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(Biological.)

## II. Wissenschaftliche Mittheilungen.

### 1. Preliminary Abstract of Observations upon the Development of the American Oyster.

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The following is a statement of the more important points of a paper upon the Development of the Oyster which will be printed in full in the »Scientific Results of the Second Session of the Chesapeake Zoological Laboratory of the Johns Hopkins University«.

1) The American Oysters, *Ostrea virginiana* Lister, are unisexual. Out of more than a thousand oysters which were carefully examined with the microscope no hermaphrodites were found, although in the ovaries of several females which had nearly finished spawning the yolk granules of ruptured eggs exhibited active brownian movements, and closely resembled spermatozoa.

2) The males and females are present in about equal numbers, and the sexes, in the same depth of water, mature at the same time.

3) The sexes are not distinguished by any external characteristics.

4) The eggs are extruded from the ovaries very slowly, the process occupying several days, and they are fertilized in the water outside the shell, and none of the adult oysters examined during the breeding season had any developing eggs or embryos in the mantle cavity, gills or ovaries.

The young are so very minute that it is almost impossible to find them in the water, and surface collecting yielded only about a dozen specimens of the early stages. The observations were accordingly made upon embryos raised in aquaria from artificially impregnated eggs.

5) As regards the age at which the Oyster can reproduce: eggs

were taken from the ovary of an oyster whose long diameter was less than an inch, and which I suppose to be one year old, and fertilized with the semen of a male of the same size, and these eggs completed their development.

6) Segmentation takes place nearly in the way figured by Lovén in various Lamellibranchs, and by Flemming in *Anodonta*, and is completed in about two hours.

7) The embryo has a distinct endoderm and primitive digestive cavity with an external opening, and an oral circle of cilia, and at the end of about two hours after fertilization the free-swimming embryos crowd to the top of the vessel and form a dense layer reaching to about half an inch below the surface of the water.

8) The lips of the orifice of invagination soon approach and unite, so that the endoderm is separated from the ectoderm and its central cavity can no longer be made out.

9) The two valves of the shell make their appearance, separately, at the ends of the furrow formed by the closure of the gastrula mouth.

10) On the opposite side of the body an opening which appears to be the definitive mouth pushes in to the endoderm, becomes ciliated: a large digestive cavity lined with cilia is visible within the endoderm; this becomes united with the opening, and small food granules are visible inside it.

11) The shells grow rapidly, the anus makes its appearance close to the mouth, and at the end of two days the animals cease to crowd to the surface of the water, and swim actively at various levels.

12) From this point the development is very similar to the forms figured by Lovén.

I was not able to keep them alive in a small quantity of water more than seven days, and they were so small that I was not able to find them in a large quantity of water. And as I could not contrive any way of changing the water without losing them, I was not able to study the later stages of development.

Baltimore, Oct. 11th, 1879.

## 2. Zur Embryologie der *Bowerbankia*.

Vorläufige Mittheilung von W. Repiachoff in Odessa.

Die ersten Entwicklungsstadien der beiden von mir untersuchten *Bowerbankia*-Species<sup>1)</sup> stimmen mit den entsprechenden Embryonal-

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1) Vgl. Zool. Anzeiger, 1878. No. 10.

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