

plate. *Hexacrinus*, *Dichocrinus*, and their allies present a similar condition. In a few genera of the Rhodocrinidæ, which have been grouped together into a section *Rhodocrinites* by Wachsmuth and Springer, the radials are not contiguous laterally; but between every two there is an interradial plate which rests on a basal below.

This character, which occurs in no stalked Neocrinoid, either recent or fossil, reappears in the singular Comatulid *Thaumatocrinus*¹ (Pl. LVI. figs. 1-4). But with this exception all the primary radials of every adult Neocrinoid, recent or fossil, stalked or free, form a complete ring.

Calyx-interradials are very usually present in the Palæocrinoids, helping, together with the higher orders of radials, to increase the size of the cup, and strengthen its walls.

According to Wachsmuth and Springer² "The first interradial is always larger than any of the rest, and is situated between the upper sloping margins of the adjoining first radials, except in some species of the Rhodocrinidæ, in which it rests directly upon the basals, separating the ring completely. There are generally two plates in the second series, and two or three in each succeeding one."

In the Mesozoic genus *Guettardicrinus*, and in some species of *Apiocrinus* (*Apiocrinus martini*, *Apiocrinus roissyanus*), there are calyx-interradials essentially similar to those of the Palæocrinoids. Each series commences with a single plate resting upon the upper angles of two first radials which are truncated for its reception (see fig. 9, on p. 183). It is followed by several others, more or less irregularly arranged; and these, together with the two outer radials, and sometimes also the two lower brachials, form the immovable wall of a large cup just as in the Palæocrinoids. No recent Crinoid presents this condition, at any rate in the adult state; though it occurs in many Ophiurids, as pointed out elsewhere.³ But in all the Pentacrinidæ, recent and fossil,⁴ the interradials, if present, are not calyx-plates at all, but merely small and more or less irregular plates developed in the perisome which unites the rays and their subdivisions (Pl. XIII. fig. 1; Pl. XXXI. fig. 2; Pl. XXXIV. fig. 1; Pl. XXXV. fig. 2; Pl. XXXVII. fig. 1; Pl. L. fig. 1). It would seem, however, that regular calyx-interradials may appear in the early larval stages of *Antedon rosacea*. At any rate this is the way in which I should interpret the following statement by Sir Wyville Thomson.⁵ "In one or two cases, however, I have observed about the time of the first appearance of the anal plate, a series of five minute rounded plates developed interradially between the lower edges of the oral plates and the upper edges of the basals." These plates therefore, separate the radials from one another all round the calyx. Their ultimate fate is uncertain. Sir

¹ On a new Crinoid from the Southern Sea, *Phil. Trans.*, 1883, pp. 919-926, pl. 71.

² Revision, part ii. p. 12.

³ On the Apical System of Ophiurids, *Quart. Journ. Micr. Sci.*, vol. xxiv., N.S., January 1884, p. 12.

⁴ See, for example, Quenstedt's *Encriniden*, Tab. 101, figs. 23, 39A; Austin's *Crinoidea*, pl. xiii. fig. 1c; and Buckland's *Geology* (Bridgewater Treatise), vol. ii., pl. liii. fig. 2.

⁵ *Phil. Trans.*, 1865, p. 540.