

B. On the Characters of Young *Pentacrinidæ*.

Young individuals of *Pentacrinus* are naturally rare, as is only to be expected. It is related, however, that on one occasion a large number of them of all ages and sizes were thrown up on the shore at Barbados after a gale; but unfortunately for science no one on the spot had knowledge enough to recognise the value of this extraordinary event, and a great opportunity, such as may never occur again, was therefore lost.

Nevertheless the discovery that recent *Pentacrinidæ* flourish in great numbers on certain parts of the sea-bed, like their predecessors in the Liassic and Jurassic Seas, has brought about a considerable increase in our knowledge of their premature stages of growth. The dredgings of the "Porcupine," Challenger, and "Blake" have yielded several young individuals of three *Pentacrinus* species and of *Metacrinus nodosus*, some of which are figured on Pls. XVIII., XXXa., XXXV., and LI.

Like the young *Comatula*, they are all distinguished by the relatively great height of the first radials as compared with those of the adult, which are wider than high, often considerably so (Pl. XIX. figs. 1, 6, 7; Pl. XXX. fig. 1; Pl. XXXVII. figs. 1, 2; Pl. L. figs. 1, 5), while the radials of the young individuals are spade-like, to use an expressive term introduced by Sir Wyville Thomson. This is naturally most marked in the youngest specimen with a total length of 80 mm. (compare Pls. XXXV. and XXXVII.); and the cup with its small basals presents a singular resemblance to that of *Plicatocrinus* and *Bathycrinus* (Pl. VII. figs. 1-3, 6; Pl. VIIIa. fig. 1). The little we know of the former, however, shows that it is a totally aberrant type, and the resemblance must therefore be considered as in great measure accidental and not as indicating any genetic relationship. But *Bathycrinus* is a decidedly embryonic form, as is shown by the length of all its three radials and the absence of pinnules from the arm-bases. *Hyocrinus* (Pl. VI.) is another type with high spade-like radials; but the basals are of the same character, and not small and inconspicuous as in young *Pentacrinidæ* and in *Bathycrinus*, while the arms are totally different.

Another character of the incompletely developed Crinoid, which is very marked in *Rhizocrinus* and *Bathycrinus*, and still more so in the aberrant *Plicatocrinus* and *Hyocrinus*, is the comparative freedom of the second radials. In many *Comatulæ* they are closely united laterally; while in most of the Palæocrinoids, as in *Apiocrinus* and *Guettardicrinus*, they are practically immovable, and enter into the composition of the body. The second radials of *Pentacrinus*, however, rarely show any traces of the lateral pits lodging interrarial ligaments such as occur in many multiradiate *Comatulæ*. But they are often in very close apposition, while in young individuals of the same species they are comparatively free (Pls. XVIII., XIX., XXIX., XXXa., XXXV., XXXVII.). The arm-joints of most young Crinoids, as well as those in the outermost and growing parts of the arms of more mature individuals, are always distinguished by