

from the Upper Silurian of North America, appears to be very closely allied to the recent *Holopus* and to *Cotylecrinus*. According to Meek and Worthen,¹ it seems to differ from this last type "only in having an anal piece on the same range with the first radials, the relations between the two groups being exactly the same as between *Hexacrinus* and *Platycrinus*." These two genera, however, are both Palæocrinoids; but *Belemnocrinus* and *Rhizocrinus*, a Palæocrinoid and a Neocrinoid respectively, are related in precisely the same way. The former, like *Edriocrinus*, has an anal plate in line with the radials; while there is no such structure in *Rhizocrinus* nor in *Cotylecrinus*. The arms of *Edriocrinus* are more numerous than those of *Holopus*, as there are secondary axillaries beyond those in the radial series; but they were rolled in on one another very much after the manner of the *Holopus*-arms; and this was also the case in the Devonian *Lecanocrinus roemeri*, Schultze. The latter type has a stem; but this organ appears to have been altogether absent in *Edriocrinus*, which is thus described by Hall:²—"These Crinoids are sessile in the young state, adhering singly or in groups to other substances until fully developed, when they are separated from the foreign bodies, and gradually secreting calcareous matter to cover the cicatrix or point of adhesion, become finally smooth rounded bases." Elsewhere³ again he described the radial plates as proceeding from this "short pedicle" as from the summit of a column. According to Wachsmuth and Springer⁴ this pedicle really consists of five closely anchylosed, basal plates, with the sutures between them obliterated by a secondary calcareous deposit, which eventually removed all traces of the scar denoting the previous attached condition of the individual.

The Mesozoic and recent Holopidæ do not seem ever to have passed into the "free" condition characteristic of *Agassizocrinus* and *Edriocrinus*, so that there is no scar of attachment to be obliterated. But I strongly suspect that the subradial portion of the body, centro-dorsal, support, cupule, or whatever it be called, consists either wholly or (more probably) in great part of anchylosed basals, just as it does in the Palæozoic *Edriocrinus*.⁵ For I find it difficult to believe in the existence of a family of Crinoids which are normally devoid of any basal plates, as these are of fundamental importance both in the morphology of the Crinoids, and in that of Echinoderms generally.

Family HYOCRINIDÆ, P. H. Carpenter, 1884.

Genus *Hyocrinus*,⁶ Wyville Thomson, 1876.

Definition.—Calyx high, and composed of basals and radials which are nearly equal in length. The former narrow gradually downwards, while the latter are broad and spade-like, each bearing a small undivided arm in the middle of its upper edge. Arm-joints united

¹ Palæontology of Illinois, vol. iii. p. 371.

³ *Ibid.*, p. 143. ⁴ Revision, part i. p. 21.

⁶ Named after Hog Island, one of the Crozets.

² Natural History of New York, Palæontology, vol. iii. p. 120.

⁵ *Ann. and Mag. Nat. Hist.*, ser. 5, vol. xi., 1883, pp. 327-334