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The Newly Hatched Larva of Argulus megalops: CHAS. B. WILSON, Westfield, Mass., State Normal School.

The most recent classification of the Copepods divides them into three classes:

A. The free-living copepods, Gnathostomata.

B. The parasitic copepods, Siphonostomata.

C. The Branchiura or Argulidæ, also parasitic.

The normal development of the copepods, viz., of the Gnathostomata, is well known to every teacher of zoology, and all have become familiar with the nauplius, metanauplius and cyclops stages in their life history. But the development of the Siphonostomata is still very imperfectly known, and while agreeing in many species with that of the free-living forms, there are frequent modifications resulting from parasitic habits.

The development of the third group, the Argulidæ, has rested until recently upon the study of a single European species, *A. foliaceus,* parasitic upon fresh-water fishes.

But the Argulidæ are found in greater abundance in North and South America and in Africa than in Europe, and are fairly well divided between fresh-water and marine forms.

A recent study of four American species shows that two of them, *A. americanus* and

A. catostomi, the former a fresh-water species and the latter occurring in both fresh and brackish water, agree almost exactly with *A. foliaceus* in development.

But the life history of the other two species, one, *A. stizostethii,* a fresh-water form, and the other, *A. megalops,* which is marine, is quite different. In both these species the newly hatched larva is almost exactly like the adult. There is no narrowing of the body posteriorly, the abdomen being fully as wide as the thorax and of the same shape as in the adult.

The carapace is somewhat shortened, but even when fully developed it is very meager. The number and arrangement of the appendages are exactly the same as they will always continue.

The form and function of these appendages are also the same, with the single exception of the first maxillipeds, and even here, while the form changes, the function remains constant from the beginning. There is no trace of a temporary locomotor apparatus of any sort or description, as in all other copepod larvæ. We have here, therefore, practically no metamorphosis at all, but a copepod life history which is virtually a direct development, and there is a marked resemblance to the life history of certain orders amongst the insects, such as the Orthoptera, etc.