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**VARIOUS**

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*Smiley*

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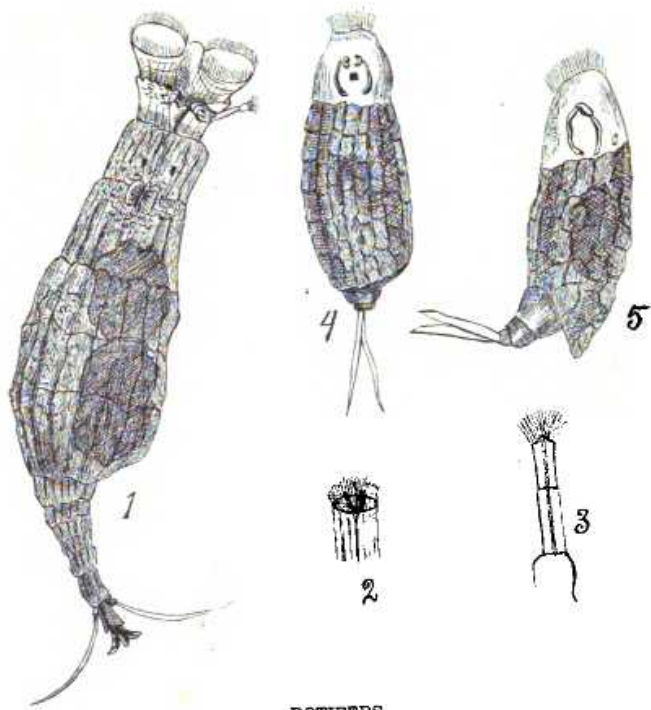
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ROTIFERS



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## Some New and Little-known Rotifers.\*

By W. BARNETT BURN, M. D.

[WITH FRONTISPICE.]

### PHILODINA TUBERCULATA.

This rotifer, shown in Fig. 1, is of large size, and occurs frequently in pools, yet it is not well known, and I do not think has been figured before. It is curiously like the *Rotifer tardus*, though in important points so different; whereas, though in all essential details coming very near *Philodina aculeata*, in aspect it is quite dissimilar.

In considering the points of resemblance of this species with *Rotifer tardus*, we notice the general outline, the brown color, the deep folds in the body, the proportion of the width of the wheels to the neck, and the habits and movements of both are the same; also the toes are somewhat alike, but here we come to the distinctive character of *Philodina tuberculata*; it differs from all its relatives in its long and slender spurs, and by this alone it may be recognized. *Rotifer tardus* approaches nearest to it in this particular, but the spurs are thicker, and the toes longer in proportion to them; in the former the last joint of the foot comes down over the toes, acting as a sucker, and, in doing so, flattens out, giving the appearance of the animal having four or five toes. Then there is the radical difference of the position of the eye, being in the rotifer in the frontal column and in the philodine in the neck; also, the former has only two teeth each side; the latter has three teeth on one side, if not on both. Sometimes many will be found having only two teeth on one side. I have counted sixty in succession with this peculiarity, and at other times have seen three on both sides always. Lord Osborne, who specially studied the teeth of rotifers, observed the same variation in *Philodina roseola*, and other observers in other species. It may be a case of knowledge coming and wisdom lingering, the third tooth being cut late in life when versed in the ways of the world.

\*Science-Gossip.

Two eyes may sometimes be seen in *Rotifer tardus*, in the neck, just above the mastax, which possibly might cause confusion; these belong to a fetal animal; but one has to look so far down before one comes to the second mastax that it might be a means of easily separating closely allied species. The head is upwards in *Rotifer vulgaris* and *tardus*, downwards in *Philodina aculeata*, *Philodina tuberculata*, and *Rotifer macrurus*, but is this invariable?

The color\* of this rotifer varies considerably, probably chameleon-like from the tint of the flocculent deposit in which it lives; some may be found quite a light yellowish-brown; these are the younger ones; in these the internal organs are more easily seen; the mastax is surrounded by a considerable glandular mass, the buccal funnel stands out like a pouch from the front of the animal, its margin fringed with cilia, and leads straight down to the mastax, immediately under which is a large oblong stomach separated by a constriction from a similar shaped but smaller intestine; on the other side an oval ovary fills up the body.

The antenna (Fig. 3) is long, two-jointed, the joint very faintly marked; at the end are three small lobes fringed with cilia. The frontal column (Fig. 2) is rather wide in proportion to its length; among the cilia a small cleft proboscis may be seen immediately before the wheels expand. The tubercles are not well marked, and appear to be formed by the folds of the trunk; in its fully extended state, when it becomes worm-like, resembling *Rotifer vulgaris*, the tubercles almost disappear.

*Philodina aculeata*, frequently found with the one under consideration, is of a yellow hue, has the distinctive spines, the wheels do not exceed the width of the body, the spurs are small, and the end joint of the antenna is wedge-shaped, base forward.

#### DISTYLA FLEXILIS.

This rotifer, belonging to the family *Cathypnade*, which includes the common *Cathypna luna*, is represented in front view, Fig. 4, and in side view, Fig. 5. Mr. Gosse places it in the genus *Distyla* with some hesitation; there is indeed but little distinction between *Distyla* and *Cathypna*, the former being longer in proportion to width, and the curious lateral, bellows-like, infolding characteristic of the family being less marked.

In this group may be observed something like a state of sleep; the animal perches on its claw-like toes, bent at an angle under its body, and remains motionless for a time, as if visited by that "gentle sleep beloved from pole to pole," which most rotifers seem not to require. The little rotifer has to exercise greater perseverance than the little ant to acquire its daily provender, and, examine it when you may, from morn to dewy eve, or in the silent watches of the night, it is ever in a state of ceaseless activity. This group is interesting from being an exception to this general rule.

*Distyla flexilis* is small, about  $\frac{1}{15}$ -inch long and without color, except the one rose-red oblong eye, and a yellowish tinge in the stomach. The body is covered with folds, giving it an irregular tessellated appearance and making the outline fuzzy under a low power. It is active in its attacks on food, but remains near one spot for a long time, occasionally swimming about to seek "fresh fields and pastures new," yet

I have left it under a  $\frac{1}{2}$  objective, and at the end of an hour have found it still in the field.

This rotifer separates its toes literally like pincers, and seizes objects between them as if to get a better hold. The one figured came from Wimbledon Common, and was abundant in some water given me by G. Western, Esq.

### The Work of the Microscope.\*

By P. H. DUDLEY, C. E.,

NEW YORK, N. Y.

At no period in the history of the microscope have the results of its researches received as much attention as at the present time. The importance of the investigations in recent years, by its means, of many of the causes affecting the health and comfort of mankind, is just being recognized by the efficacy of the remedies which have been suggested from a knowledge of the causes. The indications of a new remedy are daily flashed from continent to continent by that unseen agency, electricity, its messages multiplied by the press in all languages and distributed through the land by steam's swiftest trains. These three great inventions of communication and diffusion of knowledge of today have carried the tidings to the peoples of all nations, and there is a common interest and thought upon the subject. History does not record a grander spectacle than that of the entire civilized world, brought into sympathy and interest by the investigations of the microscope, in search of relief for thousands of its sufferers from some of the occult conditions incident to life.

Animal or plant life, either of the highest or lowest orders, is surrounded by conditions, some favorable to growth, others unfavorable, and whether an animal or plant will survive or perish aside from the inherent vitality depends upon the preponderance of the favorable or the unfavorable conditions of environment. This law is coeval with the existence of life. To ascertain and understand the conditions favorable to the human race has and will always occupy the attention of a large portion of the more intelligent of mankind.

Some of the conditions are at once apparent; others equally important are unseen, obscure, and only discovered by tracing back from the effect to the cause. We experience effects and not causes, and to analyze the former, assigning each to its proper cause, is by no means an easy matter. The first step is to observe the facts, study their relations, and trace the laws controlling them. It is only in this way that any progress has been made, and then oftentimes the real nature of the cause remains undiscovered.

Jenner's important discovery of vaccination for small-pox a century ago was not the result of an accident as often stated, but close observation of a series of facts and studying their relations. That small-pox was due to a germ in the system invisible to the keenest vision is of recent demonstration by the microscope.

\* Annual address of the President of the New York Microscopical Society, 1891, from *Journal of N. Y. Microscopical Society*.

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