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II. Wissenschaftliche Mittheilungen.

1. Reproductive Organ of *Phascolosoma Gouldii*.

By E. A. Andrews, Johns Hopkins University.

eingeg. 15. Januar 1889.

Since the publication in 1871 by Ludwig of Semper's view that the organs found by him at the base of the ventral retractors in certain *Sipunculidae* were the true reproductive organs the same explanation of the origin of the sexual cells found floating in the coelom has been given by Theel in 1875 for *Phascolion* and *Phascolosoma* and by Cosmovici in 1879 for *Phascolosoma*, while Koren and Danielssen in 1877 observed and figured such organs in six species of *Phascolosoma*, but did not regard them as reproductive organs and Selenka in 1883 includes the possession of such organs among the characters of the group *Sipunculidae*.

Whether this position of the reproductive organs is common to all the *Sipunculidae* is, perhaps, still an open question, though the masses described by Koren and Danielssen as reproductive organs are, I judge, to be regarded merely as clots of the coelomic fluid and the facts observed by Claparède in 1851 and by Sluiter in 1881 seem to require more detailed investigation.

As regards the exact nature of the reproductive organs when found on the retractors much remains to be determined: an examination of one species *Phascolosoma Gouldii* Keferstein (*Sipunculus*

Gouldii Pourtalés) begun at the Laboratory of the U. S. Fish Commission in 1888 yielded the following results.

1) Individuals of both sexes full of ova or of spermatozoa were about equally abundant from July 20 to September 20 and could sometimes be distinguished as male or female by the colour, which was often more white in the male and pink in the female owing to the nature of the contents of the coelom.

2) Attempts made during that entire period to fertilize the eggs artificially were unsuccessful though the various methods employed by Keferstein were used and some ova segmented a few times as in the early stages of those studied by that observer, but then passed through abnormal changes. The difficulty in fertilizing eggs, apparently ripe, taken from the coelom lies, I judge, in the want of some necessary concomitant connected with their stay in the nephridia, in which none were found at this season of the year.

3) Careful dissection reveals two conspicuous, irregularly fimbriated bands running outward from the nerve cord along the posterior face of the ventral retractors very near their attachment to the body-wall: each of these bands passes around onto the outer edge of the muscle to which it is attached and there abruptly ends. Each is made up of a common base of attachment to the muscle from which innumerable, irregular finger-like processes stand out freely into the coelom. In adult specimens these bands project as much as 250 μ from the retractor: in young specimens 70 mm long only 70 μ , while in a very young one only 13 mm long no reproductive organs could be found at all.

4) Serial sections show that these two bands are continuous with one another ventral to the nerve cord and are there attached to the longitudinal muscles of the body-wall. This union of the lateral halves of the reproductive organ is indicated in the figures of Koren and Danielssen, but in some cases as if it were dorsal to the nerve cord.

5) The single reproductive organ thus found is made up of a solid mass of germ cells supported by a structureless lamella projecting horizontally from between the retractor muscle fibres and the enveloping peritoneal membrane and is invested for the most part by a delicate nucleated membrane. Branches of the supporting lamella extend into the chief lobes of the organ and it is accompanied by elongated nuclei similar to those of the peritoneal membrane and to those of the membrane investing the organ and measuring about 6 μ in length. The germ nuclei have quite different staining properties from those of the above nuclei and increase in size toward the distal or free ends of the lobes of the organ where they are surrounded by protoplasm and this

acquires definite cell walls before the cells thus formed break loose from the others into the coelom.

In the males the outermost cells of the fimbriae measure 14μ with nuclei 7μ : in the females such cells measure 24μ with nuclei 12μ .

6) In the coelom various stages in the growth of the ova from the naked cell 24μ in diameter up to the apparently mature ova 185μ in diameter were observed. An ovum in which the yolk measures 151μ had a vitelline membrane 3μ thick perforated by innumerable pores through which delicate pseudopodia like processes ran out into an outer gelatinous case 12μ thick.

The reproductive organ of *Ph. Gouldii* is probably to be interpreted as a thickened fold of the peritoneum supported by a structureless basement membrane or lamella: the nuclei of the peritoneum having multiplied rapidly to form a mass of germ nuclei which on the surface of the mass acquire considerable cell protoplasm and are there forced out from the ends of finger like processes into the coelom by the growth of deeper lying cells — the investing membranous part of the original peritoneum being ruptured at the ends of such processes.

January 4, 1889.

2. Sul sistema nervoso dell' *Amphiptyches urna* Grube et Wagener.

Nota del Dr. Fr. Sav. Monticelli.

cingeg. 18. Januar 1889.

Il sistema nervoso dell' *Amphiptyches* è noto solamente per le poche notizie che ne ha dato il Wagener nel suo lavoro (Müller's Archiv. J. 1852 pag. 552. Taf. XIV). Le mie ricerche sull' *Amphiptyches* mi permettono di completare le osservazioni di Wagener e stabilire il tipo del sistema nervoso di questo interessante Platelminto.

Il sistema nervoso dell' *Amphiptyches* consta essenzialmente di due rigonfiamenti gangliformi laterali, situati nella parte anteriore del corpo, riuniti da una commessura trasversale, e di quattro nervi, due anteriori et due posteriori, che partono dai due rigonfiamenti ganglionari: tutto il sistema nervoso è spostato sensibilmente verso la faccia ventrale dell' animale.

La commessura, molto robusta, giace immediatamente al disotto ed alquanto innanzi di quella che Wagener chiama Kopfnopf e che, per ora, indico semplicemente col nome di ventosa anteriore. I due rigonfiamenti gangliformi si trovano situati lateralmente alla ventosa anteriore, nel suo terzo inferiore: cosicchè la commessura trasversale descrive un arco, modellandosi sul fondo cieco della ventosa anteriore:

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