

Thomson¹ described them as extending from end to end of the stem; but this is not strictly true. At the top of the stem where the young nodal joints are very close together and of no great thickness (Pl. XIII. fig. 1; Pl. XV. fig. 1; Pl. XXXI. fig. 2; Pl. XXXVII. figs. 1, 2; Pl. XXXIX. fig. 1; Pl. XLIII. fig. 2; Pl. XLIX. fig. 2), these bands of ligament are, no doubt, directly continuous from their attachment to the basals above, through more or fewer of the last-formed nodes and internodes. But this is certainly not the case in the lower parts of the stem. For after it has been decalcified the nodal and infra-nodal joints which form the syzygies are just as readily separable from one another as they are after the animal matter has been removed by the action of hot alkalies. This would obviously be impossible if the fibrous bands passed right through the joints "from one end of the stem to the other;" while, as a matter of fact, their terminations in the substance of the nodal or infra-nodal joints may be readily traced by microscopic examination. They correspond to the five radiating petaloid figures which are so well known on the surfaces of the stem-joints of the Pentacrinidæ (Pl. XV. fig. 5; Pl. XXVI. figs. 17, 18; Pl. XXX. figs. 28-30; Pl. XXXa. fig. 7; Pl. XXXIX. figs. 4-10; Pl. XLI. figs. 2, 3, 6, 7, 16, 17; Pl. XLVII. figs. 3-5, 7-9); and they are characterised by a somewhat looser calcareous reticulation than exists in the remaining portions of the joint (Pl. XXIII. fig. 3). The apposed faces are more or less cut up into ridges with intervening furrows; and the ridges on the lower face of the one joint correspond to the furrows on the upper face of that below it. (Pl. XV. figs. 1, 2; Pl. XIX. figs. 2-5; Pl. XXVII. fig. 1; Pl. XXXVI. ; Pl. XLI. figs. 1, 5; Pl. XLVII. figs. 1, 2, 6; Pl. XLIX. fig. 3). Hence, while the composition of the stem out of a large number of discoidal joints gives it a certain amount of motion, that motion is very limited; and it is probably only of a passive character, due to currents in the water, &c., and independent of the will of the animal. In this respect it differs from the rays and their subdivisions, the joints of which are united by pairs of muscular bundles (Pl. Vc. fig. 2, *m.*; Pl. VIIb. figs. 1, 5; Pl. VIIIa. fig. 7, *rm.*; Pl. XXXIX. fig. 13; Pl. XLI. fig. 11); and the contractions of these bundles are governed by an influence proceeding outwards from the fibrillar envelope round the chambered organ in the calyx (Pl. VIIb. figs. 1, 2; Pl. XXIV. figs. 6-8; Pl. LVIII. figs. 1, 3—*ch*) along the axial cords of the rays and arms (Pl. Vc. fig. 2. Pl. VIIb. figs. 1, 5-8; Pl. VIIIa. figs. 5, 7, 8; Pl. XXIV. fig. 9—*A*. Pl. LXII.).

Although there are no true articular surfaces on the stem-joints of the Pentacrinidæ in the sense in which that term is employed in anatomy, yet this is by no means the case in the Bourgueticrinidæ. In all the members of this family there are true articulations between the successive stem-joints, of the same nature as those between the cirrus-joints of all Crinoids, and between the two outer radials of most Comatulæ and of some species of *Pentacrinus*. But they are effected only through the agency of

¹ Sea Lilies, p. 3.