

expanded ends, while the articular ridges in the long axes of the terminal faces cross one another at various angles.

This mode of articulation is common to all the Bourgueticrinidæ, though the stem-joints are not always so long as in *Rhizocrinus* and *Bathycrinus*. It occurs also in the curious genus *Thiolliericrinus* and in the stem of the larval *Comatula*. Both *Thiolliericrinus* and *Bourgueticrinus* occur in the Jurassic rocks; while the same kind of column as occurs in these genera existed also in the Carboniferous *Platycrinus*, and according to Messrs. Wachsmuth and Springer¹ "forms one of the most characteristic features of the genus."

There is a considerable amount of variation among the different members of the Bourgueticrinidæ in the characters of the terminal faces of the stem-joints. In the Jurassic genus *Thiolliericrinus*, in *Bourgueticrinus* (Jurassic and Cretaceous), and in the Cretaceous *Mesocrinus* the articular ridge is narrow and linear, expanding somewhat around the opening of the central canal to form the real articular surface.²

In all these genera a median groove extends along each half of the ridge, from the central opening towards the margin of the joint face; and short shallow branches proceed from it on either side so as to cut out the upper portion of the ridge into a double row of small teeth.

In *Thiolliericrinus*, *Mesocrinus*, and *Bourgueticrinus ellipticus* the ligament-fossæ at the sides of the articular ridge are either uniformly shallow throughout their whole extent, or they are deepest in the immediate neighbourhood of the central canal. But they are completely separated from one another by the articular ridge, which is continuous from end to end of the elliptical surface. Very much the same is the case in the upper and middle stem-joints of *Bathycrinus* (Pl. VIIa. figs. 8, 9), except that the articular ridge is relatively larger and is destitute of teeth. But in the lowest stem-joints of this genus (Pl. VII. figs. 12, 13; Pl. VIIa. fig. 11), and in all parts of the stem of *Rhizocrinus* (Pl. X. figs. 11-14), the articular surface is incomplete, and instead of surrounding the central canal, is actually divided by it into two trihedral portions, the upper edges of which are toothed just like the corresponding parts of the complete ridge in *Bourgueticrinus ellipticus* or *Mesocrinus*. The two ligament-fossæ communicate with one another around the opening of the central canal, which thus appears to lie at the bottom of a deep depression. Quenstedt³ figures some stem-joints of this kind from the white chalk of Rügen under the name of *Apiocrinus constrictus*.

¹ Revision of the Palæocrinoidea, part ii., *Proc. Acad. Nat. Sci. Philad.*, 1881, p. 69 (243).

² In a stem-joint from the Mæstricht Chalk, which is figured by Quenstedt as *Apiocrinus (Bourgueticrinus) ellipticus* (Encriniden, Tab. 104, fig. 70), there is no articular ridge at all, but merely an oval articular surface around the opening of the central canal. Unless this be the result of an accidental removal of the ends of the articular ridge, it is a somewhat striking peculiarity which tends to approach the condition of the middle stem-joints in *Bathycrinus*, and has a still closer resemblance to a form of articular surface which is especially characteristic of the cirrus-joints (*ante*, pp. 7, 8).

³ Encriniden, Tab. 104, figs. 64-66.