

of the Echinoderms secrete calcareous matters which take a distinct form, and that the perisome especially possesses this secreting function in a very high degree. Even in the very early stages of development, the Echinoderms are characterised by possessing calcareous deposits, which almost always take the form of simple or branched spicules, which, as the larvæ grow larger, change their form and become more or less complicated. Thus it is a fact that many of the fully-developed shallow water Holothurians have their body-wall supported by plates, crowns, anchors &c., and that their calcareous ring, which is often very firmly constructed, is made up of a solid calcareous network. It is of importance to note that the Elasipoda, with few exceptions, present a singular resemblance to the larval forms as to their calcareous deposits in the perisome as well as in the ring surrounding the gullet, these deposits having been arrested at a very low degree of development.

“The water-vascular system is very well developed in the Elasipoda, and has sometimes a more complicated conformation than is met with in the pedate shallow water Holothurians, their ampullæ, which are sometimes branched, having attained a very considerable size and being enclosed within the perisome. All the manuals of invertebrate zoology indicate, as an important character distinguishing the Holothurians from the rest of the Echinoderms, that the water-vascular system in the former communicates with the interior of the peritoneal cavity by the madreporic canal, while in other Echinoderms the same canal opens into an exterior madreporic tubercle, thus placing the ambulacral system in direct communication with the surrounding medium. This character must now be omitted, since it has been observed that many of the Elasipoda are remarkable in having the water-vascular system in persistent communication with the exterior, and that too not only by one pore but sometimes by a great number of pores crowded closely together, so as to form a kind of external madreporic tubercle. The larvæ of the Apoda and Pedata have the madreporic canal in communication with the surrounding medium by an opening on the dorsal surface; but eventually this canal loses its connection with the exterior, so that it hangs loosely in the peritoneal cavity of the adult animal. Thus the Elasipoda, even in this respect, obviously resemble the larval state of other Echinoderms.

“The respiratory trees are present in all the Pedata and in some of the Apoda, but in most of the latter the respiratory trees are supplied with “ciliated cups.” The true function of these peculiar organs is unknown, though it seems probable that they subserve an excretory function. The Elasipoda seem to be devoid of every trace of these organs. Many authors seem to attach so much importance to the respiratory trees, that two orders have been founded, Pneumonophora and Apneumona, on the presence or absence of these organs. For my own part, I think that the presence or absence of ambulacral appendages—that is to say, a more or less complicated ambulacral system—is of far greater systematic importance, considering that the water-vascular system is one