

types from the group of the Neocrinoids, to which they have been already provisionally referred by de Loriol.

Both have uniserial arms, a symmetrical calyx, and no anal side; while in *Marsupites*, at any rate, the first radials were perforated by canals, and united to the second by muscular joints. Interradial plates, however, are well developed in both genera, especially in *Uintacrinus*. But the upper series of so-called interradial and interdistichal or interaxillary plates are really parts of the radial system, and correspond to the pinnules of free arms, as was pointed out by Meek. At the same time he noted their unusual size, and the fact that they are united with each other and with the main divisions of the rays for some distance up, so as to constitute a part of the walls of the body.¹

Schlüter,² to whom Meek's remarks seem to have been unknown, speaks of this as a possibility, but rejects it on account of the absence of a central canal in the supposed pinnule-joints, and other less important reasons. I cannot help suspecting, however, that the canal will be found, and that the plates in question are really the basal joints of the large lower pinnules. He describes how these plates group themselves together in double rows, the lowest of which "geht aus von dem zweiten Distichalgliede. Sie besteht vielleicht aus 9 Stücken jederseits. Die folgende Doppelreihe, aus kleineren Täfelchen zusammengesetzt, nimmt ihren Anfang vom fünften Stücke über dem Axillare." The first pinnule being on the second brachial, the next on the same side would be on the fourth; but since the third is a syzygial or double joint, the fourth brachial is primitively the fifth above the axillary; while Schlüter's figures³ show that the double row of interdistichal pieces which "nehmen ihren Anfang vom vierten Distichale aus" are really the pinnules on the epizygals of the two third brachials. There are many species of recent Crinoids (*Pentacrinus*, *Metacrinus*, *Actinometra*) which have large lower pinnules with the basal joints closely fitted together just as in *Uintacrinus* (Pl. XXXVIII.; Pl. XXXIX. fig. 1; Pl. XLIII. fig. 2; Pl. LII. fig. 1); so that the supposed resemblance in this respect between *Uintacrinus* and the Palæocrinoids goes for nothing. Apart from these two genera there are no Secondary Crinoids which could by any possibility be referred to the Tessellata; and this is still more emphatically the case with the Tertiary and recent forms. It is true that the most striking characters of the recent *Thaumatocrinus* (Pl. LVI. figs. 1-4) indicate an affinity to early Palæozoic types (*ante*, pp. 39-46); but, considering that *Thaumatocrinus* is a *Comatula*, it is more than probable that this resemblance is not due to any genetic connection.

Thus then I regard the Neocrinoids as constituting a group or subclass which is distinctly marked off from its Palæozoic predecessors. These became extinct with the Palæozoic epoch, like the Blastoids, Cystids, and Palæchinoids. The latter in fact

¹ Grinnel, Note on the genus *Uintacrinus*, Bull. U.S. Geol. and Geog. Survey of the Territories, vol. ii., No. 4, p. 377.

² *Op. cit.*, p. 58.

³ *Op. cit.*, Taf. iv. figs. 1, 3.