

5. A Note relating to *Procerodes ulvae*, *P. wheatlandi* and *G. segmentata*.

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(Mit 7 Figuren.)

eingeg. 14. April 1908.

At the meeting of the American Morphological Society held at Baltimore in Dec. 1900, the writer gave a demonstration of a marine triclad collected at Sandwich, Mass. and which was believed to be *Gunda segmentata*. The following note appears among the proceedings of the society published in Volume II. No. 6 of the Biological Bulletin.

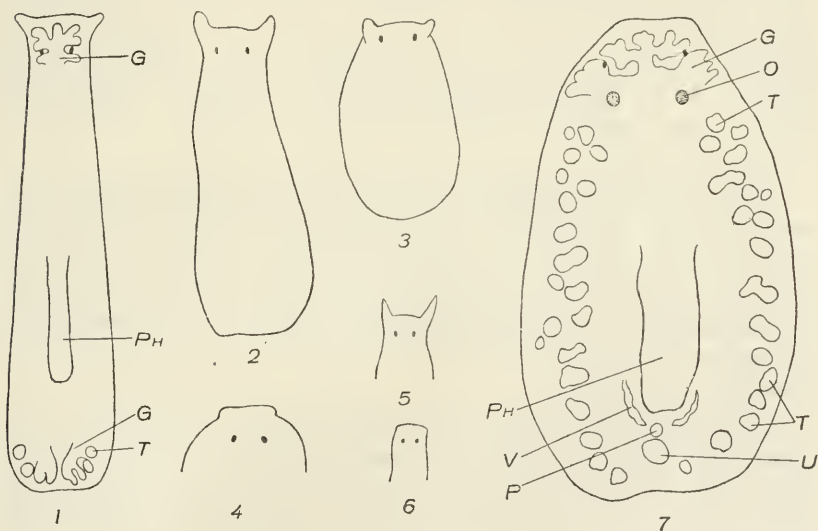
»A species of *Gunda*, which in its external features seemed identical with the *G. segmentata* of Lang, was found in large numbers at Sandwich on Cape Cod. The internal arrangement is not, however, as regular as Lang describes for *G. segmentata*. From a comparison with Verrill's figure of *Procerodes ulvae* collected in the same region (Trans. Conn. Acad., Vol. VIII, January, 1893) it is probable that the two forms are identical and that Verrill has figured the head incorrectly.«

Dr. J. Wilhelmi has requested me to publish the important parts of the notes and figures made during my study of the fresh specimens of the above mentioned triclad, for the reason that after an examination of all my original memoranda and the specimens preserved from the same lot of material, he believes the form in question to be neither *Procerodes* (*Gunda*) *segmentata* nor *ulvae* but *wheatlandi*. Accordingly, I have brought together in a connected account the notes made during a brief study of the living worms and have placed in Dr. Wilhelmi's hands samples of such permanent preparations as I now have on hand.

In all, eight specimens were studied alive and examinations made of worms moving freely as well as held under the pressure of a cover slip. Measurements of some specimens gave 4—5 mm of length to about 1 mm of width, and allowing for some contraction, I considered 5 mm $\times$ $\frac{3}{4}$ mm as accurate an estimate of the proportions as I could make. Examined microscopically, the small transparent specimens are recorded as having spherules of pigment, pink and purplish and others of yellow, others still a bluish green and among them certain colorless spheres. Rhabdites were found distributed in areas which make a polygonal tracery on the surface. The larger worms did not show this pigmentation. The shape of the body is indicated by the accompanying sketches (Fig. 1—6). I studied quite carefully the auricular appendages of the anterior end comparing them with the tentacles shown in Verrill's figures. These are not tentacles projecting from the dorsal surface of the body near its margin, but projections of the body, though the rolling of the

anterior margin between the two appendages often gives them the appearance of tentacles.

A most striking feature of this worm is its incessant activity. It moves about constantly and makes very active movements when touched. I have never seen a triclad so active. It is quite tough and will recover after being subjected to considerable pressure under a cover slip, crawling about much as before, when returned to the water. The fact that the specimens were obtained from a lot of *Mytilus edulis* collected at Sandwich Mass. and brought home along with the *Mytilus* wrapped in a newspaper during several hours travel on a railway, shows further their resistance to conditions fatal to some forms. When the *Mytilus* were placed in water the worms crawled out of the mass and were discovered along the edge of the dish. The water used was that delivered through the supply pipes of the laboratory, and as this often kills deli-



Sketches of the living worm. G, gut lobes; Ph, pharynx; P, penis; O, ovary; T, testes; U, Uterus; V, Vas deferens.

cate forms, the fact that these worms survived in the dish for several weeks shows again a considerable power of resistance. These facts suggest the habit of living near the tide line where they may be left exposed between tides as is the case with *Mytilus*. The animals seem accustomed to being out of the water for when placed upon a slide they will leave the drop and strike out across the dry surface leaving the water entirely and finally becoming stranded high and dry. This is similar to the behavior of *Syncoelidium pellucidum* and *Bdelloura candida* which often crawl up the sides of the dish containing them the addition

to the gliding movements common to such forms. The worms also move after the looping fashion of measuring worms, and some other triclads, the ventral surface between the two auricles and the median posterior ventral region acting like suckers as the worm loops along. This movement is very rapid and although they often move by gliding, this other motion is used much of the time. The action of the anterior adhesive region was studied from the dorsal side along with the auricular appendages. When the animal extends its anterior end for a new hold, the auricles are obliterated and the contours of this end of the body are as shown by the figure 6. When the adhesive ventral surface takes hold it is as though the middle portion of the anterior end between the suckers contracted and left the corners of the head expand (Fig. 5). The middle region seems to contract and roll under in front so that at one stage there is an appearance which resembles the horn-like tentacles shown in Verrill's figure of *Procerodes ulvae*. While the anterior end holds and the posterior is freed and then drawn up, the auricles project straight out in front, being then extended to their maximum length (Fig. 5). At the blunt posterior end there is sometimes a suggestion of a notch in the margin at the point where the sucker would be located on the ventral side.

The main trunks of the water vascular system and their branches were observed. The pharynx occupies the position shown in the figures 1 and 7, which also show something of the gut lobes at the anterior and posterior ends. The main posterior divisions of the gut are so closely applied that I at first thought them continuous, as in *Syneoclidium pellucidum*. A careful study, however, made it clear that they are only closely pressed together.

The ovaries were readily made out in the fresh specimens at the points indicated on the figure 7 at (*T*) and also the testes. The vasa deferentia, penis and uterus could be dimly seen posteriorly (Fig. 7). Certain silvery lobes among the lateral gut lobes were probably its yolk glands. The larger worms only showed reproductive organs.

I have attempted in the foregoing merely to put my scattered notes in a connected form without venturing any additional interpretations on observations made so long ago. These notes were sent to Dr. Wilhelmi with my full permission to make any use of them he chose. He preferred, however, that I should publish them along with a note from him upon the distribution of *G. segmentata*.

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March 15th 1908.

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Zoologischer Anzeiger](#)

Jahr/Year: 1908

Band/Volume: [33](#)

Autor(en)/Author(s): Curtis W. C.

Artikel/Article: [A Note relating to Procerodes ulvae, P. wheatlandi and G. segmentata. 201-204](#)