

contained in it are continued from one joint to another between the two large muscular bundles that unite them. In *Antedon eschrichti* and in many other Comatulæ, more especially those belonging to the genus *Actinometra*, this arm-groove merely lodges the lowest part of the coeliac canal; while the genital cord, with the water-vascular and blood-vascular trunks and the ambulacral epithelium, are all situated above the arm-groove, and separated from it by a variable amount of intervening perisome, so that little more than half the vertical height of the arm is due to its dorsal skeleton. The lower parts of the arms in *Metacrinus murrayi* present a somewhat similar condition (Pl. XLI. fig. 13).

In other Comatulæ, however, and in *Pentacrinus* a great part, sometimes even the whole, of the soft parts of the arm are lodged within the groove on the upper surface of the skeleton (Pl. XVII. figs. 1, 4; Pl. XXVII. fig. 6); and there is no substantial ventral perisome in the ordinary sense of the word, or it is reduced to a mere film, sometimes thinly plated, which covers up the muscular bundles. In many species, and especially in the small deep-sea Comatulæ, this layer of perisome is excessively thin and transparent, so that the food-groove appears to rest upon and between the muscular bundles. In some of the tropical *Antedons*, however, it bears a continuation of the anambulacral plates of the disk, and this is also the case in *Pentacrinus wyville-thomsoni*, *Pentacrinus alternicirrus*, *Pentacrinus naresianus*, and *Pentacrinus blakei* (Pl. XVII. fig. 4; Pl. XXVII. figs. 6, 13; Pl. XXXIII. fig. 3). The third of these, *Pentacrinus naresianus*, has the greatest development of this plated perisome on the arms (Pl. XXVII. fig. 13). It is continuous from one pinnule socket to the next on the same side, so as to cover in both the muscular bundles and also the upper surface of the intervening arm-joint; and the ambulacra are thus distinctly above and outside the arm-groove. They are bordered by large oval covering plates which overlap alternately from opposite sides, and are continued on to the pinnules (Pl. XXVII. figs. 11, 12). These plates do not rest directly upon the pinnule-joints, but are separated from them by a thin limestone band which is a continuation of the lateral plating of the arm. It does not, however, exhibit any differentiation into side plates, though its edges are cut out into alternate teeth and notches (Pl. XXVII. fig. 11). The latter are occupied by the tentacles, but can be closed, or nearly so, by the covering plates which rest on the intervening teeth.

In the arms of *Pentacrinus blakei* (Pl. XXXIII. fig. 3) the sides of the joints bend inwards towards the middle line more than they do in *Pentacrinus naresianus*, so that the arm-groove is narrower, and the ambulacrum practically coincides with it instead of lying above it. It is bordered by long plates which are really the covering plates fused with the side plates. When they pass on to the pinnules the former become more differentiated, but the latter lose their individuality and become parts of a continuous denticulated band just as in *Pentacrinus naresianus* (Pl. XXXIII. fig. 1).