

(1940)

The Virginia Journal of Science

Vol. I

DECEMBER, 1940

No. 8

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Published by The Virginia Academy of Science
Monthly, except June, July, August and September
at
Lexington, Virginia.

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**Studies on the Turbellarian Fauna
of the Norfolk Area. V.**

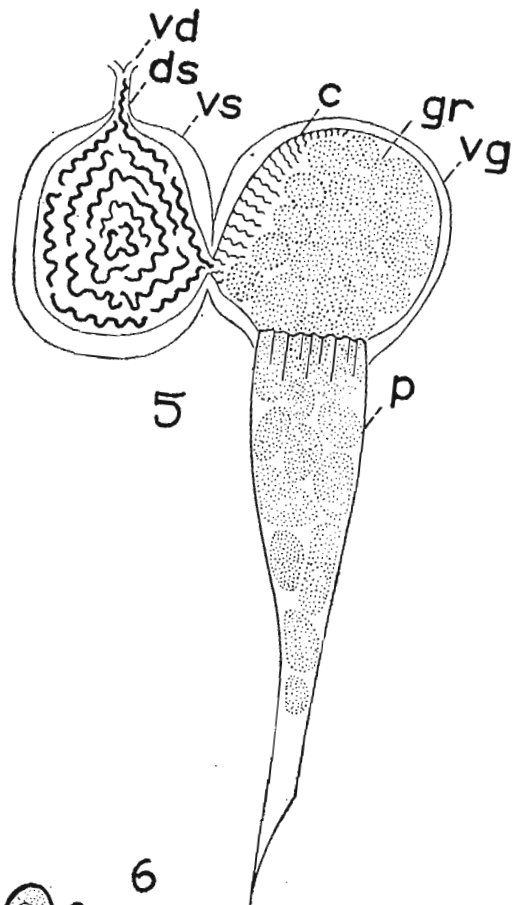
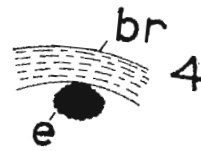
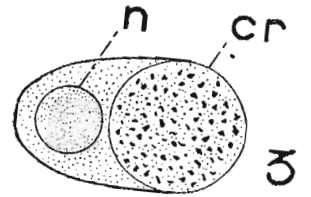
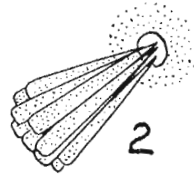
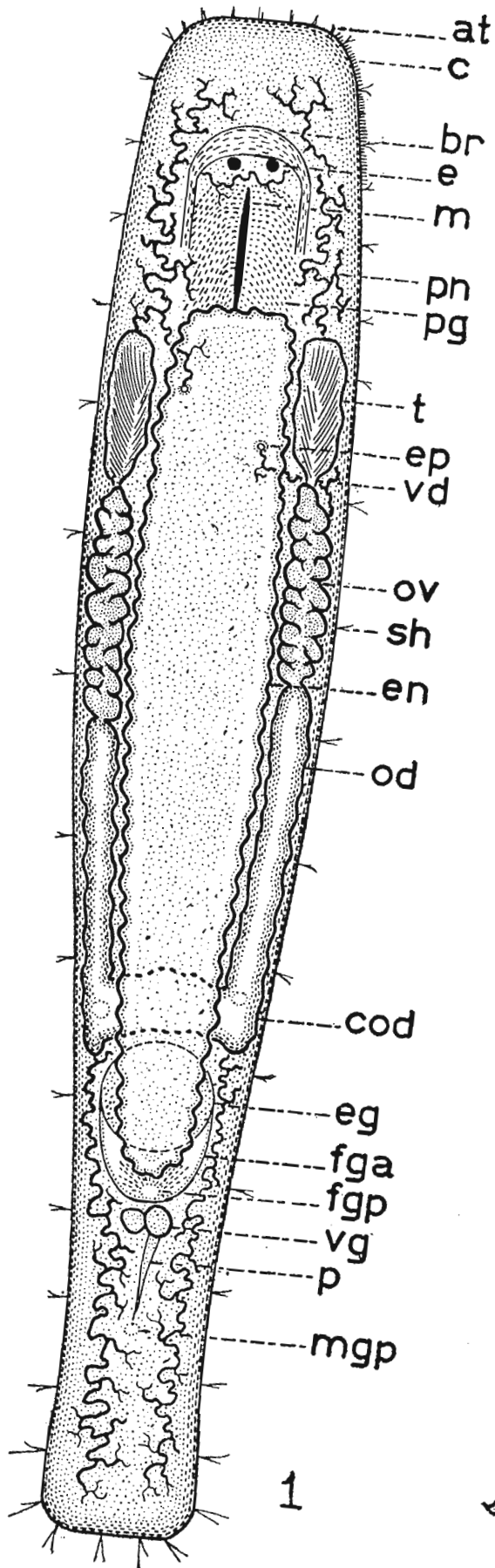
**Anatomical Notes on the American Representative
of *Macrostomum orthostylum* Braun 1885**

FREDERICK F. FERGUSON AND E. RUFFIN JONES, JR.

Macrostomum orthostylum was first taken from the flowing fresh waters of Dorpat (Tartu) Estonia by Braun in 1885. Meixner (1915) also reports its occurrence in the fresh water lakes of the eastern Alpine country. It is now reported from fresh water pools in Williamsburg, Virginia and from flowing fresh water streams in the Norfolk area. It is associated with green algae, copepods, protozoans, and other Turbellaria. A cotype of this species is deposited in the U. S. National Museum as No. 22684. All anatomical measurements used are average figures.

*Description*¹—Sides of the slender dorsoventrally compressed body (Figure 1) subparallel for the great part of the length of the animal, no lateral indentations, caudal region without spatulation, delimited by slight gradual depressions; body colorless except for black eyes and enteric inclusions; total length up to 1.1 mm. Epidermis of flat, roughly pentagonal cells bearing an even coat of cilia (5 μ long). Rhabdites (Figure 2) in packets of 7 to 10 fairly numerous on dorsum, relatively sparse on ventrum, posterior caudal rim of rhabdites prominent; "Rhamitten" sparse, no "Rhabditenstrassen"; closely packed ovoidal "Stabchen" in floor of female genital atrium radial to female gonopore (Figure 1, *fgp*). No "Haftpapillen". Sensory hairs (Figure 1, *sh*) very long postero-laterally (82 μ), frequently single laterally, arranged in short tufts anteriorly (Figure 1, *at*), no epidermal spines. "Brain" (Figure 1, *br*) crescentic, lacking median indentation at commissure, longitudinal nerve cords readily observable anteriorly. Eyes paired (15 μ in diameter), closely attached (Figure 4) at dorso-posterior part of "brain"; pigment material of eye extremely small and amorphous. Mouth median ventral (Figure 1, *m*) limited by ciliated lips. Pharyngeal glands (Figure 1, *pg*) weakly developed but extensive in latero-posterior direction. Enteron dorsal (Figure 1, *en*) saclike, laterally indented, ciliated, extending almost to female gonopore. Excretory system (Figure 1, *pn*) of paired latero-ventral main-stems extending almost from one end of body to the other, no commissures observable, but with extensive lateral branching in cephalic

¹A part of the expenses entailed in the collection of this material was met by a grant from the Virginia Academy of Science.



region (Figure 1), external openings paired, dorsal and variable in nature near and median to testes (Figure 1, *ep*). Testes compact (Figure 1, *t*) roughly obovate, smooth walled, located latero-ventrally and only slightly posterior to anterior end of enteron. Vasa deferentia (Figure 1, *vd*) extend latero-posteriorly from each testis to posterior end of enteron, there uniting to produce ductus seminalis (Figure 5, *ds*). "False" vesicula seminalis not observed. Vesicula seminalis (Figure 5, *vs*) a contractile spheroidal organ of small volume (20 μ diameter). Entrance from vesicula granulorum to vesicula seminalis guarded by a sphincter. Proximal portion of vesicula granulorum ciliated (Figure 5, *c*), distal portion and genital canal of penis-stilette usually filled with ovoidal packets of granular material (Figure 5, *gr*); vesicula granulorum is relatively thin walled. Penis-stilette (Figure 5, *p*) entirely straight, thin walled, terminus sharply pointed, opening terminal, length 57 μ . Male gonopore (Figure 1, *mgp*) relatively distant from posterior tip of body. Mature sperm cells (Figure 6) highly mobile, 28 μ long unextended, divided into tail, body, and feeler regions with highly refractive unit in body region, without "Nebengeisseln". Female genital system typical for genus with exception of extreme posterior position of female gonopore in ventral floor of female genital atrium (Figure 1, *fgp*).

Species Diagnosis.—Body slender, color white to gold, various gradations in rhaboids, with or without "Haftpapillen" in tail region, penis-stilette elongate straight funnel shaped (length up to 142 μ), opening oval at very sharp terminus, mature sperm cell without "Nebengeisseln", ovaries heavily indented, body length up to 2.4 mm, distribution fresh waters of Estonia, Switzerland, and United States, cotype U. S. N. M. No. 22684.

Remarks.—This paper records the occurrence of *Macrostomum orthostylum* Braun in the United States for the first time. An advantage was taken of this opportunity to contribute anatomical notes upon the form and especially to present information and a drawing upon the gross anatomy. The morphology of the penis-stilettes of the American and European forms is practically identical, while there is a marked difference in size.

LEGEND TO TEXT-FIGURES

1. *Macrostomum orthostylum*. Dorsal aspect of gross anatomy in optical section. x 137.

at—anterior tufts of sensory hairs	m—mouth
br—"brain"	mgp—male gonopore
c—cilia	od—oviduct
cod—common oviduct	ov—ovary
e—eye	p—penis stilette
	pg—pharyngeal glands

- | | |
|---------------------------|------------------------|
| eg—egg | pn—protonephridia |
| en—enteron | sh—sensory hairs |
| ep—excretory pore | t—testis |
| fga—female genital atrium | vd—vas deferens |
| fgp—female gonopore | vg—vesicula granulorum |
2. *Macrostomum orthostylum*. Packet of rhabdites. x 222.
3. *Macrostomum orthostylum*. Parenchymatous, concrement bearing cell. x 1000.
- | | |
|---------------|-----------|
| cr—concrement | n—nucleus |
|---------------|-----------|
4. *Macrostomum orthostylum*. Diagram showing relation of eye to "brain". x 295.
- | | |
|-------|------------|
| e—eye | br—"brain" |
|-------|------------|
5. *Macrostomum orthostylum*. Male sex apparatus. x 895.
- | | |
|------------------------|------------------------|
| c—cilia | vd—vas deferens |
| ds—ductus seminalis | vg—vesicule granulorum |
| gr—packets of granules | vs—vesicula seminalis |
| p—penis stilette | |

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