

are by far most commonly seen in the deep-water Holothurioidea in question. Supposing that the four arms of these deposits, instead of being free and independent, were connected at their ends with one another, each spicule would give origin to a plate with four holes, representing the first stage in the development of a plate or wheel. The process by which the plates and wheels of *Elasipoda* are developed from a spicule has been already sufficiently explained in the foregoing anatomical description. Besides, I may be justified in comparing the wheels of the *Elasipoda* with those of the larva of *Synapta*, but, as they are constructed in a different manner, the resemblance which they present is more apparent than real. In fact, all the wheels of the *Elasipoda* have the nave perforated by a large hole, from the edge of which rises a crown of four to six arcuate rods, while, on the contrary, the wheels of the larva of *Synapta*, in conformity with those of other Apoda, as, for instance, *Chirodota*, *Trochoderma*, and *Myriotrochus*, are devoid of a central hole as well as of a crown. The only exception to this rule occurs in the very strange minute hat-shaped bodies in *Elpidia glacialis*, which, however, by possessing a central crown composed of three rods, seem to approach more nearly to the wheels of the *Elasipoda*¹ than to those of the Apoda.

According to Müller, Baur,² Metschnikoff,³ &c., the first traces of a calcareous ring in the larvæ appear as separate unbranched spicules surrounding the œsophagus. As the spicules grow larger, their ends become bipartite and gradually dichotomous; finally, the spicules become connected with one another so as to form a complete ring. On comparing the larval ring with that of the *Elasipoda*, some very singular similarities present themselves. In fact, the whole family *Elpidiidæ* is distinguished by possessing a calcareous ring composed of spicules, which strikingly remind one of those of the larvæ, excepting that the branches or arms, which radiate from their ends, are more outgrown. However, it is of importance to remember that the ring is made up of only five radial pieces, while the larvæ, as it seems, have commonly ten, five radial and five interradial, the former five being probably first developed. The five spicules of the *Elasipoda* being, with a few exceptions, separated from one another, the resemblance becomes more striking. In the *Deimatidæ* the ring is in a somewhat more advanced state of development, the spicules having been converted into a fragile spongy network.

The larvæ of the Apoda and Pedata always have the madreporic canal in communication with the surrounding medium by an opening on the dorsal surface, but eventually the canal loses its connection with the exterior so as to hang loosely in the peritoneal cavity

¹ In my memoir on the *Elpidia glacialis* I also described some large wheels which differ most strikingly in shape from those of other *Elasipoda*, and present the greatest resemblance to those occurring in the Apoda. Danielssen and Koren are doubtless right in supposing that these wheels had accidentally stuck to the rough surface of the integument, and I feel the more convinced of it as I could never find them in more than one single individual.

² Beiträge zur Naturgeschichte der *Synapta digitata*, ii., Dresden, 1864, pp. 36, 37.

³ Studien über die Entwicklung der Echinodermen und Nemertinen (Mémoires de l'Acad. imp. d. Sc. de St Pétersbourg, vii. série, tom. xiv., No. 8, 1869, pp. 6, 7, pl. i. fig. 11).