

The transitory arms like the permanent tentacles are hollow. They terminate each in a well-defined capitulum and are about twenty in number. They form no regular verticil but extend with a scattered disposition over the greater part of the body. Upon the escape of the Actinula they continue to increase in length, and have the faculty of holding on by their clavate extremities to neighbouring surfaces. It is thus by their aid that the larva creeps about on the various objects in its vicinity.

After the Actinula has enjoyed for some days its free locomotive existence, it begins to fix itself by its aboral sucker-like extremity; the permanent tentacles become more numerous and extend further backwards on the body, while the long arms undergo a rapid degradation, become much shortened, and soon entirely disappear. All the essential features of the adult trophosome are thus acquired, and it only remains to complete the development of the Hydroid by the formation of the gonosome, which soon makes its appearance by the budding of the blastostyles and clasps from the hydranth at the proximal side of the tentacles. From the blastostyles the gonophores are subequally budded off, and the animal thus attains its complete maturity.

Myriothela phrygia, the only known species of this remarkable genus, is monœcious, the same hydranth carrying both male and female gonophores, but at what part of the developmental process just described the male influence exerts itself, or what may be the immediate changes which result from this, are points on which the observed facts will not justify a definite conclusion.

It will be seen that the formation of the Actinula in *Myriothela* is connected with certain phenomena which are very remarkable and exceptional. Among the most significant of these is the formation of a plasmodium by the coalescence of numerous primitive egg-cells. Exceptional, however, as this phenomenon is, it is not without a parallel even among the higher animals, and will at once recall the formation of the permanent ovum, as a syncytium, from the coalescence of the "primitive ova" in the early stages of the ovary in certain Elasmobranch fishes.¹

Development of the Egg in Hydra.—The phenomena presented during the development of *Hydra* are in many respects scarcely less divergent from the ordinary course of Hydroid development than those just described in *Myriothela*.

It is to the researches of Kleinenberg that we are indebted for the first complete account of the development of the sexual structures in *Hydra*.² He has shown that both ovaria and testes are derived from certain cells of the ectoderm which lie between

¹ See Balfour's Works, Memorial Edit., vol. i. p. 587; vol. ii. p. 57. Korotneff, who seems to be the only other observer who has studied the structure and development of *Myriothela* (*Zool. Anzeig.*, Bd. i. p. 363, 1878; Bd. ii. p. 187, 1879) takes a different view of the whole process. He supposes that among the multitude of egg-cells which originally fill the cavity of the gonophore, only one becomes a true egg, and that from this alone the Actinula is developed. I cannot, however, accept this view. It is impossible to reconcile it with the facts just described, and a laborious investigation of the animal has, I believe, placed the truth of these facts beyond question.

² Nicolaus Kleinenberg, *Hydra, eine anatomisch-entwicklungsgeschichtliche Untersuchung*, Leipzig, 1872.