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I. Wissenschaftliche Mitteilungen.

1. Notes on the young *Discinisca*.

By N. Yatsu.

(With 2 Figures.)

eingeg. 16. Oktober 1905.

In a study on the development of *Lingula*¹, I have pointed out that the structure which Blochmann maintains to be the nephridium of the larval *Discinisca*², is really the otocyst (statocyst) as was rightly interpreted by previous writers, such as Fritz Müller and Brooks. In the present note I desire to add some additional evidence on this point.

Two years ago the late Professor C. E. Beecher kindly gave me several alcoholic specimens of *Discinisca leavis* from Callao, Peru. On careful examination I found several young ones adhering to the shells

¹ Yatsu, N., 1902. On the development of *Lingula anatina*. Journ. of the Coll. of Science, Imp. Univ., Tokyo, Japan. Vol. 17, Art. 4, p. 65.

² Blochmann, F., 1898. Die Larve von *Discinisca*. Zool. Jahrbücher, Abt. für Anat. u. Ont. Vol. 11, p. 422. — 1900. Untersuchungen über den Bau der Brachio-poden, Second part. p. 124.

of adult individuals. The youngest of these was at the six-pair-cirri stage the shell measuring 0,6 mm in length; while the largest had a well developed foot and was 4 mm in length. One could readily notice striking differences between these young and those with four pairs of cirri as described by Fritz Müller, Blochmann and myself. In the present specimens the larval setae have been replaced by long definitive ones. In the older ones (3,5—4 mm) setae much longer than the shell are found along the anterior margin of the mantle. The tentacle of *Discinisca* shortens much earlier than that of *Lingula*. Even at the six-pair-cirri stage it has already diminished into a small elevation on the epistome.

Fig. 1.

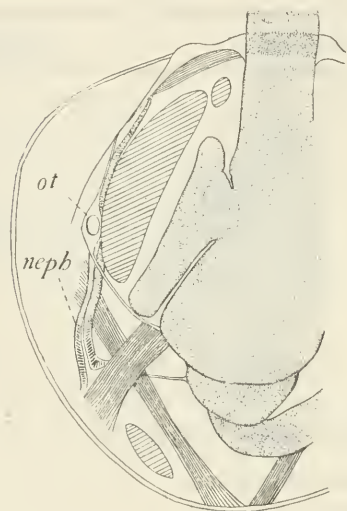


Fig. 2.

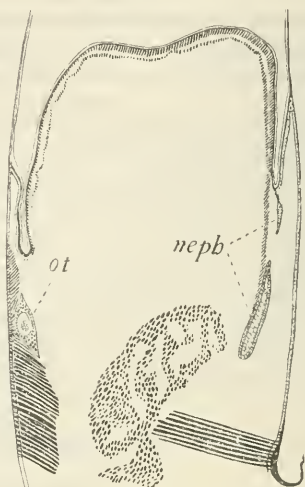


Fig. 1. Young *Discinisca* at the eight-pair-cirri stage (0,8 mm); mantle and left half of body omitted; one of the muscles not shown in this figure for the sake of clearness. $\times 162,5$. *ot*, otocyst; *neph*, nephridium.

Fig. 2. A portion of a longitudinal section of a young *Discinisca* of 4 mm; shell not represented. $\times 105$. *ot*, otocyst; *neph*, nephridium.

In *Lingula* the tentacle is absorbed at much later stages (l. c. p. 91); even as late as at the ten-pair-cirri stage the tentacle is still of fairly large size.

In the young *Discinisca* under consideration, i. e., from the six-pair-cirri stage forward, one finds a pair of nephridia very similar to those I found in the *Lingula* larvae (Fig. 1 and 2 *neph*). Anteriorly they open near the lateral ganglia, and run along the ventral body wall. Posteriorly they dilate into funnels, which are suspended by the ileo-parietal bands. Judging from the fact, that Blochmann found no nephridia in his specimens, it seems probable that these organs make their appearance at about the five-pair-cirri stage.

On the dorsal side one finds a pair of otocysts (statocysts). These are relatively small and very inconspicuous as compared with those of *Lingula* of the same stage. In *Discinisca* they are situated outside the anterior oclucosor, while in *Lingula* they are found posterior to the muscle. In both forms they are imbedded in the gastro-parietal bands. In *Discinisca* they must become smaller at the time of attachment, since, during the swimming stages they are of considerable size. Moreover, Fritz Müller³ studied the process of reduction of this organ at the time of attachment. In older larvae he failed to demonstrate its presence. Longitudinal sections of the largest specimen available (4 mm in shell-length), show, however, one of the otocysts fairly large and containing seventeen otoliths (Fig. 2 *ot*). The thickness of the shell makes it impossible to see the otocysts before sectioning. It is, therefore, difficult to decide whether they persist throughout life or not, until a careful study of the gastro-parietal band of the adult *Discinisca* is made.

I have elsewhere expressed the opinion that the *Discinisca* larvae may attach themselves soon after the four-pair-cirri stage, basing it upon the fact that swimming larvae older than those with four pairs of cirri had not, up to that time, been obtained, and upon the observation made by Fritz Müller that the fixation of the larvae to the substratum takes place after five or six day's confinement (l. c. p. 107). This surmise is now verified; for I have at present an attached specimen with six pairs of cirri. We may, therefore, conclude that in *Discinisca* the swimming life comes to an end somewhere at the five-pair-cirri stage, that is, much earlier than *Lingula*: since the latter fixes itself at the ten-pair-cirri stage. I say earlier, because it is quite probable that the addition of new cirri takes place at the same rate in both forms. In this connection, it should be noted that in *Discinisca* there may exist a close correlation between the early attachment of the larvae and the precocious diminution in size of the statocysts.

Zoölogical Laboratory, Columbia University, New York. September 30. 1905.

2. Beobachtungen über die wachsabscheidenden Organe bei den Hummeln, nebst Bemerkungen über die homologen Organe bei Trigonon.

Von Dr. L. Dreyling.

(Aus dem Zoologischen Institut in Marburg.)

(Mit 6 Figuren.)

eingeg. 2. November 1905.

I. Hummeln.

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³ Müller, Fritz, 1861. Die Brachiopodenlarve von St. Catharina. 2. Beitrag. Archiv f. Naturg. Jahrg. 27, Vol. 1. p. 55.

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