

Dr. O. Fr. von Moellendorff in Manila (Coll. Mus. Senckenberg, No. 1017, 3a).

#### 4. Notes on the Early Stages of Segmentation in *Petromyzon marinus*, L. (americanus, Le S.).

By Charles F. W. McClure M.A., Instructor in Biology, Princeton, College, U.S.A.

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Although the development of *Petromyzon* has been carefully studied by the most competent investigators, there seems to be a lack of unity in their results; whether this is due to the histological methods employed, or to the idiosyncracies of the investigators, it is difficult to decide.

In regard to the first two planes of cleavage, so far as I am aware, all investigators are agreed (Max Schultze<sup>1</sup>, Owsjannikow<sup>2</sup>, Nuel<sup>3</sup>, Shipley<sup>4</sup> and Kupffer<sup>5</sup>) except Calberla<sup>6</sup>, that they are meridional and at right angles to each other.

Calberla stated that the first plane was equatorial and that the first two blastomeres were of unequal size. Scott<sup>7</sup> who studied Calberla's material after the latter's death, states that he found among Calberla's material many ova in which the first plane of cleavage had divided the ovum into two unequal halves, but that this did not appear to be constant among all, so that in all probability the ova on which Calberla based his observations were abnormalities.

I think it is conceded by all that the third plane of cleavage occurs normally as an Equatorial one, in every ovum where total cleavage is the rule, with the exception perhaps of the ova of the Ctenophorae<sup>8</sup>, where the third plane is represented by two Meridional furrows which form an angle of 45 degrees with each of the first two furrows.

My observation on the development of *Petromyzon marinus* have led me to the conclusion that in this species at least, the third plane

<sup>1</sup> Die Entwicklungsgeschichte von *Petromyzon Planeri*. Haarlem 1856.

<sup>2</sup> Die Entwicklung von *Petromyzon fluviatilis*. Bulletin de l'Acad. d. Sc. de St. Petersburg, T. 14, 1870.

<sup>3</sup> Developpement du *Petromyzon Planeri*. Archives de Biologie. Tom. II. 1881.

<sup>4</sup> Development of *Petromyzon fluviatilis*. Quart. Journ. of Micr. Science. 1887.

<sup>5</sup> Die Entwicklung von *Petromyzon Planeri*. Archiv f. Micr. Anatomie. 35. Bd. 1890.

<sup>6</sup> Morph. Jahrbuch. 3. Bd. p. 246.

<sup>7</sup> Beiträge zur Entwicklungsgeschichte der Petromyzonten. Morph. Jahrb. 7. Bd. 1882.

<sup>8</sup> A. Aggasiz, Embryology of the Ctenophorae. Cambridge U. S. A. 1874.

of cleavage is not an Equatorial one, but consists like that of the Ctenophorae of two Meridional furrows.

Such a variance from the accustomed mode of cleavage must need considerable corroboration before it can be accepted and I can not say positively that it is constant for all seasons. But that it was so this spring there can be no doubt as the following facts show.

Between May 20th and June 1st of this year, thirty specimens of *P. marinus* were obtained from a stream in the neighbourhood of Princeton. Of these, at first two different females were stripped of their eggs which were fertilized artificially in the usual manner with sperm taken from two separate males. That is, the eggs were squeezed out of each female into clean shallow porcelain dishes, and after a few seconds the sperm from a ripe male added, together with a small amount of fresh water. The contents of the dish were then carefully stirred about a few times with a lampreys tail, so as to be sure that the sperm would come in contact with all of the ova. At the end of thirty minutes all of the water was poured off and fresh added. This process was continued until all traces of the sperm had disappeared from the water. Finally the ova were placed in hatching jars through which a continuous stream of fresh water passed and the jars kept in a fairly dark cellar. The temperature of the water at the time of the first fertilization was 6° C. while that of the second which took place one week later was 8° C.

Concerning the first and second planes of cleavage nothing remarkable was observed as in every instance, so far as noted, they were Meridional and at right angles to each other conforming in every respect to the generally accepted views on this subject. It may also be added that with very few exceptions, every ovum was fertilized and passed through the early cleavage stages.

(Schluß folgt.)

## II. Mittheilungen aus Museen, Instituten etc.

### 1. Die zoologische Station in Rovigno.

Von Dr. Hermes, Berlin.

eingeg. 22. Juli 1893.

Die inneren Einrichtungen der vom Berliner Aquarium erbauten zoologischen Station in Rovigno sind so weit vorgeschritten, daß sechs Gelehrte in derselben arbeiten können. Zwei Arbeitstische stehen zur Verfügung des deutschen Reiches, zwei werden vom preußischen Cultusministerium vergeben und über die letzten zwei Tische hat sich das Berliner Aquarium die Disposition vorbehalten. Indem

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Autor(en)/Author(s): McClure Charles F.

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