may be as many as eleven joints from the radial axillary, though occasionally only eight or nine (Pl. VIII. figs. 1, 3).

In all the genera of living Crinoids, with one singular exception, the mouth is situated at or near the centre of the disk (Pl. III. fig. 2; Pl. VI. fig. 4; Pl. VII. fig. 3; Pl. XVII. figs. 6, 10; Pl. XXVI. figs. 1, 2; Pl. XXXIV. fig. 2; Pl. XXXIX. fig. 2; Pl. LV. figs. 3–7; Pl. LVI. fig. 6), and the arms are about equally developed on all the five rays. But in the large Comatulid genus *Actinometra* the mouth is excentric or even marginal (Pl. LV. figs. 1, 2; Pl. LVI. figs. 7, 8); and there is frequently a considerable amount of difference in the development of the oral or anterior, and the aboral or posterior arms.

Even when all the arms are provided with food-grooves on the ventral surface as in other Crinoids, those which come off round the mouth are usually longer, sometimes considerably so, than those which spring from the hinder part of the disk; while in other species the anterior and posterior arms are all grooved and all equal in length, but the distribution of their syzygies is quite different.

A great many species of *Actinometra*, however, are characterised by a still more striking difference between the anterior and posterior arms. The former have a wide food-groove of the usual character and a well-developed tentacular apparatus at its sides, while they always appear to end in a "growing point." The posterior arms, on the other hand, have an ungrooved and convex ventral surface, which is without any respiratory tentacles at all (Pl. LVI. fig. 7). They are only about half the length of the grooved anterior arms, and, therefore, taper much more rapidly, while they terminate in an axillary segment which bears two pinnules of the ordinary character. The genital glands which they contain are usually far more developed than those of the anterior arms. Not only are there more fertile pinnules, though the total number of pinnules may not be much more than half that of an anterior arm; but the portions of the glands within these pinnules also attain a greater size than in the oral arms, the basal and median pinnules of the latter being usually less swollen than the corresponding pinnules of a posterior arm.

[1] Preliminary Report on the Comatulæ of the Caribbean Sea, *Bull. Mus. Comp. Zoöl.*, vol. ix., No. 4, pp. 14, 15.