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Metamorphosis of Pedicellina

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which surround the egg, which is thus enclosed in a pith-like envelope of a secretion resembling spiders' threads. The secretory organs consist of two circlets of spinnerets placed on the sides of the abdomen, at the point occupied by the cornicles in the true *Aphidinae*.

These eggs, kept through the winter, began to hatch in the first days of April; I then transported the fragments of bark bearing these little animals to a young poplar placed for the purpose in my garden, and upon which I had ascertained that there were no galls last autumn. This operation was effected in the first days of the month of April, before my departure to the meeting of the French Association at Algiers. On my return I hastened to look at my little tree, and found it garnished with small galls of *Pemphigus bursarius* (easily recognized by their position at the base of the young buds) already as large as green peas.

The test and counter tests having thus proved successful, I think that I may affirm that *Pemphigus filaginis* is only the gemmiparous and pupiferous form, *i. e.* the third and fourth forms of *Pemphigus bursarius*.

It may perhaps be objected that, the poplar being in the open air and incapable of being covered with a bell glass, some error may still be possible; but this seems to me difficult. Nevertheless I am already preparing plants of *Filago*, which I shall keep shut up and under bells until the month of July, so as to make a rearing in the room, sheltered from all external influences.

Moreover I have sent some of the same eggs which I have used in the above experiments to Mr. Riley at Washington, and to Mr. Monell at the Botanic Garden of St. Louis (Missouri); I am expecting information from them; and if I can give rise to the same galls on the poplar in America, this will be an unanswerable argument.—*Comptes Rendus*, May 2, 1881, p. 1063.

Metamorphosis of Pedicellina. By M. J. BARROIS.

Most authors have hitherto supposed that the larva of *Pedicellina* passed directly into the adult by simple elongation of its lower part (the extremity of its aboral face), which became drawn out to form the peduncle. In 1877 I gave figures showing that matters did not go on in quite so simple a manner, and that, notwithstanding the great resemblance of the two forms, the larvæ of *Pedicellina*, like all the others, were subject to a period of very profound modifications. I was not then able to trace these modifications; but my recent thorough investigations of the subject enable me now to give a description of the passage, based upon observed facts.

I. *Fixation*.—The fixation takes place by the oral pole, and not, in accordance with the extant hypothesis, by the extremity (aboral pole) of the body.

II. The digestive tube, accompanied by a portion of the vestibule, undergoes a rotation from in front backwards. In consequence of

this phenomenon the intestine loses the horizontal position with apertures directed downwards, which it at first possessed, and passes gradually through two other positions :—1, one vertical with apertures directed towards the posterior surface of the larva (which, as in the *Escharinæ*, becomes the anterior surface of the adult); the other horizontal and with apertures directed upwards.

The first position represents a state precisely analogous to *Loxosoma*, with the anus above and the œsophagus below; the second is that of *Pedicellina*.

III. While the digestive tube is undergoing this rotation, the vestibule divides into three distinct parts:—1, the inferior one, which bears the circle, and of which the elements come to form the gland of the foot, which is also visible at a certain epoch in the *Pedicellina*; 2, the superior one, which follows the digestive tube and becomes isolated to form the tentacular chamber; it is this portion that will give origin to the tentacles; it afterwards places itself in relation with the exterior by means of a cleft-like invagination of the ectoderm; 3, the median portion, which becomes degenerascent to give origin to the mass of globules, which at first fills the cavity of the peduncle, and each of which afterwards becomes converted into a stellate cell of the supposed colonial nervous system.

IV. There remain the two enigmatic organs of the ectoderm (organs of sense) which a recent author (Hatschek) represents as playing so important a part. These, in my opinion, are nothing but provisional organs; they are both thrown up upon the dorsal surface, where they finally disappear by degrees. No doubt we must recognize in the two setæ described by Salensky upon the dorsal surface of *Loxosoma crassicauda* the remains of the anterior organ of sense, which, according to my investigations, comes to occupy this position.—*Comptes Rendus*, June 27, 1881, p. 1527.

On the Structure of the Oothecæ of the Mantides, and the Hatching and first Moults of the Larvæ. By M. C. BRONGNIART.

Several groups of Articulata surround their eggs with a common protective envelope. Sometimes it is in the body of the female itself that this agglomeration is effected (*Blattina*); sometimes, on the contrary, the female constructs the protective shell and deposits her eggs in it (*Spiders*, *Hydrophili*, *Mantina*).

Several authors, such as Pagenstecher, Roesel, Prof. E. Perrier*, and M. Henri de Saussure†, have studied the egg-cases or *oothecæ* constructed by the *Mantes*. In May last I brought from Algeria some oothecæ of *Mantes*; and I have thus been able to witness the emergence of the young larvæ.

The egg-cases of the *Mantes* are deposited upon branches of shrubs or upon stones. The structure differs but little in the diffe-

* Ann. Sci. Nat. Zool. 5^e sér. xiv. (1870).

† Mission Scientifique au Mexique, 1872.