

the Crinoid larva have precisely the same relation to the vaso-peritoneal system as the corresponding plates (genitals and oculars) of an Urchin is a strong reason for not laying too much stress upon the negative evidence of a confessedly imperfect palæontological record.¹

In one respect it is somewhat unfortunate that the Urchins should have been selected as affording the typical apical system of the Echinozoa, with which that of a Crinoid could be compared. For their apical system is primitively a comparatively simple one; whereas many Crinoids have a ring of plates immediately beneath the basals which are unrepresented in the Urchins, though present in many Ophiurids and Asterids.

In his endeavour to find an early Crinoidal form with a calyx of the same simple description as the apical system of an Urchin, Professor Lovén² was led to select the genus *Cyathocrinus* (*Poteriocrinus*); and he proposed the following homologies between the two types:—

1. Dorsocentral of Urchin = the five under-basals of *Cyathocrinus* (the basals of J. Müller).
2. Genitals of Urchin = the five basals of *Cyathocrinus* (the parabasals of J. Müller).
3. Ocular plates of Urchin = radials of *Cyathocrinus*.

The two last of these propositions have been generally, but not universally, accepted. As regards the first, however, I am sorry to say that I have found myself unable to agree with Professor Lovén.

I pointed out six years ago³ that the under-basals of *Cyathocrinus* constitute an element in the calyx which is by no means so constant in its occurrence as it should be, were it a fundamental part of the apical system and homologous with the dorsocentral of an Urchin or Starfish. Under-basals are present in *Encrinus*, *Extracrinus*, and *Marsupites* among the Neocrinoids, and in *Cyathocrinus*, *Poteriocrinus*, *Rhodocrinus*, and a large number of allied genera among the Palæocrinoids; while they are absent in *Apio-crinus*, *Pentacrinus*, *Actinocrinus*, *Platy-crinus*, and in many other less known genera. When present, there are generally five distinct plates, resting on the upper stem-joint; and this fact, together with the want of constancy in their occurrence, caused me to suspect that they could not be collectively homologous to the primitively single dorsocentral plate of an Urchin or Starfish, as supposed by Lovén. I was therefore led to seek for the homologue of this last in the terminal plate at the end of the stem of the Pentacrinoid larva, which occupies the same position with regard to the right peritoneal tube as the dorsocentral of a larval Urchin or Starfish. This suggestion has been accepted by Lütken and by Sladen, as I have pointed out above (p. 168), though it is altogether ignored by Lovén. But no serious arguments have been yet brought forward against it by other authors who have discussed the question; while, on the other hand,

¹ Dr. Hoernes does not appear to have gone into the subject very deeply. I have nowhere suggested that the radials of an Urchin are homologous with the basals of a Crinoid; nor that the madreporite of *Clypeaster* is comparable to the centro-dorsal of *Comatula* and to the central plate in the calyx of *Marsupites*. Nevertheless Hoernes thinks fit to express his dissent from these views, which have originated with no one but himself, and he entirely misses the real point at issue.

² *Études, loc. cit.*, p. 80.

³ *Quart. Journ. Micr. Sci.*, 1878, vol. xviii., N. S., pp. 358-361.