

Rudolph Wagener;¹ the general features of the body, the alimentary canal with what he calls a hepatic dilatation anteriorly, and other doubtful organs being mentioned. He noticed the rudiments of the permanent tentacles at the base of the larval tentacles; but he thought them mere appendages. C. Gegenbaur² next found some examples of Müller's *Actinotrocha branchiata* towards the end of December at Messina, about 0·35 in. long, with fourteen tentacles; while others appeared in February, 0·5 in. in length, with twenty-four tentacles. He mentions most of the anatomical features formerly indicated, but added nothing to its relationships, for he was inclined to consider it the larva of an Echinoderm. It was not until Krohn and Schneider found this larval form undergo metamorphosis into a Sipunculoid worm—which Kowalewsky somewhat later showed was *Phoronis*—that, as mentioned in the introductory remarks, the true life-history was ascertained.

In the examples procured by the Challenger the free eggs in almost all cases seem to have advanced beyond the earlier stages, and indeed to show various phases of embryonic existence. The rounded forms had a diameter which ranged on each side of 1-240th of an inch, and thus the eggs of this large form are even less than those of the smaller British species described by Dyster, who gave the diameter at 1-200th of an inch. An egg-capsule is sometimes difficult of detection in the preparations of the extruded ova; and all that can be said is that the exterior of the early forms presents a definite pale margin, best seen in those, for instance, divided into a few spheres, and with a central cavity in section, though in others a capsule is present. The former condition was also noticeable in those at the gastrula-stage. Their development would seem to be rapid; indeed, Dyster states that in a few hours the surface of the newly extruded products becomes ciliated all over, and the embryos are capable of quitting the parent entirely at the end of the second day. The body-cavity of the præoral lobe is very early formed, the two cavities, archenteron and body-cavity of the hood, apparently being seen in the section shown in Pl. III. fig. 6. In outline many of the embryos show at first an hour-glass constriction, and then a comma-shape, apparently from the development of the præoral lobe. In the stage shown in Pl. III. fig. 5, the præoral lobe is on the right, and its body-cavity clearly outlined. The lobe bends downwards over the mouth (*m*). The archenteron is indicated in the body on the left, and also indications of the posterior body-cavity close to the upper hypodermic border in the figure. Moreover, some show two or three papillæ projecting from the body of the larva, these representing rudiments of the tentacles; and they appear to be proportionally large.

In the embryos the hypoderm is very early differentiated, and a thin pale line beneath probably indicates the formation of the basement-tissue. The central cavity is, moreover, lined with a distinct epithelium.

¹ *Op. cit.* 1847, pp. 202-206, Taf. ix.

² *Zeitschr. f. wiss. Zool.*, Bd. v. p. 347, 1854.