

quantity was limited, so I need not appeal to the indulgence of the reader on account of the imperfection of my researches in this department.

The study of the eggs of *Nymphon brevicaudatum*, Miers, was the most successful of all. These eggs are the largest of the species here in question; the number of animals furnished with eggs was in this species rather great;¹ and their condition was superior to that of the eggs of the other species. The method I followed is well known. I enclosed the eggs (hardened with absolute alcohol) in paraffine, and coloured the sections afterwards with picocarmine.

Fig. 3 is a drawing of the first stage I was able to observe. The food-yolk and the formative-yolk (deuto- and proto-plasma, Ed. van Beneden) are still mixed together, and the cleavage is complete. Every segment is furnished with a nucleus, coloured distinctly red by the picocarmine, and situated almost in the middle of each segment. The structure of the yolk particles in each segment is very curious, and probably this is caused by the continued action of the alcohol. In fig. 4 I give a strongly-magnified drawing of a small part of such a segment just at the border of the section. It looks as if the yolk-elements had grown vesicular,—a matter I only make mention of as the same structure is no longer observed in the next stage of development of the egg. In this stage, as in the following, the egg is furnished with a distinct but very thin membrane.²

The second stage I observed has the blastoderm distinctly developed. The cells of which it is composed are very much flattened, and do not show distinct limits; a very large nucleus is, on the contrary, always easily observed. Fig. 5 shows the cells as seen on section, fig. 6, the blastoderm with the nuclei magnified. Every nucleus shows a distinct nucleolus and numerous small granules. In this stage the food-yolk is irregularly split into larger or smaller parts, which are coloured yellow by the picocarmine; they do not show the vesicular structure of the yolk-segments in the first stage, and are not furnished with a nucleus.

A transverse section of the next stage of development I observed is figured in fig. 7.³ Here the embryonic development is already far advanced, consequently I was not able

¹ The eggs of *Nymphon hamatum*, *N. longicoxa*, and *N. fuscum* were so far advanced in development that in them only the different larval stages could be studied.

² Dohrn, *loc. cit.*, p. 139, says that the egg of *Pycnogonum litorale* has a double membrane, and that these membranes are found in the ovary, an assertion not corresponding with the observations I made on the eggs of *Nymphon*.

³ Between the stage figured in fig. 7 and the foregoing, numerous other stages were observed; but in these the cellular structure was so totally spoiled by the action of the alcohol, that I dare not give drawings or descriptions of them. The only means of distinguishing the embryonic cells from the deutoplasm is by the colouring of the cells with picocarmine, and there can be little doubt that one of the first changes the blastoderm undergoes consists in the formation of a longitudinal thickening of it at the future ventral side of the embryo. This thickening terminates rather abruptly at the anterior end, but at the posterior end it slopes gradually to the unicellular part of the blastoderm. Afterwards a longitudinal furrow seems to take rise in the middle of this thickening, the inner part of which is finally isolated in the form of a longitudinal tube. I publish these details only with the strongest reserve, the condition of the eggs and the circumstance that the sections are necessarily taken in quite uncertain directions, making the giving of a decided description impossible.