

canal; while the fossæ for the attachment of the ligaments are on either side of it (Pl. VIIa. figs. 7-11; Pl. X. figs. 11-14).

A similar mode of articulation occurs between the two outer radials of most Comatulæ and of a few species of *Pentacrinus* (Pl. XXX. figs. 11, 12; Pl. XXXII. figs. 16, 17; Pl. XXXIV. figs. 3, 6), as well as in the fossil *Extracrinus*, *Apiocrinus*, and *Millericrinus*. It is likewise very common between the first two joints after the radial and every other successive axillary, in those species which have branching arms; and also between some of the lowest pinnule joints. It has often been incorrectly described as a syzygy or a modified syzygy, though clearly distinguished therefrom by Müller¹ and by Dr. Carpenter.² Each of the two apposed faces is divided into two lateral halves by a vertical ridge pierced by the opening of the central canal, around which it is more prominent than at its ends. These fossæ lodge the strong interarticular ligaments, and no muscular bundles are interposed between the two joints. They are only capable of lateral movement upon one another, and cannot take part in any movements of flexion or extension, in which they act as a single segment only.

A peculiar modification of this bifascial articulation, as it may be called, occurs in *Bathycrinus*. It is naturally best seen between the two outer radials (Pl. VIIa. fig. 16) and the two lowest brachials, on account of their larger size; but it may be traced all through the arms (Pl. VIIa. figs. 20, 22). It was wrongly described as a syzygy by Sir Wyville Thomson in *Bathycrinus aldrichianus*,³ and also by Danielssen and Koren in *Bathycrinus carpenteri*.⁴ The vertical articular ridge is relatively large, and the two fossæ at its sides small in proportion (Pl. VIIa. figs. 16, 20, 22, *li'*). But at its lower end is a small though tolerably deep pit (*ld'*), which lodges a bundle of closely set ligament-fibres corresponding to those forming the dorsal ligament in an ordinary muscular joint (Pl. VIIb. fig. 5, *ld*). This bundle probably enables the two joints to take a larger share in the movements of flexion and extension than is possible in the bifascial articulations of the other Crinoids. The three ligaments, viz., the two lateral ones (*li*) and the median one on the dorsal side (*ld*) are all seen in section in Pl. VIIb. fig. 8.

A side view of a decalcified arm shows that there is a greater length of ligament between the two joints united in this way than there is between two joints which are united by syzygy in the much larger arm of a *Pentacrinus*; and though its length is but little greater than that of the fibres forming the syzygies in the arms of *Rhizocrinus rawsoni*, yet the latter are less numerous than in the trifascial articulation of *Bathycrinus*, especially on the upper (ventral) side of the central canal.

In all the four species of *Bathycrinus* which are considered in this Report, a trifascial articulation, like that between the two outer radials, occurs between the first and second,

¹ *Op. cit.*, pp. 26, 30.

² *Op. cit.*, pp. 715, 716.

³ *Journ. Linn. Soc. Lond. (Zool.)*, vol. xiii. p. 50, 1876.

⁴ *Ilycrinus carpenteri*, *Nyt Magazin for Naturvidenskaberne*, Bd. xxiii. pp. 6-8 (of separate copy).