

speak, into a great number of types, diverging in widely different directions; compare the genera *Psolus*, *Colochirus*, *Cucumaria*, *Thyonidium*, &c.

But even the Elasipoda, which, from their number and often monstrous shapes, form such a characteristic feature of animal life in the bottom of the ocean, have suffered great alterations from the primitive type. Nevertheless they have still preserved much more of their important characteristics than any other Holothurid, and, if compared with one another, betray an evident tendency to uniformity in development, resulting no doubt from the monotony of the depths. It is probable that the Elasipoda have gained these modifications in the course of their migration towards deep water, and that a comparative repose has ensued in their evolution, after their having become acclimatised to the depths. However, life at the bottom of the ocean does not by any means permit of a stationary condition. The very fact of the Elasipoda occurring there in enormous masses clearly proves that fighting and development have gone on and are going on hand in hand there.

In the preceding remarks I have several times stated the opinion that the common ancestors of the Holothurioidea must have been *Cucumaria*-shaped animals furnished with an open stone-canal, feet, and a well-developed ambulacral system. This hypothesis, which can only be supported with a greater or less degree of probability, is contrary to the pedigrees proposed by my predecessors, in which the apodous Synaptidæ have been regarded as the oldest and least changed forms. Semper says, in his excellent work on the Holothurioidea of the Philippines:—"The apodous Holothurids are phylogenetically older than the pedate; the primitive form of the Holothurids cannot have been a pedate animal." In his opinion, these conclusions are justified by the fact that the water-vascular ring is the earliest persistent organ of the Holothurids, from which the other parts of the water-vascular system are afterwards developed. It seems to me that Semper has overlooked, as so many other inventors of pedigrees have done, the possibility of a reduction of organs taking place. However, the reduction and disappearance of organs is a fact that is quite as well established as the development of new ones; and in this particular case it appears much more probable that a reduction has taken place.

Without entering too far into details, I shall briefly state the reasons why I think it more probable that the pedate Holothurids are more primitive than the apodous. The Echinids, Asterids, and Holothurids have branched off from the same primitive type; on that point there is no doubt among the different authors. It is further well known that on examining the organisation of these classes somewhat more closely, we find—(1) that the water-vascular system, which is of extraordinary importance to and the most prominent characteristic of the Echinoderms, is entirely built on the same plan, inasmuch as it consists of a vascular ring, one or more stone-canals and Polian vesicles, and (excepting in the Apoda among the Holothurioidea) five radial ambulacral vessels giving out branches that pass internally into the ampullæ, externally into the feet, the latter