

of the adult animal. Most of the Elasipoda are remarkable in having the water-vascular system in persistent communication with the exterior, thus obviously resembling the larval state. In the rest of the species, the madreporic canal neither opens externally by a pore, nor does it hang freely into the interior, but its end is intimately joined to the dorsal perisoma and is sometimes, as it were, blind and inserted in it. This must, of course, be considered as a transitional state between the larva and the fully-developed animal. Not long ago Ludwig¹ published an account of a young *Chirodota rotifera*, Pourtalés, in which the madreporic canal had begun to detach itself from the dorsal body-wall; it had already lost its pore on the exterior, and the blind end was enclosed within the perisoma.

The respiratory trees and ciliated cups become developed only in a more advanced condition of the larvæ. Thus it seems to me as if the persistent absence of such organs in the Elasipoda indicated a certain conformity to the earlier stages of the Holothurids.

It follows from the facts above mentioned that the Elasipoda have retained many peculiarities characteristic of the larvæ of the Apoda and Pedata, and consequently that they have in many respects persisted without any sensible change for very long periods of time, and that they do not bear any genetic relation to the present representatives of the Apoda and Pedata, but are derived from ancestral forms of extreme antiquity.

On comparing the organisation of the recent Holothurioidea—the Elasipoda as well as the Apoda and Pedata—in the different stages of their development, and considering that the development of the embryo records the ancestral history of the species, it seems highly probable that the common progenitors of the three orders of Holothurioidea were characterised by a more or less distinctly-marked bilateral form, by a water-vascular system composed of a circular vessel, tentacular canals and a madreporic canal communicating with the exterior, by a calcareous ring, composed of spicules separated from one another, and by the absence of respiratory trees and ciliated cups, &c.

Danielssen and Koren² insist on the Elasipoda being placed very low in the series of Holothurids, but in this I cannot quite agree with them. The presence of a well-developed ambulacral system with five radial ambulacral vessels in connection with pedicels is considered as a marked peculiarity of the Echinoderm type; besides, in the more typical Echinoderms, as, for instance, the Echinoidea and Asteridea, &c., the madreporic canal terminates beneath a part of the apical system of ossicles, the pores of which place the ambulacral system in communication with the exterior. Now, it seems to me to be rather evident that those Holothurids must be regarded as higher in the Echinoderm chain, in which the water-vascular system has attained a higher degree of development,

¹ Ueber eine lebendiggebärende Synaptide (Archives de Biologie, ii. 1881, pp. 41–56, pl. iii.).

² Echinodermter fra den Norske Nordhavsexpedition (Nyt Magazin for Naturvidenskaberne, xxv. 2, 1879, pp. 102–104).