

III.—THE CALYX.

In all the recent Crinoids, with the single exception of *Thaumatocrinus* (Pl. LVI. figs. 1–4), the calyx proper is formed of but two series of plates, viz., the basals, which rest upon the top stem-joints, and the radials, which are supported by and alternate with the basals. The plates of these two series are suturally united to their fellows and to one another; and they enclose a central cavity which is sometimes large enough to contain the whole visceral mass, as in *Holopus* (Pls. I.–IV.) and *Hyocrinus* (Pl. VI.). In other cases, however, the internal cavity of the calyx is reduced to a minimum, and it lodges nothing but the chambered organ with the plexiform gland which rises from it; while the entire visceral mass is situated altogether above it, and is very easily detached from it, as in many Comatulæ, so that there can hardly be said to be any cup at all.

Intermediate conditions between these two extremes are met with in the Bourguetiacrinidæ and Pentacrinidæ. In the last named family the cup which is formed by the united upper surfaces of the radials is wider than in *Antedon*, but somewhat more hollowed than in *Actinometra* (Pl. XII. figs. 1, 2, 15, 16; Pl. XVIII. figs. 4, 5; Pl. XX. figs. 5, 8; Pl. XXVI. fig. 11; Pl. XXX. figs. 3, 4; Pl. XXXIII. fig. 5; Pl. XXXIV. figs. 7, 8; Pl. L. figs. 5, 6); and the lowest portion of the visceral mass rests in this concave upper surface of the radial pentagon; while the greater part of it lies in the cup which is formed by the outer radials and lowest distichals (Pl. XVII. fig. 5; Pl. L. fig. 1; Pl. LXII.). But the central funnel of the calyx, which is between the inner faces of the radials, only contains the plexiform gland ascending from the chambered organ (Pl. LVIII. fig. 3, *x*).

This is also the case in *Rhizocrinus* and *Bathycrinus* (Pl. VIIb. figs. 1, 4, 5, *x*). In the former genus the upper surface of the calyx has a deep hollow which lodges a portion of the intestinal coil (Pl. X. figs. 1, 4, 6, 7, 8); while the upper part of the visceral mass is entirely supported by the first four brachials in two syzygial pairs (Pl. X. figs. 2, 20). In *Bathycrinus*, however, the gut hardly descends to the level of the first radials; and though the visceral mass is very largely supported by the large wing-like processes of the axillaries, it is practically quite free from the lowest brachials (Pl. VII. fig. 3; Pl. VIIb. figs. 1, 7, 8).

Concealed in the lower portion of the calyx is the chambered organ, the position of which, relatively to the calyx-plates, varies considerably. In all the Comatulæ it is lodged within the cavity of the centro-dorsal, and it is therefore entirely on the dorsal side both of the radials and of the basals, whether the latter have been metamorphosed into a rosette or not. But in the stalked Crinoids there is no enlargement of the central canal of the stem within its uppermost joint, and the vascular axis passes up into the calyx before expanding to form the chambered organ. In *Rhizocrinus*, *Bathycrinus*, and