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North American Triclad Turbellaria. 16 Fresh-Water Planarians from the Vicinity of Portland, Oregon

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The fresh-water planarians of North America have not been well studied. The most extensive work on them is the invaluable study by Kenk (1935) on Virginian triclads. Later this author published similar studies on the fresh-water triclads of Michigan (Kenk, 1944) and of Alaska (Kenk, 1953). My own publications on North American triclads have been sporadic, dependent upon the receipt of specimens from interested zoologists. Especially knowledge is scanty concerning the fresh-water planarians of the western half of the United States. It is known that certain species, *Dugesia tigrina* and *dorotocephala*, occur virtually throughout the breadth of the United States, but other species have a more limited distribution, sometimes very limited. Hence material from the vicinity of Portland, Oregon, hitherto not explored for planarians, was very welcome. Dr. Eugene Kozloff, of Lewis and Clark College, kindly sent an abundance of live and preserved planarians from the Portland area, together with some whole mounts and sets of serial sections. His student, Donald Huther, participated in assembling the material. Unless otherwise stated, the worms came from the vicinity of Crystal Springs in the Eastmoreland District of Portland.

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FAMILY PLANARIIDAE

The material contained three common species: *Dugesia tigrina*, *Dugesia dorotocephala*, and *Polycelis coronata*. As indicated above, the first two species are spread throughout much of the United States. The specimens of *D. tigrina* came from water-lily leaves in a boggy inlet on the north side of Lake Oswego. *Polycelis coronata* is distributed from hill streams in the Black Hills of South Dakota westward to the Pacific coast. A fourth planariid in the material was found to be an undescribed species.

***Phagocata oregonensis*, new species**

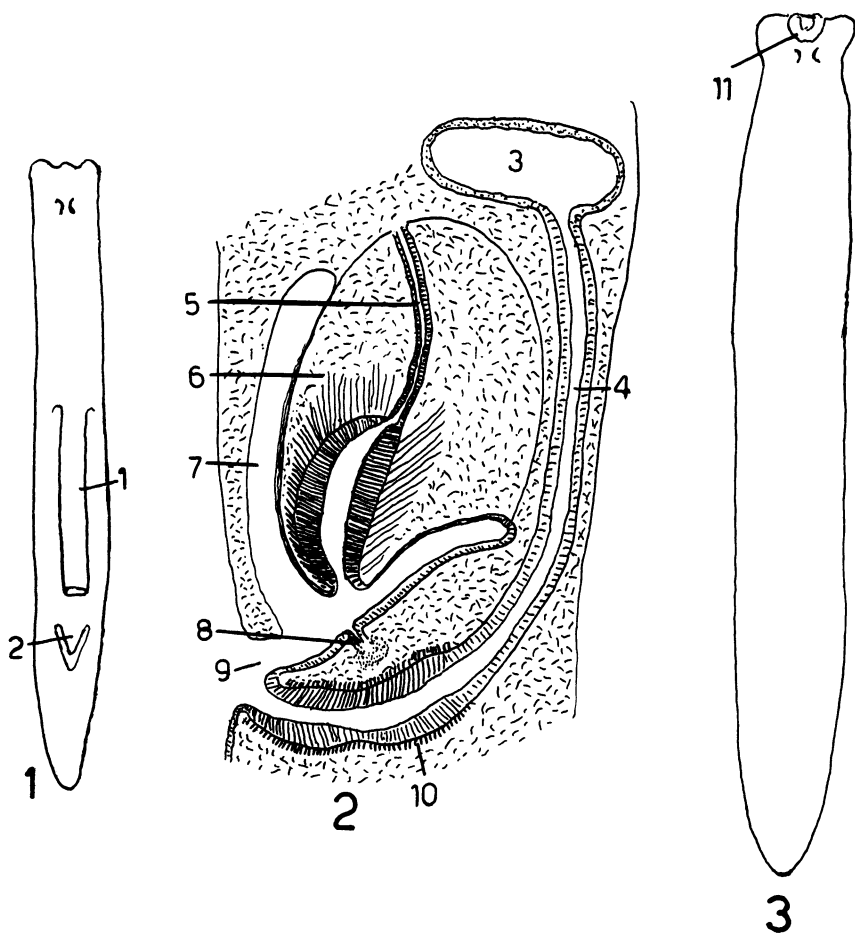
Figures 1, 2

This is a small white species, about 5 mm. long, with the truncate anterior end characteristic of the genus (fig. 1). There is a pair of eyes well behind the anterior margin, which lacks an adhesive organ.

Study of the sagittal series of sections kindly provided by Dr. Kozloff indicate an undescribed species of *Phagocata*. The testes are ventrally located and extend posteriorly to the level of the copulatory apparatus. The latter is depicted in sagittal view in figure 2. The sperm ducts could not be traced into the penis bulb but evidently unite at the anterior margin of the bulb to form an ejaculatory duct that arches through the bulb to enter an oval cavity in the penis papilla. This cavity, lined by an epithelium of high slender cells, narrows to its exit at the tip of the penis papilla. The penis bulb contains a web of muscle fibers from which radiating fibers attach to the wall of the penis lumen. The surface of the penis papilla and the wall of the male antrum into which the penis papilla projects are lined by a very thin epithelium which widens into a cuboidal form on the posterior wall of the antrum. This wall at a point opposite the penis tip is penetrated by the common ovovitelline duct which, as is characteristic of the genus, opens into the male antrum.

The female apparatus presents no special features. The copulatory sac, located just anterior to the penis bulb, is of oval contour, with a thin epithelial wall not underlain with musculature. From the upper part of its posterior wall, the bursal canal, lined with cuboidal epithelium, proceeds posteriorly above the penis, then curves ventrally to open into the common gonopore (fig. 2). This terminal part of the bursal canal is enlarged, lined by high slender epithelial cells, and provided with a coat of circular muscles.

Small white species of *Phagocata* (= *Fonticola*) are common in the world, especially in the Balkans, Asia, and Japan. They cannot be distinguished externally as a rule, only by the details of the copulatory



FIGS. 1-3. 1. *Phagocata oregonensis*, whole worm from life. 2. Sagittal view of the copulatory apparatus of *P. oregonensis*. 3. *Dendrocoelopsis vaginatus*, from life. Symbols: 1, pharynx; 2, penis papilla; 3, copulatory sac; 4, bursal canal; 5, ejaculatory duct; 6, penis bulb; 7, male antrum; 8, common ovovitelline duct; 9, gonopore; 10, muscle layer; 11, adhesive organ.

apparatus. They have been discussed by Kenk (1953). In North America there are known three white species of *Phagocata*: *morgani* (Stevens and Boring, 1906), Appalachian region; *nivea* Kenk, 1953, Alaska; and *bursaperforata* Darlington, 1959, Georgia. The last lacks the typical truncate head, having laterally extended auricles. The present species differs from *P. morgani* and *P. nivea* in the details of the male copulatory apparatus.

HOLOTYPE: One set of serial sagittal sections deposited in the Department of Living Invertebrates of the American Museum of Natural History, also three worms mounted whole on a slide.

FAMILY DENDROCOELIDAE

Dendrocoelopsis vaginatus Hyman, 1935

Figure 3

This species has not been seen since the original description, based on specimens from Flathead Lake, Montana, but is evidently common in the vicinity of Portland, Oregon. The Montana specimens were white and the Oregon specimens are dark, but microscopic examination showed that the dark color is caused by dark points in the cells of the gastrodermis, presumably originating from ingested food. The superficial tissues of the body were seen to be colorless.

There seems to be little difference between *Dendrocoelopsis piriformis* Kenk, 1953, and *D. vaginatus* except that the testes are dorsal in the former, ventral in the latter. The location of the testes has been regarded as a stable taxonomic character in fresh-water triclad, but there is one species, *Dugesia festai* (Borelli, 1898), in which the testes, although usually ventral, are dorsal in some individuals (de Beauchamp, 1939; Marcus, 1960). Probably *D. festai* is a form of *D. tigrina*, a highly variable species, with usually ventral testes.

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