

particles, he regards as a necessary result of such a kind of growth the substitution of pavement epithelium for flagellated epithelium covering the central cavity in the Olynthus, as well as the formation of differentiated flagellated chambers (radial tubes). In harmony with all this, and since, through forms like *Leucilla uter*, *Leucilla connexiva*, *Amphoriscus elongatus* and *Amphoriscus poculum*, the typical Syconidæ are most closely connected with typical Leuconidæ, Dr. Poléjaeff upholds the existence of an *absolute* distinction between the Asconidæ and all other Calcarea, and gives systematic expression to it by subdividing the group into two orders.

“Although the above theory is regarded as quite plausible, it must however be noticed that it stands in a certain contradiction to some embryological data which, though mentioned by the author, are not brought into harmony with his hypothesis. Poléjaeff regards his Homocœla and Heterocœla as systematically equivalent groups, *i.e.*, to present divergent branches from the same spot of the genealogical tree of the animals. Again, on page 21 of his Memoir, he adopts the opinion upheld by Metschnikoff that in Parenchymula we have to do with a larva of more primary characters than those of Amphiblastula, both these larvæ, as is well known, being characteristic of the Calcarea. But it is also known that these larvæ are not distributed in such a manner that Parenchymula characterises the development of Homocœla and Amphiblastula that of Heterocœla. The latter is of course true, but the development of Homocœla is characterised in some instances by Parenchymula, in others by Amphiblastula. The contradiction above alluded to is clear. And it is equally plain that the hypothesis under consideration will become theory only when it has been proved either that the statements of Barrois and Keller as to the occurrence of Amphiblastula within the Asconidæ are based on a mistake, or that the opinion of Metschnikoff above mentioned is erroneous, or finally that the Amphiblastula of Heterocœla and that of Homocœla are only analogous and not homologous larvæ.

To return to the results of the Report, which concern the Heterocœla almost exclusively. As to the order of Homocœla, the author believes it to contain only a single family, but he is not prepared to say whether this family consists of but one or of many genera. On the whole he believes our knowledge on this head to be still very deficient.

“In the order Heterocœla three families are distinguished, all already established by former systematists. The inducement to adopt the family Teichonidæ established by Carter for a single genus, *Teichonella*, has been given by the circumstance that the Challenger collection contained a form, the beautiful *Eilhardia schulzei* (see fig. 218), with its silvery lustre, which, closely allied to the genus *Teichonella* as it is, differs from it so very much that the creation of a new genus, and thus the adoption of the whole family, became indispensable. The family is characterised by having the outer surface differentiated into two different planes, one bearing oscula, the other pores, and the internal organisation of its re-