

muscles are ever found between the second and axillary radials of any Neocrinoid except *Eudesicrinus* (p. 215), nor (except in *Metacrinus*) between the first and second brachials, unless the latter be a syzygial joint. In the aberrant *Metacrinus*, however, the second radial is a syzygial joint (Pl. XII. figs. 7–10) and the axillary is usually either the fourth or the sixth radial (Pl. XII. figs. 3, 4; Pl. XXXIX. fig. 1; Pls. XLII., XLIII., XLV., XLVI., XLVIII.–LI.); and there is usually a syzygy in the third joint after each successive axillary, just as in the free arms of most Comatulæ. But the first two joints are united by muscles instead of by ligaments, as in the Comatulæ; and I have not met with any instances of bifascial articulation in the arms of this genus, which have nothing but syzygies and muscular unions like the arms of *Actinometra solaris* or *Actinometra typica*.

Each pinnule has a muscular attachment to the arm-joint which bears it (Pl. Vc. fig. 2, *m*; Pl. VIIa. fig. 21; Pl. XVII. fig. 1; Pl. XXXa. figs. 10*a*, 12*a*; Pl. XLI. fig. 11; Pl. XLVII. figs. 11, 12); while in *Metacrinus* and some tropical Comatulæ the lower joints of the pinnules are united by muscles instead of by ligaments or suture only (Pl. XIII. fig. 12).

The articular face of a joint which is connected with its successor by muscular bundles presents a variety of fossæ separated by intervening ridges, that are frequently somewhat ill defined (Pl. VIIa. figs. 15, 17, 18, 19, 21, 23; Pl. X. figs. 1–4; Pl. XII. figs. 3–6, 8, 9, 12, 15, 19, 20, 23; Pl. XXI. figs. 1*a*, 1*b*, 2*a*, 2*b*, 3*b*, 4*b*, 5*c*, 6*d*, &c.). Beneath its upper and lateral edges lie the two fossæ in which the muscular bundles are attached (Pl. VIIa. fig. 15, *rm'*). They are sometimes separated by a vertical ridge as on the first radials of *Antedon phalangium*, *Antedon eschrichti*, and of most species of *Antedon* and *Promachocrinus*; and sometimes by a groove which may extend downwards to the articular rim around the opening of the central canal, as in the first radials of *Antedon rosacea* and most species of *Actinometra* and *Pentacrinus* (Pl. XXI. fig. 6*d*). In these last types the fossæ are comparatively small; but in *Promachocrinus* and in most species of *Antedon* they occupy nearly or quite half of the articular face, as in *Bathycrinus aldrichianus* (Pl. VIIa. fig. 15, *rm'*; Pl. VIIb. fig. 5, *rm*). Below the muscular fossæ, and separated from them by more or less distinct ridges, are those lodging the interarticular ligaments (Pl. VIIa. fig. 15, *li'*; Pl. VIIb. fig. 5, and Pl. VIIIa. fig. 7, *li*). They are bounded below by the transverse articular ridge, which is pierced by the opening of the central canal. This is usually surrounded by a more or less prominent rim, from which the ridges start that separate the muscular fossæ from the ligamentous ones and from one another. All these characters are much less distinct in the Pentacrinidæ than in the Comatulæ.

Beneath the transverse ridge, and bounded below by the curved edge of the articular face is a large fossa extending right across the face and lodging the dorsal elastic ligament (Pl. VIIa. fig. 15, *ld'*; Pl. VIIb. fig. 5, and Pl. VIIIa. fig. 7, *ld*). As a general rule this ligament is chiefly concentrated in a small, more or less oval pit situated