scribed by Torrey from Alaska, as synonymous with *Epiactis prolifera* Verrill. This is, I think, not correct. The species I called *Cnidopus ritteri* (Torrey), also taken on the coast of Alaska, is very different from *prolifera* and, as far as I can see, is identical with Torrey's species; the nematocyst batteries at the base of *Cnidopus* probably consist of atrichs. It is questionable if Uchida's *Eloactis mazelii* (l.c., p. 288) is identical with the European species. Some other species described by Uchida are not referred to the right genus. *Andwakia hozawai* is probably not *Andwakia*, as it seems to lack tenaculi proper. *Milne-Edwardsia akkeshi* (Annot. Zool. Japon. 13: 571. 1932) is certainly not *Milne-Edwardsia* but belongs to a new genus, if it is not identical with *Drillactis*, the anatomy of which is unknown. *Phellia decora* (Annot. Zool. Japon. 17: 623.1938) is not a *Phellia* but a *Telmatactis* (or possibly another genus previously described, see Stephenson, *The British sea anemones*, 1935, and Carlgren, Vet.-Akad. Handl. Stockholm (3) 17: 67–68.1938). Moreover, it raises the question as to whether the synonyms enumerated by Uchida of *decora* are correct.

ZOOLOGY.—*Notes on the morphology of* Macrostomum ruebushi *var.* schmitti.[1] WAYLAND J. HAYES, Jr., University of Virginia, and FREDERICK F. FERGUSON, College of William and Mary. (Communicated by WALDO L. SCHMITT.)

In October and November 1938, while investigating a pond and its spring source situated beside Charlotte Pike, Nashville, Tenn., one quarter of a mile west of the intersection of Old Hickory Boulevard with the Pike, we discovered what appears to be a new variety of a turbellarian worm, *Macrostomum ruebushi* var. **schmitti.** In this, the type locality, the variety, of which we obtained many specimens and studied about 50 mature individuals, was associated with *Stenostomum virginianum*, *S. tenuicaudatum*, *Dalyellia rossi* var. *tennesseensis*, *Gyratrix hermaphroditus*, and unidentified species of *Provortex* and *Geocentrophora*. The new variety is named in honor of Dr. Waldo L. Schmitt, curator of marine invertebrates, U. S. National Museum, in gratitude for his kind assistance in our work upon Turbellaria. The cotypes are deposited in the U. S. National Museum as no. 20529.

Description.[2]—Sides of the dorsoventrally compressed body subparallel for the greater part of the length of the animal, without lateral indentations in the cephalic region, with slight gradual depressions marking off the spatulate tail; body colorless except for dark eyes and enteric inclusions;

[1] Received September 6, 1939.

[2] The name of this variety was first published in the program of the Seventeenth Annual Meeting of the Virginia Academy of Sciences at Danville, Va., p. 18, May 6, 1939, without description. The characters of the variety were discussed by Mr. Hayes in the paper that he delivered at that time before the Academy. The present account, however, constitutes the first publication of the variety.

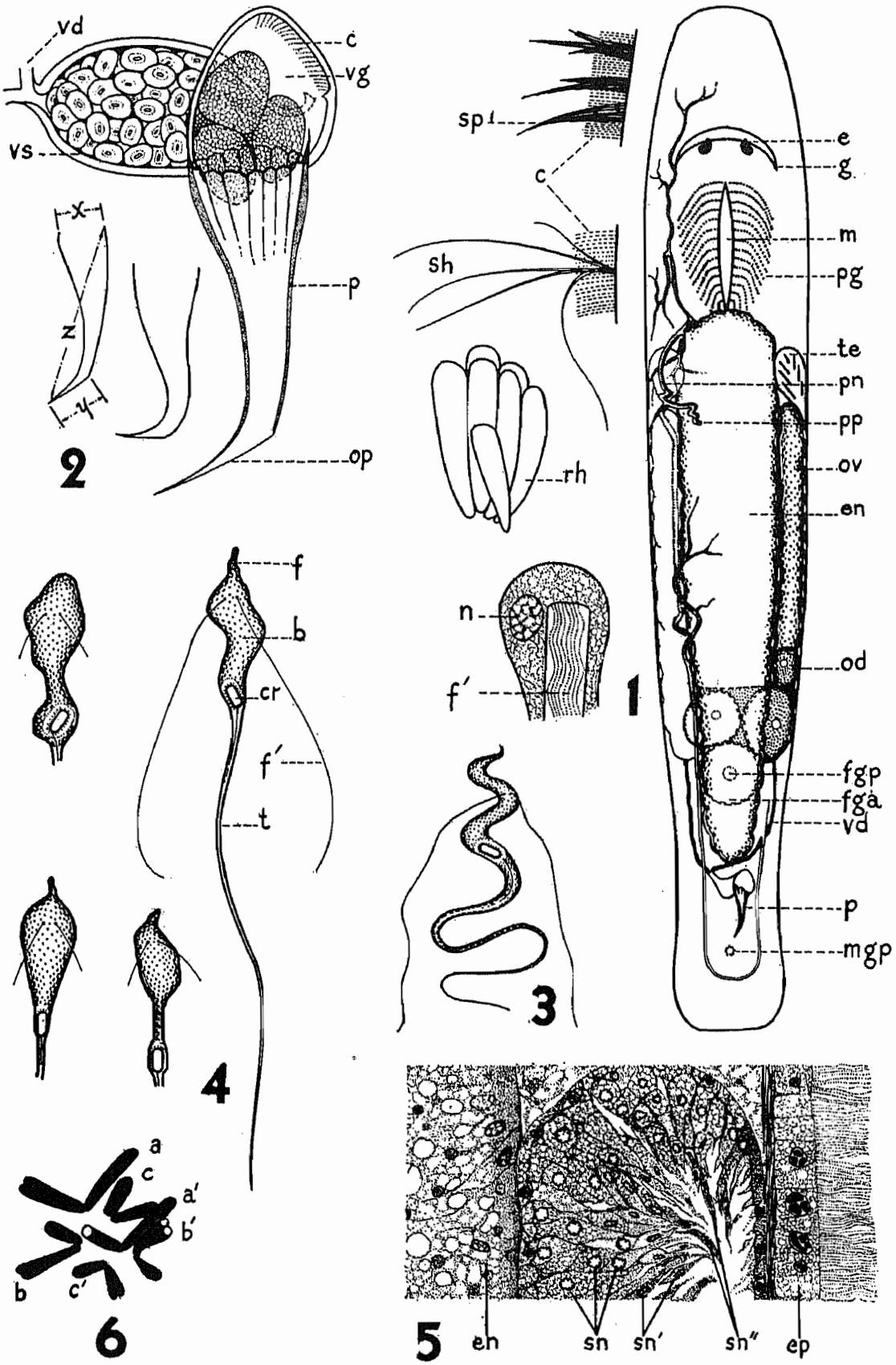
total length 1 to 1.7 mm. Epidermis of flattened, usually pentagonal cells bearing an even coat of cilia 10 to 11μ long. Rhabdites, in groups of 1 to 12, distributed over the entire epidermis but most abundantly at the extremities; weak Rhabditenstrassen present anteriorly; Stäbchen abundant, radially arranged about the female gonopore; rhabdites 9.8 to 14μ long, 1.4 to 2.1μ wide; Stäbchen smaller. With groups of sensory hairs 30 to 50μ long and lacking basal spines distributed among the cilia laterally and posteriorly, the lateral hairs stouter than the posterior ones; with semirigid spines 25μ long restricted to the anterior cephalic margin. Paired cerebral ganglia joined by a broad commissure to form a crescent-shaped "brain" located equidistant between the dorsal and ventral sides of the body. Paired eyes approximately 17μ in greatest diameter immediately behind and dorsal to the "brain." Mouth bounded by ciliated lips located ventrally 145 to 190μ from anterior end. Pharyngeal glands directed laterally and then posteriorly, often exhibiting in fixed and stained material large eosinophilic vacuoles bounded by basophilic granules. Enteron saclike, considerably lobed, ciliated, extending dorsally above female gonopore almost to union of vasa deferentia. Excretory system of two laterodorsal main-stems extending almost from one end of the body to the other and connected posterior to the male gonopore by a commissure; main-stems with paired lateral branches including paired end-stems, which, at a level 100 or 130μ behind the anterior end of the enteron, pass mesially and dorsally over the enteron and, coiling, end in paired dorsal openings. Flame cells with flagella about 10μ long. Testes obovate, smooth, located lateroventral and only slightly posterior to anterior end of enteron. Vas deferens extending caudally from each testis to posterior end of enteron and there uniting with its counterpart in entering the vesicula seminalis. False vesicula seminalis not observed. Vesicula seminalis muscular, contractile, thin walled when filled with sperm, thick walled when empty. Entrance from vesicula seminalis to vesicula granulorum guarded by a sphincter. Vesicula granulorum with the proximal portion ciliated, distal portion and the stilette usually filled with granular ma-

---

Figs. 1–6.—*Macrostomum ruebushi* var. *schmitti:* 1, Dorsal view of gross anatomy, detail of epidermal spines, detail of sensory hairs, detail of rhabdites, and detail of flame cell; 2, male sex apparatus and two views of penis stilette under varying pressure beneath the cover glass (scheme of measurement: x = base, y = opening, z = total length); 3, normal, living sperm; 4, living sperm swollen by contact with water and three views of the body of the same sperm in different stages of movement; 5, longitudinal section through the testis, showing the condensation of the nucleus during the maturation of the spermatid; 6, somatic metaphase chromosome plate.

ABBREVIATIONS USED

b.....body
c.....cilia
cr.....chromatin granule
e.....eye
en.....enteron
ep.....epidermis
f.....feeler
fga.....female genital atrium
fgp.....female genital pore
fl.....flagellum
g.....ganglion of brain
m.....mouth
mgp.....male gonopore
n.....nucleus
od.....oviduct
op.....opening
ov.....ovary
p.....penis stilette
pg.....pharyngeal glands
pn.....protonephridium
pp.....excretory pore
rh.....rhabdite
sh.....sensory hairs
sn, sn', sn''....nucleus in stages of condensation to form chromatin granule
sp.....spine
t.....tail
te.....testis
vd.....vas deferens
vg.....vesicula granulorum
vs.....vesicula seminalis



Figs. 1–6.—(See opposite page for explanation.)

terial organized into bundles. Penis stilette a conical tube housed in a muscular tunic; the cuticular walls thickest near the base and there hardly a micron thick, capable of slight change of shape under pressure; the base widened, highly crenate, the apex flexed at an angle less than 90° and with the opening lacking a distal lip or flange, terminal on the convexity of the curve; average measurement[3] of base 18.5μ, of opening 14.1μ, of total length 62.9μ. Male gonopore approximately 65μ from the posterior end of body. Mature sperm cell highly mobile, 35 to 40μ long, 3.5 to 4μ wide, composed of body and of tail provided with axial filament, body with two flagella about 20μ long extending lateroposteriorly from the anterior portion, posterior portion of body with a single, oblong, in life extremely hyaline granule about 2μ long, which after proper fixation always stains with Heidenhein's hematoxylin, Gentian violet, and Feulgen reaction, none of which treatments stain the remainder of the cell. Female genital system typical for the genus. Ovary about one-fourth as long as the body. Egg grayish. Female gonopore about 200μ from the posterior end of the body. Chromosome number, N = 3, 2N = 6. Chromosomes, as fixed in Allen's B-15 fixative, with one large pair about 3μ long and the centromere submedian, one medium-sized pair with the centromere displaced slightly toward one end, and one small pair with submedian centromere.

Differential diagnosis.—Penis stillette not distally enlarged, the proximal end truncated at right angles to the shaft and crenated, the distal end obliquely truncated and with terminal opening not provided with a distal lip, the shaft with a single flexure of less than 90° near the distal end and with a total length averaging 63μ; pharyngeal glands without striking pigmentation; sensory hairs 50μ or less in length; enteron extending well beyond the female genital atrium; mature sperm 35 to 40μ long and characterized by two flagella and by a single, nuclear-staining granule located in the posterior part of the sperm body.

Remarks.—*Macrostomum ruebushi* var. *schmitti* possesses the specific characters of *Macrostomum ruebushi* Ferguson (1939) but is distinct from the species and its other varieties and from all other species of *Macrostomum* heretofore described by the characters stated above in the differential diagnosis as may be shown by comparing these characters with those set forth in the key to the genus in Ferguson (1939–1940).

LITERATURE CITED

FERGUSON, FREDERICK F. *The morphology and taxonomy of* Macrostomum virginianum *n. sp.* Zool. Anz. **119**: 25–32, 8 figs. 1937.

———. *The morphology and taxonomy of* Macrostomum beaufortensis *n. sp.* Zool. Anz. **120**: 230–235, 6 figs. 1937.

———. *A monograph of the genus* Macrostomum *O. Schmidt 1848. Part I.* Zool. Anz. **126**: 7–20, 2 figs., 4 maps. (Subsequent parts in same journal.) 1939–40.

——— and JONES, E. R., Jr. *Studies on the turbellarian fauna of the Norfolk area. I.* Macrostomum ruebushi *var.* kepneri *n. var.* Zeitschr. für Morph. und Okol. 1939. (In press.)

——— and STIREWALT, M. A. *The morphology and taxonomy of* Macrostomum phillipsi *n. sp.* Zool. Anz. **123**: 42–45, 4 figs. 1938.

GRAFF, L., von. *Das Tierreich. Turbellaria II. Rhabdocoelida.* Pp. 47–55. 1913.

HAYES, W. J., Jr. *The morphology and taxonomy of* Macrostomum ruebushi *var.* schmitti *n. var.* Prog. Virginia Acad. Sci., May 1939, p. 18. 1939.

[3] Obtained by the measurement under oil immersion of a dozen mature specimens.