

several recent researches have supplied further cogent reasons for rejecting the homologies which Lovén seeks to establish between the dorsocentral of an Urchin or Starfish and the under-basals of a dicyclic Crinoid.

Six years ago the numerous modifications of the apical system which are presented by Asterids and Ophiurids had received comparatively little attention; and I was therefore led to regard the under-basals of *Encrinus*, *Extracrinus*, and of the Palæozoic Crinoids as "additional elements which occur in the apical system of some Crinoids, while they are unrepresented in other members of the order and in the other Echinoderms."¹ Four years later, however,² I was able to show that the apical system of the young *Amphiura squamata*, which had been recently described by Ludwig,³ corresponded precisely with that of *Marsupites*, the type which was first selected by Lovén for comparison with *Salenia*. Both in *Amphiura* and in *Marsupites* there is a central abactinal plate representing the dorsocentral of an Urchin. Next to this come, not the interradial plates corresponding to the genitals of an Urchin and the basals of *Cyathocrinus*, as Lovén formerly supposed,⁴ but a ring of radially situated plates which correspond to the under-basals of *Cyathocrinus*, but are not represented at all in the apical system of an Urchin, as at present known. Outside these come the interradial basals (genitals) and then the radials (oculars). Ludwig discovered that the latter remain on the disk of *Amphiura*, and are not carried away from it by the growing arms as had been generally supposed.

Having discovered, as I believed, the homologues of the under-basals of a Crinoid in a larval Ophiurid, I naturally began to seek for them in the adult members of the class; and it soon appeared that they were represented in the rosette of primary plates which occupies the centre of the disk in certain species of *Ophioglypha*, *Ophioceramis*, *Ophiomusium*, and *Ophiozona*.⁵ At the same time two important discoveries bearing on this question were made by Sladen.⁶ (1) The radial plates of the larval Asterid remain on the disk, like those of the Ophiurid, and are not carried outwards by the growing arms, as was formerly supposed. (2) In the late larvæ of *Zoroaster fulgens*, *Asterina gibbosa*, *Asterias rubens*, *Asterias glacialis*, and other species, the so called genital plates (=basals of a Crinoid) are separated from the dorsocentral by a ring of radial plates which occupy exactly the same position as the under-basals of *Marsupites*, and the corresponding plates in the Ophiurids mentioned

¹ *Quart. Journ. Micr. Sci.*, 1878, vol. xviii., N. S., p. 374.

² *Ibid.*, 1882, vol. xxii. p. 380.

³ Zur Entwicklungsgeschichte des Ophiurenskelettes, *Zeitschr. f. wiss. Zool.*, Bd. xxxvi. 1882, pp. 181-200, Tafn. x., xi.

⁴ Lovén appears to have been so far influenced by my criticisms on his comparison of the radially placed under-basals of *Marsupites* with the interradial genitals of *Salenia* that he makes no further reference to the former type, although in his earlier "Études" he laid great stress upon its resemblance to *Salenia*. This is unfortunate, because the presence of a dorsocentral in *Marsupites*, as well as of under-basals homologous with those of *Cyathocrinus*, proves conclusively that the latter cannot represent the dorsocentral of *Marsupites*, and therefore of *Salenia*, as Lovén formerly supposed.

⁵ *Quart. Journ. Micr. Sci.*, 1884, vol. xxiv., N. S., p. 11.

⁶ *Ibid.*, pp. 29-34.