

On Haptophrya gigantea, a new Opalinid from the Intestines of the Anurous Batrachia of Algeria. By M. E. MAUPAS.

The intestines of the Batrachians harbour a whole world of parasites, which live in them and multiply with a truly surprising abundance. Micrographers especially may get from them the finest harvests of Infusoria and Bacterians. From this point of view I have often examined the contents of the intestine of *Bufo pantherinus*, *Discoglossus pictus*, and *Rana esculenta*, which live in the waters of the neighbourhood of Algiers. I have always found them richly populated, and have been able to recognize the following species—*Nyctotherus cordiformis*, *Balantidium elongatum*, *B. entozoon*, *Opalina dimidiata*, *O. intestinalis*, *O. obtrigona*, and *O. ranarum*. Swarming among these large ciliated Infusoria were myriads of Bodos, Monads, Amœbas, Bacilli, Vibrios, and Bacteria. All these species have already been recognized in Europe; but I have also very often met, in the intestine of the *Bufo* and the *Discoglossus*, less frequently in the frog, with a very fine species of Opalinid, which does not appear to me to have been described, and which, from several very curious details of its organization, must greatly interest protozoologists.

This Opalinid may be regarded as the giant of the Infusoria; for I have measured individuals the length of which exceeded 1 millimetre. The body is of a very elongate cylindro-conical form, tapering from the front backwards. The anterior extremity is pretty strongly depressed, and nearly twice the breadth of the posterior region, which measures from $\frac{80}{1000}$ to $\frac{90}{1000}$ millim. This depressed portion is occupied by a circular sucking-disk formed by the retreat inwards of the wall of one of the broader surfaces, which may be called the *ventral surface*. The action of the sucker is ensured by cords of sarcode which start from its inner wall and attach themselves to the opposite dorsal wall. The concavity caused by the traction of these cords is, of course, very slight, but it is nevertheless clearly visible by the microscope. The animalcule attaches itself to objects by means of this sucker. The surface of the body is very closely covered with rows of cilia. Four or five rows may be counted in $\frac{1}{100}$ millim.; and in the cavity of the sucker they are half as numerous again. The cilia, the length of which is $\frac{5}{1000}$ millim., are very close together, about 13 or 14 in each $\frac{1}{100}$ millim. These cilia are the sole organs of locomotion of this Infusorium, the progress of which is never very rapid.

The integument or ectosarc has a thickness of $\frac{45}{1000}$ millim. and consists of two very distinct layers—an external one, in which the continuation of the cilia may be traced in the form of bacilli, and an internal one composed of transparent and absolutely amorphous sarcode. This integument is entirely destitute of proper contractility, so that the animalcule cannot in any way spontaneously modify its form; on the other hand, it possesses great elasticity, which enables

the body immediately to resume its normal contour when this has been modified by any obstacle. The endosarc consists of clear and liquid sarcode, at the periphery of which there exists a layer of large opaque granules.

The nucleus is free in the general cavity, and, following the movements of the body, can move from one extremity to the other. Its form is that of a very elongate and rather flat ellipsoidal shuttle. It may measure as much as $\frac{1.85}{1000}$ millim. Its substance consists of an opaque slightly yellowish gangue, in which we see numerous spherical corpuscles of nucleolar appearance. When, in consequence of the crushing of the body, a fresh nucleus is placed directly in the water, its substance contracts, and at the surface there appears a fine structureless membrane, as in the case of many Infusoria.

The body is traversed throughout its length by a long contractile canal attached to the dorsal face, the pulsations of which, from one systole to another, last a little more than a minute. This canal is not rectilinear, but describes numerous sinuosities irregularly disposed. Its diameter, in the state of diastole, is $\frac{1.8}{1000}$ millim. It is furnished with proper walls and thus constitutes a true vessel. In this character it differs from the contractile vacuoles of the other Infusoria, which are only temporary cavities hollowed out in the endosarc. The wall of the vessel, which is visible even in the living animals, becomes still more apparent with coagulant reagents. This vessel is moreover provided with orifices, which traverse the integument and open outwards in the form of very clearly visible pores in the midst of the rows of cilia. These pores place the vessel in communication with the external world, and serve for the issue of the interior liquid at the moment of systole, and very probably for the entrance of the exterior liquid during diastole. The pores, seven or eight in number in large individuals, are placed exactly in a straight line, at irregular distances on the course of the vessel. They are of an oval form, and measure $\frac{3}{1000}$ millim. in length.

This Infusory multiplies by dividing transversely into segments. The segmentation is at first indicated at the middle of the length of the body by a clear band in the endosarc. The nucleus divides into two; a constriction contracts the body at the point of segmentation; and the vessel becomes divided in two; the two segments remain soldered together. The same operation is then repeated at the middle of each of the segments, so that we see four segments soldered together; then a second time at the middle of each of these four segments, and the body is cut into eight segments still attached to one another, and completely recalling, by their external aspect and arrangement, the zoonites of the tapeworms. These segments afterwards separate; and one always finds many of them isolated in the rectum of the hosts of this Infusory.

This fine Infusory much resembles the Opalinid found by Von Siebold in *Planaria torva*, and figured by Max Schultze under the name of *Opalina polymorpha*. If we adopt the generic divisions established by Stein in the family Opalinidæ, it will have to take its

place side by side with the last-mentioned species, in the genus *Haptophrya*; and on account of its large size I name it *H. gigantea*.—*Comptes Rendus*, May 5, 1879, p. 921.

Trichinosis in a Hippopotamus. By M. E. HECKEL.

M. Heckel describes some observations made by him upon a young Hippopotamus, about two years old, which died on the 10th of May last in the zoological garden of Marseilles, having been received from Egypt about four months before. The animal was in bad health all the time of its residence at Marseilles; and its skin showed an eruption of confluent boils. When removed, the skin showed several lesions in the shape of deep ulcerations, which, having originated around a hair, had attacked the bulb, and thus formed a canal leading generally into a great purulent cavity. Smaller ulcerations led into smaller cavities bounded by a proper membrane, like true cysts, and filled with creamy pus. The examination of a section of the muscular tissue surrounding one of these cysts showed it to contain great numbers of *Trichina*-cysts, resembling those of *Trichina spiralis*, with which also the enclosed worm agreed. The cysts, however, seemed to be much more developed than in the pig or in man.

Upon this curious and interesting fact the author has the following remarks:—"I am ignorant," he says, "what relations may exist between the presence, in the same animal, of *Trichina* and of enormous cysts filled with pus; but the fact indicated by me appears to possess some interest . . . because it seems to prove that the Pachyderms, more than other animals, are exposed to the spontaneous development of this terrible parasite—an important point which may serve to throw some light upon its hitherto unknown migrations. It has been attempted to explain the frequency of the *Trichina* in the pig, by the consideration of the voracity and filthy habits of that animal. The fact to which I now call attention seems to protest against this opinion; for the hippopotamus by no means shares in the mode of existence and the tastes of the pig; and we can hardly suppose that captivity, by the special diet which accompanies it, could have a marked influence upon the development of the Nematoid worm."—*Comptes Rendus*, June 2, 1879, p. 1139.

On the Apparatus of Sound in some South-American Fishes.

By M. W. SÖRENSEN.

During my residence, in 1877 and 1878, at the mouth of the Riacho del Oro, in the Rio Paraguay, I was enabled to make some investigations into the mode in which several fishes of these rivers, especially those of the families Siluroidei and Characini, produce peculiar sounds. The swimming-bladder is the principal organ



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