

resembling the *Rhodocrinites* in having five large plates separating the radials, *Thaumatocrinus* differs from them and from most Palæocrinoids in the absence of any higher series of calicular interrarial plates resting upon the first series which separate the radials.

Except on the anal side the primary interrarial plates of *Thaumatocrinus* end simply in a free rounded edge at the margin of the disk (Pl. LVI. figs. 1-3, 5), which is doubtless due to the simplicity of the arms; for these become free almost at once, and are not connected laterally by much perisome in which higher orders of radials could be supported. But in the presence of the anal appendage on the azygous interrarial (Pl. LVI. figs. 2, 4, 5) *Thaumatocrinus* bears a remarkable resemblance to *Reteocrinus* as understood by Wachsmuth and Springer, and to the *Xenocrinus* of S. A. Miller; while the appendage has an even closer resemblance to the so called "anal series" of *Onychocrinus* and *Taxocrinus*, the lowest plate of which rests, not on a basal, but on the upper angles of the two first radials.

There can, I think, be no reasonable doubt that the anal appendage of *Thaumatocrinus*, although free laterally, is homologous with the vertical series of plates in the anal interradius of *Reteocrinus* and *Xenocrinus*, *Onychocrinus* and *Taxocrinus*. But owing to the small size of *Thaumatocrinus* and the simplicity of its rays the anal appendage is free; whereas in the Palæocrinoids it is united to the more or less branching rays by the general series of minute irregular plates which occupy the anal interradius and pass gradually upwards into those of the so called vault.

It is difficult to consider the existence of interradians and of the anal appendage of *Thaumatocrinus* as instances of atavism, for no known Neocrinoid presents any similar characters, and it is a long way back from a recent *Comatula* to a Palæozoic Crinoid. The reappearance of these characters in such a specialised type as a *Comatula* is consequently not a little surprising. Associated with them we find the distinctly embryonic characters of persistent basal and oral plates, the latter occurring in no other *Comatula*, together with the simplicity of the undivided arms.

*Thaumatocrinus renovatus*, P. H. Carpenter, 1883 (Pl. LVI. figs. 1-5).

*Description of an Individual.*—The total width of the calyx across the disk is barely 2 mm.; and the height of the centro-dorsal and radials together is about the same. The former (Pl. LVI. figs. 1-4) is rounded below, with its central canal completely closed up, so that it must have been detached for some little time from the remainder of the stem. The bases of half a dozen cirri are attached to it, and there are pits for the reception of two or three more. In the largest stump which is preserved (Pl. LVI. figs. 1, 3) the first two joints are quite short, as is usually the case in all cirri; but the third reaches a length of 1.5 mm., so that the cirri must have been very like those of