

theory accounts for the varying conditions of the lowest nodal joint which are presented by different individuals; while the "accident" hypothesis of Filhol's does not explain this fact at all, unless he means that some individuals had become detached at one time and some at another. But this is precisely what Sir Wyville believed; only he regarded it as a natural event corresponding to the separation of the centro-dorsal of a *Comatula* from the rest of the stem below it, which appears to me to be a more rational explanation of the facts than that suggested by Filhol.

It is possible that the "accident" referred to by the latter author may not mean the fracture of the stem at a syzygy beneath a nodal joint as I have supposed above, but a separation of the stem from its anchorage by the lowest whorl of cirri. This would account for the modification of the nodal joint in the "Porcupine" specimens; for in the figure which Filhol gives to illustrate the mode of attachment of those dredged by the "Talisman," the lowest nodal joint is represented as not in contact with the rock beneath, to which its cirri are soldered; so that it might very well have been thickened and rounded in the manner described above. But this supposition, while removing one difficulty, only introduces another. The "Porcupine" specimens were living on a bottom of ooze at a depth of 1095 fathoms, considerably greater than the 1500 metres (800 fathoms) at which the "Talisman" examples were discovered on a rocky or stony bottom. Now in the first place, the cirri could not solder themselves to this ooze with such firmness that they would break rather than loose their hold; and secondly, there is no trace of such a connection in the cirri borne by the modified lowest nodal joint of any of the "Porcupine" specimens. For in some individuals (Pl. XIX. fig. 1) they are as perfect as those at the nodes above them, and not broken as they were in the detached specimens dredged by the "Talisman." In the case of *Rhizocrinus*, however, the attachment of the radicular cirri to stones and shells by slight calcareous expansions is well known (Pl. X. fig. 15).

All the Challenger Pentacrinidæ, with one exception, were dredged from mud or ooze, and though the stems of several of them terminate below in a rounded nodal joint as in the "Porcupine" examples of *Pentacrinus wyville-thomsoni*, I have seen no traces of their being attached by the cirri of the lowest whorl soldering themselves to the bottom, as described by the French zoologists.

The condition of four species of *Pentacrinus* which I have carefully examined with reference to this point appears to me to show conclusively that these observations have by no means the general application which is claimed for them. The internodes of *Pentacrinus wyville-thomsoni* are very long, while the cirri are short (Pl. XIX. fig. 1), so that only those of the lowest whorl can come in contact with anything beneath the lowest nodal joint. But the case is far different in many other species, among which I select four for special consideration, as they are represented by individuals in which the lowest whorls of cirri are better preserved than usual. In the present condition of many of the specimens several of the cirri on the stem are more or less broken; and though in the