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Art. III. A NEW NORTH AMERICAN  
OLIGOCHAETE OF THE GENUS  
HAPLOTAXIS

BY  
FRANK SMITH

Art. IV. A REPRESENTATIVE OF THE  
GENUS TRICHODRILUS FROM  
ILLINOIS

BY  
JAMES E. KINDRED



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## ERRATA

Page 97, line 17, for first *larval* read *pupal*.

Page 112, in legend, for *jonessi* read *jonesii*.

Page 114, in legend, for *or* read *of*.

Page 125, line 4, for *Bonosa* read *Bonaso*.

Page 131, in legend, for *hirundinaceus* read *hirudinaceus*.

Page 138, last line, for *cocoon* read *cocoon*.

Plate XII, explanation page, next to last line, for *acrivora* read *aerivora*.

Plate XIII, explanation page, next to last line, for *White-grubs* read *White-grub*.

Page 293, Figure 5*a* was reversed in printing, and the two items of the legend should change places.

Page 515, second table, for *Pelocoris femorata* read *Pelocoris femoratus*.

ARTICLE IV.—*A Representative of the Genus Trichodrilus from Illinois*.\* BY JAMES E. KINDRED.

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INTRODUCTION

The description given in this paper is based upon the detailed examination of a single specimen which was pumped from a well in Concord, Illinois, June 18, 1915. It was submitted to Professor Frank Smith, of the University of Illinois, with a question as to its harmfulness, and after this had been answered, was set aside. The specimen is now in the collection of Professor Smith, to whom I am under obligations for the opportunity to study it and for suggestions in the preparation of this report. It came into my hands mounted in cedar oil, in good condition for external examination, but the sections which were made for examination of the internal characters were unfortunately wrinkled in some of the most important parts of the reproductive somites, so that conclusive evidence for the presence or absence of certain of the reproductive parts can not be given, and therefore its exact status can not be established.

The resemblance of this form to the members of the European genus *Trichodrilus* Claparède is evident, and many points in its anatomy link it with the type species of the genus, *T. allobrogum* Claparède. No representative of this genus of the Lumbriculidae has as yet been recorded in North America, and still other representatives may exist in the kind of environment in which the present worm was found. Any small aquatic worms which are pumped from our wells from time to time may be important in extending our knowledge of *Trichodrilus* and other genera of the oligochaete fauna of the United States. It is desirable that persons finding such forms should send them to qualified specialists for identification if they can not themselves determine them with the aid of the brief description of the species of *Trichodrilus* given at the conclusion of this paper, thus aiding in the settlement of the position of doubtful forms and making known the presence of others, if there are such.

Besides *T. allobrogum*, two other species of *Trichodrilus* have been described from Europe, *T. pragensis* Vejdovský and *T. sanguineus* (Bretscher). The latter was first described as the type of a new genus, *Bichaeta* (Bretscher, '00), but Piguet ('13) placed it in the genus *Trichodrilus*. In the following section the details of structure of the Illinois form are given as far as the material will permit. Since it seems to

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be more closely related to *T. allobrogum* than to the other species, it is recorded under that name, with a query indicating the uncertainty of its position.

#### TRICHODRILUS ALLOBROGUM Claparède (?)

##### EXTERNAL CHARACTERS

The natural color of the worm seems not to have been noted, but the body wall was presumably unpigmented. It is 45 mm. long and its diameter in 10 is 0.54 mm. Anterior to 10, the body tapers gradually to a diameter of 0.33 mm. The prostomium appears to be elongate, but as it was doubled upon itself, it could not be measured. There are 116 somites in the specimen, which has evidently lost several somites from the posterior end. Each somite has an annulation dividing it into a narrower anterior part and a wider posterior one, the latter bearing the setae. The setae are slender, elongate, nodulated, and sigmoid. A dorsal seta from 10 is 0.175 mm. long, 0.003 mm. in diameter at the base, and 0.007 mm. in diameter at the nodule, which is at a distance of 0.061 mm. from the tip. The clitellum is indistinct, although the worm was in a sexually active condition at the time of fixation.

The spermiducal pores are borne at the distal ends of a pair of genital papillae which are on the ventral surface of 10, just posterior to the ventral setae. The oviducal pores are in the intersegmental groove 11/12, in line with the ventral setae. There are two pairs of spermathecal pores, one of which is on 11, between the ventral setae and the oviducal pores, and the other in 12/13, in line with the ventral setae.

##### INTERNAL CHARACTERS

The pharynx is thick-walled and extends into 6. In 4 it is 0.043 mm. in diameter, while the diameter of its lumen is 0.017 mm. It is covered with large deeply staining glandular cells, the septal gland cells, from 4 to 6. There is no distinct line of division between the esophagus and pharynx. The chloragogue cells begin in 7. The structure and relations of the circulatory system and of the nephridia are not sufficiently clear to be of value in comparisons.

There are two pairs of spermaries attached to the septa 8/9 and 9/10 respectively, and projecting freely into 9 and 10. These two somites are filled with developing spermatozoa unenclosed in sperm sacs, but there is a small median sperm-sac projecting anteriorly into 8, and either one or two sacs filling up most of 11 and 12. The spermatozoa in these somites are distinctively enclosed in walls which are somewhat twisted and do not permit of a satisfactory determination as to the number of sperm sacs.

Only one pair of spermiducal funnels could be located, and these are on the anterior face of 9/10. The presence or absence of a posterior pair can not be ascertained because of the folding of the sections in the region where they would be most likely to occur, but they are probably present. On each side a narrow sperm-duct, measuring 0.014 mm. in diameter with a lumen 0.003 mm. in diameter, extends posteriorly from

the spermiducal funnel of 9 to the atrium. It is unconvoluted in its passage along the floor of 10 and curves dorsally to enter the atrium in this somite. Columnar cells like those which make up the wall of the sperm duct line the lumen of the atrium, which is about three times as great in diameter as the lumen of the sperm duct. In addition to the epithelium of the lumen, the wall of the atrium of either side has a layer of muscle which is in turn surrounded by a mass of small glandular cells. A layer of circular muscle-fibres, continuous with the layer beneath the epidermis of the genital papilla, is present around the distal end of the atrium between the epithelial and longitudinal muscle-layers. This layer is folded in such a manner as to suggest that this part of the reproductive apparatus may be an eversible penial organ.

The ovaries are on the posterior face of 10/11 and project freely into 11. The oviducal funnels are on the anterior face of 11/12. There are two pairs of spermathecae, one pair each in 11 and 12. These are very large and not exactly uniform in shape, although this lack of uniformity is presumably due to their treatment after fixation. The one on the right side of 11 is almost spherical and is 0.142 mm. in diameter, the wall being composed of flattened squamous epithelium, 0.007 mm. thick. The duct leads directly to the exterior from the posterior surface of the ampulla, and its cells are more columnar in character than those in the wall of the latter. The length of the duct is 0.150 mm.; the diameter, 0.038 mm.; and the diameter of its lumen, 0.011 mm. There is no sign of the degeneration or disappearance of these organs. The other three spermathecae are more ovoid than the one described, but all are approximately of the same size, and their ducts have the same general relations to the ampullae.

The following brief diagnoses of the three European species of *Trichodrilus* have been appended for the benefit of readers who may be interested in the identification of these aquatic worms but do not have access to the scattered literature concerning them.

#### TRICHODRILUS ALLOBROGUM Claparède

Length, 20–25 mm. Somites, about 70. Color, yellow. Prostomium conical, about twice as long as diameter of base. Clitellum indistinct. Nephridiopores in line with ventral setae. Spermiducal pores on 10, on pair of genital papillae, posterior to ventral setae. Oviducal pores in 11/12. Spermathecal pores: one pair on 11 between oviducal pores and ventral setae; one pair on 12 in line with ventral setae. Setae simple-pointed, sigmoid, nodulated, two per bundle. Five or six pairs of transverse vessels per somite (one pair blind and contractile). Nephridia in 7 and 8; lacking in 9–12. Spermiducal funnels: a pair on the anterior faces of 9/10 and 10/11 respectively. Sperm ducts from these open into a pair of common atria in 10. Atrium pear-shaped, covered with glandular cells, with eversible penis at distal end. Spermaries.—? Ovaries in 11. Oviducts and funnels on 11/12. Spermathecae ovoid; long narrow duct to exterior; a pair in 11 and 12 respectively.

## TRICHOBRILUS PRAGENSIS Vejdovský

Length, 30–40 mm. Diameter, 0.6–0.7 mm. Somites, 60–80. Color, reddish white. Prostomium rounded, about twice as long as diameter at base. Clitellum indistinct. Spermiducal pores on 10, posterior to ventral setae. Oviducal pores in 11/12. Spermathecal pores: one pair on 11 between the oviducal pores and ventral setae; one pair on 12 in line with ventral setae. Setae simple-pointed, sigmoid, nodulated, two per bundle. Eight pairs of transverse vessels in anterior somites. Dorsal vessel with 4–6 asymmetrically arranged caecal diverticulae per somite, with forked tips. Nephridia in 8, 14, 22, etc., irregularly distributed, and extending into other somites. Spermiducal funnels paired in 9 and 10. Sperm ducts opening into a pair of atria in 10. Atria as in *T. allobrogum*. Spermathecae arranged as in *T. allobrogum*, but the second pair disappears in sexually active worms.

## TRICHOBRILUS SANGUINEUS (Bretscher)

Length, 9–13 mm. Somites, 50–72. Differs from *T. pragensis* chiefly in having bifid setae. Spermathecae of 12 disappear in sexually active specimens as in *T. pragensis*. Lateral branches of dorsal vessel not described.

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