Zoology Part XXXII: Report on the CRINOIDEA. First Part.-Stalked Crinoids. By P. H. Carpenter. Bound in Volume 11,1884.

ones just beneath the calyx. Throughout its whole length it tapers downwards from the calyx, rapidly at first, then more slowly and afterwards somewhat rapidly again, till the joints are but little larger than those of the most developed cirri on its middle part. The number of internodal joints also diminishes in this lower part of the stem; for while it reaches eleven or twelve in the middle of the stem, the numbers in the four lowest internodes are respectively nine, seven, five, five; and the remains of the cirri borne at the intervening nodes show a corresponding diminution in size. The inferior termination of the stem is not known, as it is broken at the syzygy beneath the lowest whorl of cirri.

The free mode of life appears to be attained in these individuals, not by actual fracture of the stem at a node so as to shorten it more or less, but by the lower and therefore older part remaining undeveloped, while new joints appear in succession above it, each growing to a larger size than those previously formed. The stem thus becomes slender and tapering, and but ill adapted for attaching itself below; but its length is not diminished so much as if it were broken at a node.

The downward tapering of the stem in some of the fossil Pelmatozoa has been already noticed; and it is evidently a character of more general occurrence than was suspected by Sir Wyville Thomson. Quenstedt[1] contrasts the comparatively short tapering stems of *Extracrinus briareus* with the gigantic ones of *Extracrinus subangularis*, which may reach the length of 50 or even of 70 feet; and he suggests that the former type and its allies "könnten gleichsam als eine Comatula betrachtet werden, deren Knopf zu grösserer Länge in einer Zeit heranwuchs, wo es noch keine eigentlichen Comateln gab." De Loriol[2] in like manner regards it as probable—"qu'ils avaient, à l'état adulte, une tige court, libre, et qu'à l'aide de leurs cirrhes tres nombreux et très longs ils pouvaient nager facilement et se transporter, rapidement peut-être, d'un lieu à un autre; ils avaient aussi la faculté de se fixer à quelque objet, lorsqu'ils en avaient le désir, au moyen des crochets dont est munie l'extrémité de leurs cirrhes."

I suspect, however, that the swimming was effected rather with the arms than with the cirri, which are not used for that purpose by the Comatulæ, and would have to be moved with considerable power in order to effect the locomotion of the animal. The condition of so many recent species is a strong argument in favour of the views formerly expressed by Buckland[3] and others regarding the possible locomotive powers of the Liassic Pentacrinidæ, though they have been somewhat discredited of late. Now too that their recent representatives have been found so abundantly in depths of less than 100 fathoms, instead of being exclusively abyssal types as was once supposed, the

[1] Encriniden, p. 271.
[2] Notice sur le Pentacrinus de Sennecey-le-Grand, Chalon-sur-Saone, 1878, p. 12.
[3] Geology and Mineralogy, vol. i. p. 437.

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