than in *Pentacrinus asterius*. There are fewer joints between the successive axillaries, and the characters of the pinnules are altogether different. In these latter points *Pentacrinus mülleri* closely resembles *Pentacrinus maclearanus* (Pl. XVI.), *Pentacrinus wyville-thomsoni* (Pl. XVIII. fig. 1), and *Pentacrinus alternicirrus* (Pl. XXV.). But the first named has only one or two internodal joints in the stem, while *Pentacrinus wyville-thomsoni* has from thirty to forty-five, so that they are both readily distinguishable from *Pentacrinus mülleri;* while the grouping of the cirri on the stem of *Pentacrinus alternicirrus* is sufficient to distinguish this species at once.

So far as I can judge from the material at my disposal, *Pentacrinus mülleri* is certainly the most variable of the Pentacrinidæ with the exception of *Pentacrinus decorus*. The stem does not seem to reach the length which it attains both in the latter species and in *Pentacrinus asterius*. In one instance it is rounded off at the twelfth node, only 135 mm. from the calyx, and Rhizopods are attached to the under surface of the lowest nodal joint. Another stem tapers gradually downwards from a width of 5 mm. at the calyx to 3 mm. at the sixteenth node, where it is rounded off 185 mm. from the calyx.

The length of the internodes varies a good deal in different individuals, though as a rule it is tolerably constant in any given stem. The component joints are usually thick and thin alternately. This is very marked in the specimen represented in Pl. XIV., though not well shown in the figure; while in other cases the joints are more equal in height, as shown in Pl. XV. fig. 4. This figure should be compared with the corresponding one of *Pentacrinus asterius* (Pl. XIII. fig. 8), in which the cirrus-sockets are not so deeply hollowed as they are in *Pentacrinus mülleri*. Their shape, too, is somewhat variable in the latter type. In some stems (Pl. XV. fig. 4) they are transversely oval as in *Pentacrinus asterius* (Pl. XIII. figs. 4, 8), though not reaching so near the top of the nodal joint. But they always extend slightly downwards on to the hypozygal, which is not the case in that species. In other examples, however, the hypozygal is deeply grooved to receive the bases of the cirri, and the sockets thus become more circular in form; so that it appears as if the cirri were borne conjointly by the two syzygial joints. This has been described as an important difference between *Pentacrinus mülleri* and *Pentacrinus asterius*, but erroneously so; for the whole of the articular surface is always on the nodal joint, which is the only one pierced by the canals lodging the cirrus-vessels.

The cirri, though always stout, are considerably shorter in some forms than they are in others; and while some of them have quite smooth terminal joints, those of other individuals bear small blunt processes which never, however, reach to the size of a spine.

The "Blake" collection includes a curious fragment of a stem which had broken between a nodal joint and the first joint of the internode above it. The upper part of the stem and the calyx are missing; but six irregularly shaped joints have been added above the node. One would like to know whether this reparation would ever have resulted in the formation of a new calyx and arms. Such an extensive reparation