

constitute a parallel group to the Palæocrinoids, as Urchins are abundant in the Secondary and Tertiary rocks and also at the present time. But the Blastoids and Cystids shared the fate of the Trilobites, and did not persist into the Triassic Seas.

It will now be advisable to discuss the various characters which distinguish the Neocrinoids from the Palæocrinoids. Some of them have been alluded to elsewhere, but no attempt has yet been made to group them together.

In the first place the calyx of a Neocrinoid is very symmetrical in its composition, though it may undergo more or less distortion, as in the Eugeniocrinidæ and Holopidæ (Pls. I.–IV.).

Under-basals are rarely present (*Encrinus*, *Extracrinus*, and *Marsupites*); while by far the greater number of genera have five equal and similar basals, with five equal and similar radials resting upon them. *Hyocrinus* it is true has only three basals (Pl. VI.); while the radials of *Holopus* (Pl. III. fig. 1) and *Eudesicrinus* are not symmetrical; but their want of symmetry is not due to the intercalation of any anal plate as in nearly all Palæocrinoids, so that one side of the calyx becomes especially distinguished as the anal side. In all Neocrinoids, with the single exception of *Thaumatocrinus*, these primary radials are in contact with one another by the entire length of their sides; or more rarely, as in *Guettardicrinus*, *Uintacrinus*, and *Apiocrinus roissyanus*,<sup>1</sup> their distal angles are cut away, so as to receive the lower part of the first interradial. This feature, which is common enough in the Palæocrinoids, is rare in the Neocrinoids; for the second radials are usually wider than the first, and more or less completely united to their fellows by their lower angles (Pl. XV. figs. 1, 2; Pl. XXIX. fig. 1; Pl. XXXVII. figs. 1, 2; Pl. XXXIX. fig. 1; Pl. XLIII. fig. 2; Pl. XLIX. figs. 1, 2).

In like manner there is only one known genus and species of Neocrinoids (*Thaumatocrinus renovatus*, Pl. LVI. figs. 1–4) which has the rays completely separated by primary interradials that rest on the basals; though there are several genera of Palæocrinoids distinguished by this peculiarity, which is characteristic of the large and important family Rhodocrinidæ (Wachsmuth and Springer).

In most Palæocrinoids a certain number of the plates above the primary radials become closely united to one another and to the interradials so as to form the walls of a relatively large and substantial calyx. This is especially the case in the Actinocrinidæ; “while in the Platycrinidæ comparatively few plates are enclosed within the calyx, many of them, which in the Actinocrinidæ form a conspicuous part of the body, being here found in the lateral appendages. In the Platycrinidæ the calyx proper is constructed almost exclusively of basals and first radials, all higher orders of radials either forming a part of the brachial appendages, or, when partially incorporated with the calyx, being insignificant compared with the other parts.”<sup>2</sup>

In the Ichthyocrinidæ, however, while the secondary and tertiary radials form a part

<sup>1</sup> See woodcut, fig. 9 on p. 183.

<sup>2</sup> Wachsmuth, Revision, part ii. p. 55.