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Emanationen zum Ausgangspuncte — wenn nicht etwa dem äußersten Endabschnitte der Eileiter, der mit dem Ductus ejaculatorius gleichwerthig zu sein scheint. Dieses negative Verhalten steht wohl in Beziehung zur ausgiebigen Involution, welche das Nymphalstadium über die paarigen Eileiter überhaupt verhängt.

10) Zwischen männlichen und weiblichen Nebenorganen der Geschlechtsausführungsgänge besteht gar keine Homologie, indem jene des Männchens — accessorische Drüsen, Samenblasen und Ductus ejaculatorius — mesodermalen Ursprungs sind, jene des Weibchens dagegen — Begattungstasche, Samenkapsel, Kittdrüsen — rein ectodermal entstehen. Was die Muskelhäute der weiblichen Anhangsorgane und Ausführungsgänge betrifft, so ist hervorzuheben, daß jene des Uterus von den Genitalsträngen abstammen, während die Derivate des vorderen und des hinteren Imaginalscheibenpaares aus besonderen Zuzügen des intervisceralen Muskelnetzes ihren Bedarf beziehen.

Padua, den 25. März 1896.

4. Preliminary Note on the anatomy of Actinotrocha and its bearing upon the suggested Chordate affinities of Phoronis.

By Arthur T. Masterman, B.A. Lecturer and Assistant Prof. of Zoology in the University of St. Andrews.

eingeg. 9. April 1896.

At a meeting of the Royal Society of Edinburgh last month (March) a note upon the structure and affinities of *Phoronis* was read and therein were put forward reasons for holding that *Phoronis* is closely allied to the three genera (*Balanoglossus*, *Cephalodiscus*, and *Rhabdopleura*) which are, by most English naturalists, placed together in the group »Hemichordata« It was pointed out that, due allowance being made for the sedentary degenerate habit of *Phoronis*, its anatomical resemblances partly to *Balanoglossus*, and partly to *Cephalodiscus*, are so striking that even the absence of a notochord and of gill-slits should perhaps hardly militate against its claims to a place amongst the *Chordata*. At the same time, according to the principles of ontogenetic repetition of phyletic vestigial organs, it was suggested that some vestige of a notochord should be presented in the *Actinotrocha* stage before the loss of the pre-oral lobe and the well-known metamorphosis.

A preliminary examination of spirit specimens of *Actinotrocha* has yielded such remarkable results that I thought it best to briefly state the leading points in this note. Not only do I find in *Actinotrocha* an organ which appears to be the homologue of the notochord

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but other characters so much resembling those of the Hemichordata that *Actinotrocha* appears to bear the same relation to *Balanoglossus* and to *Phoronis* respectively as the tailed *Ascidian* larva does to the Amphioxus and to the adult Ascidian. In other words, the development of *Phoronis* reaches its highest morphological stage in the fully formed *Actinotrocha* and subsequent stages leading to the adult condition involve processes of degeneration similar to those found in Ascidian ontogeny.

In the »stomach« region of *Actinotrocha* a pair of diverticula of its walls run forwards on either side of the oesophagus for a short distance and end blindly. These are readily seen in a view of the larva intact and, have been figured and labelled by Wilson (Quarterly Journ. Micr. Science XXI) and others as »glandular part of stomach«. In sections, however, they present no trace of glandular structure but shew all the characteristics of notochordal tissue. These two hypoblastic diverticula I would compare to the notochord of higher forms: they arise from the region which, as will be seen, is comparable to the collar of the Hemichordata.

The large hoodlike pre-oral lobe is filled internally by a large impaired coelomic cavity definitely lined by mesoblast and shut off posteriorly from the two tentacular cavities by a mesentery. Under the apical plate there is a haemocoele space between the epiblast and the mesoblast. The posterior part of the pre-oral coelome comes in contact with the front swollen termination of the dorsal aorta, which is itself merely a haemocoelic (blastocoelic) space dorsal to the gut. Here the coelomic wall is glandular and thickened. These relations prompt an almost irresistible comparison with the ‚proboscis gland' and ‚heart' of *Balanoglossus*.

Immediately behind the pre-oral coelome, lie the tentacular coelomic cavities which are separated by mesenteries from the pre-oral coelome in front and the trunk coelomes behind. These are produced into the tentacles on eiter side. I have not yet determined how far they are separated from each other by a dorsal mesentery. It is in this region that the notochordal diverticula arise and the two cavities are obviously homologous with the »collar cavities« of the Hemichordata.

The two trunk cavities lie on either side of the intestine and seem to fuse dorsally; there is a circular haemocoele space lying immediately under the thickened peri-anal ciliated ring.

I am inclined to believe that the ciliated nephridial tubules open into the collar cavities, but cannot speak with certainty.

There is a ciliated area along the free border of the pre-oral lobe,

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another following the course of the post-oral tentacles and lastly a peri-anal ring.

Thus the ciliated areas practically consist of a pre-oral ring (partial) and two post-oral rings, corresponding to the three segments of the body (pre-oral, collar, and trunk).

It is impossible in a short note to follow up these and other points to their logical conclusion, but it is well to compare *Actinotrocha* with *Tornaria* in their leading characters.

The following features are common to each: —

1) A bilaterally symmetrical triploblastic pelagic larva.

2) A complete and functional alimentary canal, a ventral mouth, short oesophagus, stomach and hind-gut (intestine), a terminal anus.

3) A large pre-oral lobe covering over the mouth.

4) Three ciliated bands, more or less sinuous — the first or pre-oral encircling (partially or wholly) the pre-oral lobe — the second or post-oral encircling the area immediately behind the mouth and often following the course of a number of tentacles, into which this region of the body is produced — the third or peri-anal, usually simple and encircling the hind part of the body. (In *Tornaria* the pre-oral ring very nearly meets the post-oral, in the mid-dorsal line.)

5) A thickened apical plate on the dorsal surface of the pre-oral lobe, bearing in most cases, a pair of eye spots.

6) Mesoblast consisting mostly of an unpaired coelomic sac in the pre-oral lobe and two pairs of post-oral coelomic sacs, the sacs are mostly separated by mesenteries but the dorsal one may be absent.

This list will be quite sufficient to shew the very close agreement in structure between the two larvae.

Some extremely important generalisations follow from the above facts but these must be left to the complete paper which will, I hope, shortly be published. I think *Phoronis* will either have to te placed in the Hemichordata or will have to constitute a group Diplochordata having the same relation to *Balanoglossus* as Urochordata to Amphioxus.

United College, St. Andrews N.B., April 6. 1896.

5. Diploposthe, eine neue Gattung von Vogeltaenien.

Von Dr. Arnold Jacobi in Leipzig.

eingeg. 13. April 1896.

Diejenigen Formen unter den Cestoden, welche mit doppeltem Geschlechtsapparat versehen sind, haben besonders in neuerer Zeit eine generische Sonderung von ihren Verwandten erfahren; eine

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