

V.—On *Triarthra longiseta*. By C. T. HUDSON, LL.D.

PLATE VI.

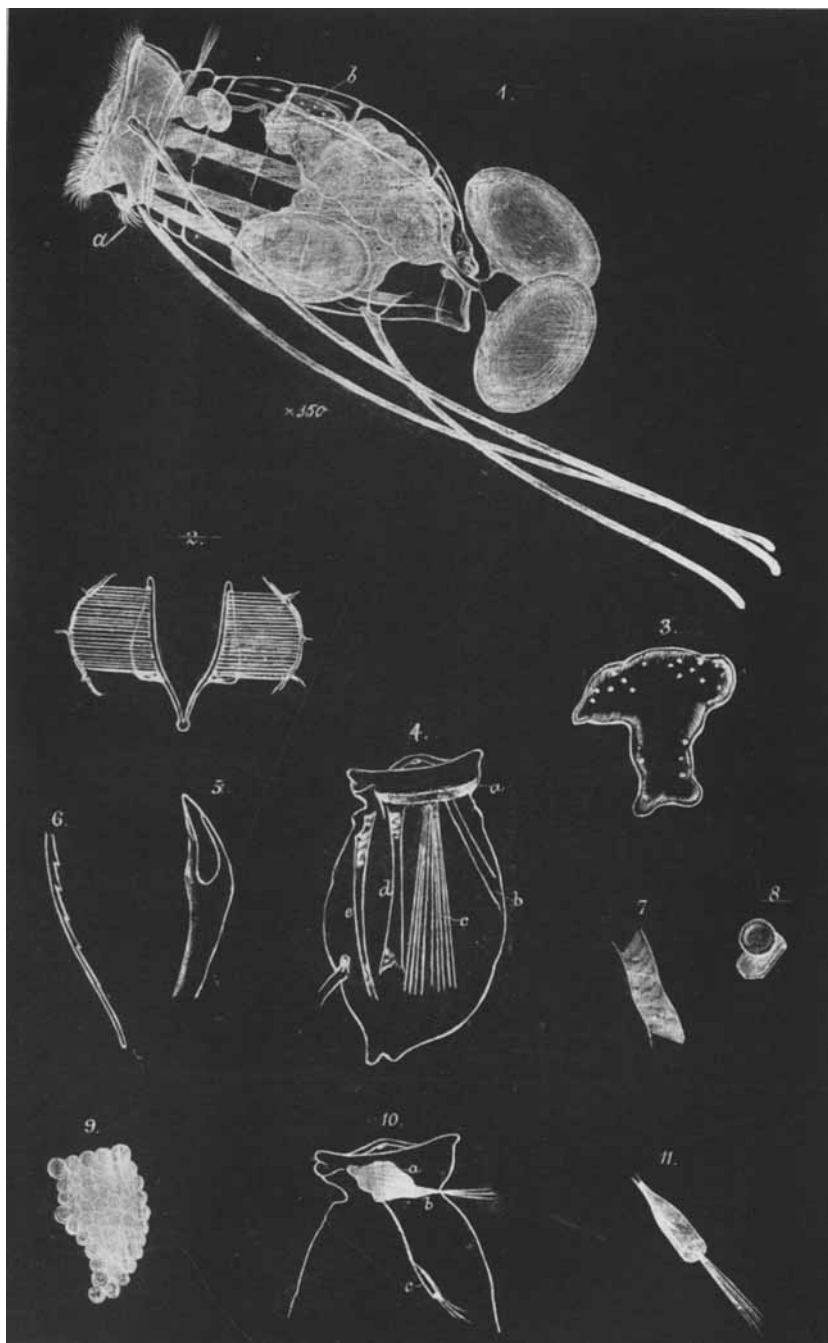
TRIARTHRA LONGISETA swarmed this summer in a farm-yard pond, near Portbury, and gave me an excellent opportunity of trying to add to the rather meagre stock of information that at present exists concerning this curious rotifer, as well as of attempting to do some justice to its singular figure.

The trochal disc is of an oval shape, and bears in its centre one large conical prominence, with a lesser one on either side of it; and on each of these latter is seated a red eye. An unbroken row of cilia fringes the disc; and by means of these, *Triarthra* swims slowly forwards, in the direction of its length, and at the same time turns gently round its longer axis. When it reaches the edge of the water in which it is confined, or for any other reason wishes suddenly to change its course, it jerks forward three spines, two of which spring from beneath the trochal disc, and the third from the lower portion of its ventral surface. The third spine is, indeed, where the pseudopodium is usually placed, and owing to the absence of which *Triarthra* is forced to be perpetually in motion.

Just under the edge of the trochal disc, and on the ventral surface, is the aperture of the buccal funnel (Fig. 1, *a*). It is formed by a fold of the cuticle, and is shaped like a watch-pocket, having its edge and inner surface lined with cilia. The funnel slopes backwards and upwards towards the dorsal surface, to meet the mastax. This latter is furnished with jaws similar to those of *Melicerata*, and containing about twenty pairs of slender parallel rods attached to the incus (Fig. 2). From the mastax proceeds a long narrow tube to the stomach, which has very thick walls, and the lower third of which is divided from the upper portion by a deep constriction. This lower portion is densely covered with long cilia, and the food which enters it is soon afterwards expelled into the cloaca. On the upper portion of the stomach are seated two saddle-shaped gastric glands (Fig. 1, *b*; and Fig. 3), clear and almost colourless, and with what appear to be oil globules embedded in the surface.

The ovary is generally large, and stretches right across the body, usually containing one large egg and a multitude of undeveloped germs. It opens into the cloaca; and each egg, when sufficiently matured, is expelled, with a sudden violent effort, so quickly that the eye can scarcely follow the process. The eggs remain attached for some time, by slender threads, to the parent; and *Triarthra* is generally to be found with two or three eggs adhering to it.

The muscular system of *Triarthra* is very remarkable (Fig. 4). One powerful band (Fig. 4, *a*) passes round the neck, and from



Auctor del. Tuffen West lith.

W West imp.

Structure of *Triarthra longiseta*.

under its edge spring four other pairs; all are striated,—the striae, which are frequently oblique (Fig. 7), averaging 2500 to the inch: only one of each pair is represented in the figure. One pair (*b*) is fastened to the dorsal surface: the next (*c*) consists of from eight to ten parallel fibrillæ, divided into two main groups, and stretches nearly the whole length of the rotifer. The other two (*d, e*) run parallel to the ventral surface; and the whole four pairs act together with surprising vigour, and enable the animal to draw its head suddenly in, and so jerk forward the spines. In Pritchard's 'Infusoria,' *Triarthra* is drawn in an impossible attitude, for the head is represented protruded while the spines are advanced. The spines recover their normal position by their own elasticity; for they appear to be hollow at their bases like quills, with one half cut away (Fig. 5) where they are fastened to the body. They are also notched here and there, and, especially towards the ends (Fig. 6), are occasionally roughened by minute imbrications. Five circular muscles surround the body, and by their contractions force out the retracted head.

The vascular system of *Triarthra* is delicately transparent, and very difficult to be seen. It exists, however, as a long, tortuous double thread, or tube, which springs from the cloaca, passes up either side of the body close to the surface, and ends in a mesh of convolutions below the neck. I could only detect one vibratile tag on each side of the neck, and close to the spot from which the muscle (*c*) springs. I have always failed to discover a contractile vesicle, but it may be very small, and hidden between the ovary and stomach.

By bringing into focus the central and inner portion of the head, a bluish and roughly rhomboidal mass (Fig. 10, *a*) may be seen, above which are placed the eyes, and a prolongation from which (*b*) extends to a fossa beneath the neck bearing long setæ. From this mass, also, which is probably a cerebral ganglion, may be traced, on either side of the body, a curved thread, which ends in a rocket-shaped base (*c*), and Fig. 11, bearing setæ. These are doubtless tactile organs; precisely similar ones exist at the hinder extremity of *Synchaeta tremula*.

Each eye (Fig. 8) is a clear colourless sphere of $\frac{1}{80000}$ th of an inch in diameter, resting on, and partly embedded in, flat plates of red pigment.

Towards the latter end of November, all the specimens I captured had winter eggs (Fig. 9), which are of a peculiar shape, and are protected by a thick layer of yellowish transparent cells. The average length of a full-grown *Triarthra* is $\frac{1}{700}$ th of an inch.