be a permanent inequality, large and small joints alternating all down the stem. This is the case, for example, in the fossil *Pentacrinus jaccardi* and *Pentacrinus nicoleti* figured by de Loriol,[1] and also to some extent in the recent *Metacrinus moseleyi* (Pls. XLV., XLVI.).

There is very little difference between the upper and the under faces of the young nodal joints, or between either of them and the ordinary internodal joint (Pl. XXII. figs. 1, 6–8, 15; Pl. XXXa. figs. 2, 3; Pl. XXXVII. figs. 14–16; Pl. LI. figs. 2–5). But as the joints become older and more pentagonal their differences are more apparent (Pl. XIII. figs. 2, 3, 5, 6, 10; Pl. XXII. figs. 16–18; Pl. XXXVII. figs. 11–13, 17, 18); while in the lower part of the stem the simple syzygial nature of the under face of the nodal joint and its loss of the denticulate petaloid markings become very distinct (Pl. XV. fig. 6; Pl. XXII. figs. 19, 20; Pl. XXVI. figs. 13, 14; Pl. XXVII. figs. 2, 3; Pl. XXX. figs. 26, 27; Pl. XXXVII. figs. 21, 22; Pl. XXXIX. figs. 4, 5; Pl. XLV. figs. 4, 5; Pl. L. figs. 21, 22).

In some species of *Pentacrinus*, *e.g.*, *Pentacrinus wyville-thomsoni*, the lowest and therefore the oldest stem-joints gradually lose the more or less prominent ridges which appear on the faces of those higher up the stem, and become much more smooth and simple in their character (Pl. XXII. figs. 23–26).

A similar change seems to take place in *Pentacrinus asteria* (Pl. XIII. figs. 10, 11), and also in other species, though I have not been able to trace it so distinctly as in *Pentacrinus wyville-thomsoni*. It is manifested externally by the gradual disappearance of the crenulation of the interarticular lines, which is so very prominent in the upper and middle parts of the stem (Pl. XIII. figs. 7, 8; Pl. XV. figs. 1, 2, 4; Pl. XIX. figs. 2–5; Pl. XXV.; Pl. XXVII. fig. 1; Pl. XXXI. fig. 3; Pls. XXXV.–XXXVII.; Pl. XLI. figs. 1, 5, 15; Pl. XLIII. fig. 1).

The amount of crenulation varies considerably in different species, according to the position of the large teeth bordering the outer ends of the petaloid spaces. When these start from near the edge of the joint, as in *Metacrinus cingulatus*, *Metacrinus nobilis*, or *Metacrinus costatus* (Pl. XLI. figs. 1–3, 5–7; Pl. XLIX. figs. 3–5), the interarticular line is well crenulated. But there is sometimes a sort of rim outside the ends of the teeth, as in *Metacrinus murrayi* and *Metacrinus varians* (Pl. XLI. figs. 15, 17; Pl. XLVII. figs. 6–9), and the external crenulation is then less marked. This outer rim is only formed comparatively late, the teeth of a young joint starting directly from its edge, as is well shown in Pls. XXII., XXIII., and XXXVII.

The increase in the length of the internodes only takes place gradually, and *pari passu* with the continual formation of new joints just below the calyx. Hence, in the upper part of the stem, there is a variable number of premature internodes, those nearest the summit being the shortest, and consisting of the smallest number of joints. The

[1] Swiss Crinoids, pp. 130, 140, pl. xv. figs. 13, 36.