

they might then have been lost after the decay of the perisome uniting them. Those of *Holopus* were retained in the dry specimen which was figured by Pourtalès,¹ and subsequently by Sir Wyville Thomson; and the condition of the Palæozoic *Coccoocrinus* seems to me to be entirely explained by that of the recent *Holopus*.

Wachsmuth and Springer² describe it as follows:—"In well preserved specimens of *Coccoocrinus*, the vault is constructed of five large oral plates, which rest upon five interradial pieces. The oral plates are not in contact laterally, but leave five slits, which in the fossil have no floor nor covering, and leave an open space in the centre." They are strikingly similar to the orals of the recent *Hyocrinus* (Pl. VI. figs. 1-4), as has been pointed out by Zittel; and the resemblance to the orals of *Holopus* (Pl. III. fig. 2) is still greater, as the latter rest directly against the calyx plates, which is not the case in *Hyocrinus*. In both the recent forms and also in *Thaumatocrinus* (Pl. LVI. fig. 5) the clefts between the triangular oral plates are open and uncovered, as in *Coccoocrinus*. Schultze³ follows Roemer in thinking that these slits do not penetrate into the cavity of the calyx; but that they were hollows for the reception of the arm bases, as in *Eucalyptocrinus*. But Wachsmuth, having examined Schultze's specimens, states distinctly that these grooves have no floor. He says in the Revision (part ii. p. 17) that "the similarity to *Hyocrinus* is probably merely superficial, as the lateral grooves in *Coccoocrinus* were evidently (*why?*) closed by additional plates as in other Platycrinidæ, while they are open in *Hyocrinus*." Again "it is evident that the central space and open furrows were covered in the animal as in similar genera." The oral plates "do not join laterally nor in the centre, but leave a median space and lateral slits, which in perfect specimens were doubtless closed, the one by the apical dome plates and the slits by small marginal pieces." . . . "In *Coccoocrinus* a covering of the ambulacral groove has not yet been observed, but, judging from the fissure between the oral plates, it probably rested just upon their edges, and formed an intermediate link between the vault structure of the Cyathocrinidæ and Platycrinidæ."⁴

When Wachsmuth wrote the passages which have been quoted above, he held, like Zittel and myself, that the five large triangular plates which rest on the primary interradials of the calyx are homologous with the orals of recent Crinoids. He has since, however, come to the conclusion that "*Coccoocrinus* had externally no oral plates, its so-called orals are secondary interradials, and mouth and food-grooves were covered by supra-oral plates" (Extract from Letter). I must confess that I greatly doubt the existence of this additional covering in *Coccoocrinus*, which seems to Wachsmuth so evident; for I find it difficult to believe that the "Scheitelstücke," as Schultze called them, are not oral plates like those of the Neocrinoids. It is of course possible that their resemblance to the orals of *Holopus*, *Hyocrinus*, and *Thaumatocrinus* is simply an

¹ Hassler Crinoids, pl. x. fig. 9.

³ *Op. cit.*, p. 89.

² Revision, part ii. pp. 17, 58.

⁴ Revision, part ii. pp. 17, 30, 58, 59.