(itself a syzygy) in a singular specimen of *Pentacrinus decorus*, which was dredged by the "Blake" (*ante*, p. 336).

In *Metacrinus*, however, the number of primitive radials is typically either five or eight. In both cases the second and third of these eventually become united by syzygy, and the latter, which corresponds exactly to the third radial in the abnormal *Pentacrinus müllerí* already mentioned (Pl. XV. fig. 2), bears a pinnule, as does also the next joint, which is sometimes followed by the axillary (Pl. XXXIX. fig. 1; Pl. XLIII. fig. 2). When there are eight primitive radials the original fifth and sixth joints become united by syzygy in the same way; so that the ray is described as consisting of six joints, of which the second and fourth are syzygial, both of these as well as the third and fifth bearing pinnules (Pl. XLVI.; Pl. L. fig. 1).

These pinnules also afford a very good distinguishing character of *Metacrinus*. Their lower and middle joints are very large and massive, having a considerable vertical height in addition to their thickness from side to side; while one or two of the basal joints are nearly cubical in appearance (Pl. XXXIX. fig. 1; Pl. XLIII. figs. 2, 4; Pl. XLVI.; Pl. XLVIII. fig. 1; Pl. L. fig. 1). The later joints, while remaining long and high, gradually diminish in breadth so that they come to be prismatic, with a sharp dorsal edge. The distichal and palmar pinnules have the same characters as those on the radials, though in a less prominent degree.

The shape and large size of their joints are well shown in Pl. XXXIX. fig. 2, and in Pl. XLIII. fig. 2. There is no regularity as to the side of the ray on which the first pinnule occurs; so that the same interradial space may be occupied by the first pinnules of two rays as is shown on the right of Pl. XXXIX. fig 1; while on the left of the same figure the second pinnules of two rays also occur in the same interradius. This not unfrequently causes a certain amount of crowding; and it is not uncommon for one of the later radial or lower distichal pinnules to be very much flattened laterally and almost knife-like in appearance, while the corresponding pinnules on the other rays of the same individual are large and massive.

About the level of the distichal axillary, or rather farther out if the number of arms be large, the stout lower pinnules begin to lose their distinguishing characters and to pass gradually into the ordinary pinnules of the free arms. The transition is very difficult to explain without a long series of figures illustrating its successive stages, and it varies a good deal in different types; but it may be generally described as a flattening of the pinnule-joints (as it were) against the arm and against the succeeding pinnules. They thus retain a considerable height in a vertical (dorsoventral) direction and have a sharp dorsal edge, with the exception of the lowest joints which are set in a different plane from their successors and are often of a much greater width. This is the case, for example, in the palmar and lower brachial pinnules of *Metacrinus moseleyi* as seen on the left hand ray of the specimen represented in Pl. XLVI.; while in *Metacrinus*