

these plates. It appears to me very probable that this may also be the case in *Thaumacrinus* (Pl. LVI. figs. 1-4), *i.e.*, that the primary cords pass right up out of the basals into the interradials and then divide, so that the secondary cords would enter the sides of the radials as in *Bathycrinus*, instead of their inner ends as in *Pentacrinus* and *Comatula*.

G. THE SACCULI, AND THE COLOURING MATTERS.

The nature and functions of the sacculi are as much a puzzle to me now as they were when I first began to study the Crinoids in 1875; and I have nothing to add to the observations of Wyville Thomson and Perrier on their appearance in the living animal, both larval and adult. Colourless during life, they become strongly tinged after death by the pigment set free from the perisome. Their occurrence in the wall of the digestive tube in *Antedon rosacea* was first noticed by Ludwig; and I have found them in the very lowest part of the cup of a larva with five cirrus-stumps, just above the chambered organ. But this is the only species known to me which presents this peculiarity. In all other types in which the sacculi occur at all, they are invariably limited to the immediate neighbourhood of the water-vessels. Abundant in most species of *Antedon*, they never occur in *Actinometra*, and I suspect that Ludwig's reference to their presence in this genus is due to an oversight.¹ At any rate I have not been able to find them in *Actinometra trachygaster* and *Actinometra bennetti*, the two species which had come under his observation.

They vary considerably in distribution among the other genera of Comatulæ. I have not succeeded in finding them in *Thaumacrinus*, while they are but scantily developed in the three species of *Atelecrinus*. *Eudiocrinus indivisus* and *Eudiocrinus atlanticus* have them in abundance; while there are few in *Eudiocrinus varians* and none in *Eudiocrinus semperi* or in *Eudiocrinus japonicus*, so far as I have been able to make out. *Promachocrinus kerguelensis* has them on the pinnules, but they are very scanty or absent elsewhere. Neither have I found any in a small series of sections through a *Holopus*-arm; and though structures of the same nature occur sparingly in *Pentacrinus*, *Rhizocrinus*, and *Bathycrinus*, they are but poorly developed and irregular in their occurrence.

In some species of *Actinometra* individual vesicular bodies resembling the elements of the sacculi are scattered through the ventral perisome; but there is no regular arrangement of them into groups at the sides of the ambulacra as in the endocyclic Crinoids. When the ambulacra are plated, as in many tropical *Antedons*, the sacculi are lodged between the successive side plates, the front edges of which are notched for their reception (Pl. LIV. figs. 4, 6-9); while they occupy little pits in the large plates which cover the

¹ *Zeitschr. f. wiss. Zool.*, Bd. xxix., 1877, p. 59.