Among the recent Pentacrinidæ there is but one solitary example of a uniformly ten-armed type, which embraces a majority of the species of *Antedon*. This is *Pentacrinus naresianus*, represented in Pls. XXVIII.–XXX.

Owing to the fragmentary condition in which many of the fossil Pentacrinidæ occur, it is impossible to say much about the nature of their arm-divisions. But in *Pentacrinus beaugrandi*, de Loriol,[1] sp., the remains of the primary arms bear no axillaries up to the twelfth joint from the radials; while eleven simple joints are still preserved in the specimen from the Lias of Vaihingen, which is referred by Quenstedt to *Pentacrinus tuberculatus*.[2]

Reference has already been made to the low state of development of the arms of recent Pentacrinidæ as compared with those of Comatulæ (*ante*, p. 55). They are fewer in number (*i.e.*, when multiradiate forms are compared), and have both pinnules and ambulacral plating less developed towards their ends; while the number of joints separating successive axillaries is far more variable within specific limits, and does not seem to have become tolerably fixed as is the case in the Comatulæ. Singularly enough, the two species *Pentacrinus wyville-thomsoni* and *Pentacrinus alternicirrus*, in which the distichal and palmar series are most uniform, are the very ones which most resemble the Comatulæ in their mode of life (*ante*, p. 19).

It is curious that in the Pentacrinidæ and Apiocrinidæ the external appearance of the arm-joints should be so much more constant than it is among the Comatulæ. In the latter family the arm-joints may be saucer-shaped, more or less sharply wedge-shaped, &c., and it is in many cases easy to identify a species from detached portions of the arms, especially as there is also very considerable variation in the characters of the pinnules. But both in *Pentacrinus* and in *Metacrinus* there is a very great sameness, not only in the form of the arm-joints as seen from their dorsal side, but also in the appearance of the pinnules which they bear. The tubercular projections on the pinnule-joints of *Pentacrinus asterius* (Pl. XIII. figs. 1, 14), and the indications of carination on the pinnules of a few species of *Metacrinus*, are almost the only variations in the character of the pinnules through all the recent species of the family. It is true that the features of the lower pinnules of *Metacrinus* are such as to afford a character of some generic value for separating it from *Pentacrinus*. But with the exceptions above mentioned the pinnules of all the different species of *Metacrinus* are very much alike. Both in this genus and in *Pentacrinus* the arm-joints are almost invariably of the transversely oblong type (Pls. XI., XIV.; Pl. XV. figs. 2, 3; Pl. XVI.; Pl. XVIII. figs. 1–3; Pl. XIX. figs. 1, 6, 7; Pls. XXV., XXXVI., XXXVIII., XLII., XLIII.–XLVI., XLVIII., XLIX., LII.); and the same is the case in most, if not all, of the fossil species. It is therefore at first sight by no means easy to identify the species to which isolated

[1] Monographie des Étages Jurassiques Supérieurs de Boulogne-sur-Mer, 2me partie, p. 298, pl. xxxvi. fig. 23, *a*.

[2] Encriniden, Tab. 97, fig. 39.