

ending typically in a suctorial disk; (2) that the nervous system, which is scarcely less characteristic of the Echinoderms, is devoid of ganglia, and consists of a ring round the mouth with stems issuing from the ring and entirely following the water-vascular system. On account of these important coincidences, it appears to me that the common progenitor of the three classes ought to have had the above-mentioned organs already developed.

For it should not be assumed, I think, except from particularly cogent reasons, that these organs could have been developed so as to agree in every detail, after the three classes have diverged from one another. Accordingly, although in the apodous Holothurids the five radial ambulacral vessels are either totally wanting (in the Synaptidæ and some Molpadidæ), or, if existing, are without any connection whatever with the feet (in the rest of the Molpadidæ), it seems to me much more probable that this organisation of the Apoda is to be regarded as the result of a reduction than as an original condition. If a *Synapta*-shaped animal should be regarded as the common progenitor, the present apodous Holothurids must of course be considered to be its least altered descendants. Then we have to choose between two possibilities. There may have issued from this main stem a form that by developing ambulacral canals with feet and ampullæ has become the progenitor of the pedate Holothurids, the Echinids and the Asterids. In this case we arrive at the conclusion that the pedate Holothurids are more nearly related to the Echinids and Asterids than to the Apoda. The other possibility is that the pedate Holothurids on the one hand, and the Echinids and Asterids on the other, have branched off from the common main axis of the Echinoderms, and, independently of each other, developed feet and radial ambulacral vessels similar in detail. Although in this latter case the relationship between the Pedata and Apoda becomes more evident, still there remains the above-mentioned difficulty of understanding how such a complicated water-vascular system so similar in detail could have arisen, notwithstanding that the classes had developed independently of each other. On this account I think it more probable that the primitive form of the Holothurioidea has been a pedate animal, that the Synaptidæ represent their most differentiated form, and that in the Molpadidæ the reduction of the water-vascular system is still going on.

If, on the other hand, the derivation of the Holothurioidea is to be founded on Ontogeny, it would follow that the Elaspoda might justly claim to be regarded as being phylogenetically the oldest, because they have for the most part maintained the connection of the stone-canal with the exterior, and present such numerous instances of an extremely peculiar calcareous ring composed of spicules, and strongly reminding one of that of the larvæ, and because they have, moreover, in general, very primitive deposits in the perisoma, and have thus preserved many important peculiarities no doubt belonging to the common ancestors, but lost by the other Holothurioidea. The Elaspoda have, indeed, become much changed in other respects from the primitive type, as is