

On Entoniscus mænadis. By M. A. GIARD.

Almost at the moment when I made known the existence on the French coasts of the *Entoniscus* parasitic upon *Pachygrapsus marmoratus*, Fab.*, P. Fraisse met with this curious Isopod in the Bay of Naples, that is to say in the locality where it was discovered in 1787 by Cavolini. Fraisse further stated† that he had found the same parasite in *Carcinus mænas*, but he did not establish the correctness of this determination by the comparative examination of the embryos, which furnish the best specific characters in creatures which are so profoundly modified in the adult state. As I had observed at various points on the shores of the Channel embryos of *Entoniscus* which had strayed into the incubatory cavity of *Sacculina Carcini*, I repeatedly sought for *Entoniscus* in *Carcinus mænas*, but always without success, notwithstanding the great number of crabs which were sacrificed for this purpose.

I have been more fortunate this spring, and the first crab which I opened at Wimereux furnished me with a fine *Entoniscus*, the ovigerous lamellæ of which contained perfectly mature embryos. The infested *Carcinus mænas* was a female of middle size, bearing a *Sacculina* the incubatory cavity of which was empty. The *Entoniscus* was placed on the left side of the crab, in the midst of the hepatic cæca of its host.

This *Entoniscus*, which I shall call *Entoniscus mænadis*, is very distinct from *Entoniscus Cavolinii*. The liquid which circulates in the vessels contrasts by its red colour with the orange-yellow ground of the ovarian mass. The ovigerous sac, or, to be more exact, the mass of embryos ready for exclusion, presents a mauve-grey coloration, very different from the leaden tint of *Entoniscus Cavolinii* loaded with ova in the same stage of development. The embryo, especially, presents easily recognizable differential characters. We find no trace of the remarkable Nauplian eye, the existence of which I have indicated in the parasite of the *Grapsus*. The crystallines of the lateral eyes are more approximated, and from these eyes there start, on each side of the head, arcs of a reddish-brown pigment which meet upon the median part of the forehead. The sixth pair of thoracic legs presents nearly the same conformation as the corresponding pair in the embryo of *E. Cavolinii*; nevertheless the terminal rod is shorter, and does not support a tuft of hairs as in the latter. From this point of view *E. Cavolinii* and *E. mænadis* differ greatly from *E. Salvatoris*, Kossmann, in which the six pairs of thoracic feet are all similar‡.

Kossmann has placed beyond doubt the existence of the male in the European *Entoniscus*§. Further, he has supposed that in the

* 'Comptes Rendus,' August 12, 1878.

† Arbeiten a. d. zool.-zoot. Inst. zu Würzburg, Bd. iv. 1878.

‡ I resume, for the parasite of *Portunus arcuatus*, the name originally given by Kossmann, because this parasite appears to me to be specifically distinct from that of *Portunus puber*, *E. Moniezii*, with which Kossmann would identify it.

§ See Kossmann's paper translated in the Ann. & Mag. Nat. Hist. ser. 5, vol. x. p. 81.

species of the allied genus *Cryptoniscus* there is hermaphroditism with successive functioning of the two sexes and *protandry*. This hypothesis, strongly supported by the investigations of Bullar and Paul Mayer upon the Cymothoadina, appears to me to be very acceptable in the present state of our knowledge, and I willingly extend it to the genera *Hemioniscus* and *Entoniscus*, and even to other less abnormal Bopyrina, such as *Ione thoracica*, which is also found at Wimereux in the branchial cavity of *Callianassa subterranea*. We should thus easily explain how, in the case of animals so rare as the *Entonisci*, Fraisse and myself were able to find, comparatively often, upon the same crab, two or even three female individuals in different stages of development and unaccompanied by any male*.

The young imperfectly developed females would in this case be males, which, after having functioned as such, had succeeded in attaching themselves directly upon the crab, and continued their evolution as females, thanks to the more perfect nutrition which they would obtain in their new position. The great dimensions of the sac occupied by the *Entoniscus* leaves, after the escape of the embryos, a free space much greater than in the case of the true *Bopyri*, and facilitates this change of place of the male, the activity of which is sufficient.

Sacculina Carcini is not very common at Wimereux; the *Entoniscus* is very rare there. The coincidence of these two parasites upon the same crab therefore possesses a real interest, especially if we connect this observation with those made by Fritz Müller upon *E. Porcellanæ*, and by Fraisse upon *E. Cavolinii*. It is, it seems to me, a fresh example of what I have called the mutual assistance or the successive association of parasites in a determinate order, each species preparing the soil for those which are to follow it. Demonstrated first among the insects, this law seems to me to be of very general application, and it will doubtless furnish valuable indications in comparative pathology when it is applied to parasites of a lower grade, animal or vegetable.—*Comptes Rendus*, May 3, 1886, p. 1034.

On the Calcareous Sponges of Minorca.

By M. LAKSCHEWITZ.

M. Lakschewitz has communicated to the Dorpat Society of Naturalists a preliminary note on the calcareous sponges of Minorca, founded upon collections made in 1882 by Prof. M. Braun, chiefly in the harbour of Mahon and the Alcanfa inlet. He adopts Hæckel's classification.

Order CALCISPONGIÆ.

Fam. 1. ASCONES.

1. *Ascetta primordialis*, Hæck.

Most of the specimens are flat cushion-like stocks of 10–40 millim.

* Fraisse found the *Entonisci* upon seven females of *Carcinus maenas* without ova; one of these crabs bore two and the other three parasites. Upon a single *Portunus puber* I found two unequally developed specimens of *Entoniscus Moniezii*, the only individuals of this species that I have been able to observe.



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