

## TWO NEW NEMATODE WORMS FROM RODENTS

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In this paper two nematodes which appear to be new species from rodents are described. The first of these species was collected from the cecum and colon of a flying squirrel, *Glaucomys volans volans*, which was found dead by Miss Florence Thompson, librarian of the Bureau of Animal Industry, at her home at Falls Church, Va., July 28, 1927. This parasite belongs to the family Oxyuridae Cobbold, 1864, subfamily Syphaciinae Railliet, 1916, and genus *Syphacia* Seurat, 1916. For this species the name *Syphacia thompsoni* is proposed.

The second species was collected from the small intestine of a gray squirrel, *Sciurus carolinensis*, which was killed near Bowie, Md., by Dr. Albert Hassall, October 10, 1927. This species belongs to the family Trichostrongylidae Leiper, 1912, subfamily Helimosominae Travassos, 1914, and genus *Heligmostrongylus* Travassos, 1917. For this species the name *Heligmostrongylus hassalli* is proposed.

### SYPHACIA THOMPSONI, new species

*Specific diagnosis.*—*Syphacia*: Slender forms, milk white in color, male much smaller than female, and with the tail of both sexes very long and slender. Cuticula coarsely striated transversely. The mouth is provided with three lips of about equal size. The circumoral papillae and amphids are situated laterally in two groups, each group consisting of two small submedian papillae and a large umbilicated amphid or so-called lateral papilla. (Fig. 1.)

*Male* 3.1 mm. long and 156 to 160 $\mu$  wide. The posterior end of the male is strongly curved ventrally in the form of a hook. (Fig. 2.) The cuticle of the anterior end of the body is inflated and is 78 to 98 $\mu$  in diameter and extends from the base of the lips to the level of the cervical papillae. The esophagus is club-shaped, 250 to 280 $\mu$  long by 38 $\mu$  wide at the narrowest part and increasing to 60 $\mu$  at the posterior end. The esophageal bulb is spherical, 76 to 99 $\mu$  in diam-

eter, and is joined to the esophagus by a short slender constriction. The nerve ring surrounds the esophagus about  $90\mu$  from the anterior end of the body. The excretory pore opens ventrally  $75\mu$  caudad of the esophageal bulb. The cervical papillae are situated 172 to  $214\mu$  from the anterior end of the body. The lateral alae arise immediately caudad of the cervical papillae and extend to within a short distance from the cloacal aperture. The tail is long and slender, and terminates in a fine point. (Fig. 3.) There are two narrow, symmetrical bursal alae and three pairs of caudal papillae, one pair pre-anal, one pair adanal, and one pair postanal; the postanal papillae are large and pedunculated, and support the caudal alae. The cloacal aperture is situated on a slight prominence 340 to  $435\mu$  from the end of the tail. Immediately caudad of the cloacal aperture there is a small rounded prominence which bears six small spikelike projections. The spicule is simple, slightly curved, and 156 to  $190\mu$  long by  $18\mu$  wide at the base. The gubernaculum is 95 to  $110\mu$  long, directed transversely, and is provided at its distal end with a barb-like hook. (Fig. 4.) The ventral surface of the body bears three large, finely striated bosses or mamelons. The most caudad of these prominences lies  $250\mu$  in front of the cloacal aperture and is 156 to  $187\mu$  long; the second lies 140 to  $155\mu$  anterior of the first and is 125 to  $155\mu$  long; and the third is 95 to  $125\mu$  anterior of the second and is 125 to  $140\mu$  long.

*Female* 11 to 14 mm. long and with a maximum width of 357 to  $430\mu$ . The esophagus is  $435\mu$  long by  $45\mu$  wide at the anterior end and increases to  $98\mu$  in width at the posterior end. The esophageal bulb is 117 to  $310\mu$  wide. The nerve ring surrounds the esophagus about  $120\mu$  from the anterior end of the body. The cephalic dilation is 120 to  $170\mu$  wide in outside diameter. The cervical papillae are situated 260 to  $280\mu$  from the anterior end of the body. The excretory pore is situated about  $470\mu$  caudad of the union of the intestine and esophageal bulb. The lateral alae begin at the cervical papillae and extend to the posterior end of the body. The anus is situated 3 to 4 mm. from the tip of the tail. The vulva is situated 1.6 mm. from the anterior end of the body. (Fig. 5.) In immature specimens the vulva is covered with a brownish colored plaque; in gravid specimens, however, the vagina is protruded. Eggs oval, flattened on one side, and 96 to  $98\mu$  long by 28 to  $38\mu$  wide.

*Host*.—*Glaucomys volans volans*.

*Location*.—Cecum and colon.

*Locality*.—Falls Church, Va.

*Type specimens*.—United States National Museum Helminthological Collections No. 27827; paratypes No. 27793.

*Syphacia thompsoni* resembles *S. obvelata* (Rudolphi, 1802), the type of the genus, in body form and in the number of ventral mame-

lons in the male. It differs, however, in that the former species is about twice the size of the latter, the tail of both sexes is proportionally longer and more slender, the spicule and gubernaculum larger, and the egg smaller. The presence of a spiny process caudad of the cloacal aperture also appears to be characteristic of the new species. This species is readily distinguishable from *S. pallaryi* (Seurat, 1915) by the number of ventral mamelons, there being but two in the latter species.

Yorke and Maplestone (1926) list *S. bonnei* Thiel, 1925, from *Myctes seniculus*, and *S. stossichi* (Setti, 1897) from *Hystrix cristata*, in addition to *S. obvelata* and *S. pallaryi*, as belonging to the genus *Syphacia*. Travassos (1925), however, has shown that *S. bonnei* is identical with *Enterobius minutus* (Schneider, 1866). The inclusion of *S. stossichi* (= *Oxyuris stossichi*) in this genus by Travassos (1923) appears to the writer to be subject to question. The bosses or mamelons figured by Setti (1897) are too small and situated too near the cloacal aperture to be considered comparable to the large mamelons of the other species of the genus; there also appears to be an absence of caudal alae, papillae, and a gubernaculum. On the basis of these differences it is the opinion of the writer that if *S. stossichi* is restudied, it will probably be found to represent a new genus.

HELIGMOSTRONGYLUS HASSALLI, new species

*Specific diagnosis.*—*Heligmostrongylus*: Small slender worms, reddish in color and loosely coiled when fresh, yellowish and almost straight when preserved in alcohol. Cuticle of the anterior end dilated and coarsely striated transversely. (Fig. 6.) The cuticle of the body is finely striated transversely and is also provided with small striated bosses (fig. 7) arranged in the form of 14 to 16 longitudinal lines. These lines extend from the cephalic dilation to the vulva of the female, and to the bursa of the male. A well-defined ala extends along the left side of the body from the cephalic dilation to the vulva in the female, and to near the bursa in the male. Cervical papillae not observed. The mouth opening is triangular and bears 2 submedian papillae, and one amphid (the lateral papilla of various authors) on each side. (Fig. 8.)

*Male* 5.3 to 6.8 mm. long by a maximum width of  $122\mu$  at the middle of the body. The cephalic expansion is  $38\mu$  wide and  $75\mu$  long. The esophagus is simple, 290 to  $300\mu$  long by  $15\mu$  wide at the anterior end and increasing to  $40\mu$  in width at the posterior end. The nerve ring surrounds the esophagus about  $150\mu$  from the anterior end. The excretory pore is situated immediately caudad of the posterior end of the esophagus. The bursa consists of two large

lateral lobes and a smaller dorsal lobe. The ventro-ventral and latero-ventral rays are widely separated and divergent, the latero-ventral ray being longer than the ventro-ventral and extending to the edge of the bursa; externo-lateral ray slightly thicker than the other rays; medio-lateral ray relatively thick and extending almost to the edge of the bursa; externo-lateral ray short and divergent; externo-dorsal ray slender; dorsal ray cleft almost to the base, forming two branches which in turn give off a lateral branch near the origin of the primary branch. (Fig. 9.) Prebursal papillæ present. The spicules are tubular, pointed, and  $385\mu$  long by  $16\mu$  wide at the base. Gubernaculum absent. The telamon (fig. 10) is feebly chitinized and elongated; its anterior end pointed and embedded in the ventral wall of the cloaca; the lateral edges are inrolled, forming a tube through which the spicules pass; slightly caudad of the middle of the telamon a slender lateral process is given off which appears to furnish attachment for muscles.

*Female* 8.4 to 8.6 mm. long and  $76\mu$  wide at the vulva. The esophagus is  $350\mu$  long by  $20\mu$  wide at the anterior end and the width increases to  $50\mu$  at the widest portion. The nerve ring is situated  $210\mu$  from the anterior end of the body. The tail is short and blunt. (Fig. 11.) The anus is situated about  $53\mu$  from the tip of the tail. The uterus is single and is provided at its distal end with a strongly muscular ojector which measures  $220\mu$  in length. The vulva is situated about  $180\mu$  from the posterior end of the body. In some specimens a short, thick, ventral process is present immediately in front of the vulva. Egg  $76\mu$  long by  $45\mu$  wide, oval in shape and provided with a thin shell.

*Host*.—*Sciurus carolinensis*.

*Location*.—Small intestine.

*Locality*.—Bowie, Maryland.

*Type specimens*.—United States National Museum Helminthological Collections No. 27853; paratypes No. 27860.

This species differs from *Heligmostrongylus sedecimradiatus* (Linstow 1899) in its smaller size, shorter spicules and dorsal ray. The dorsal ray in *H. hassalli* is not cleft entirely to the base and the lateral branches arise near the bifurcation. In *H. sedecimradiatus* the dorsal ray is cleft entirely to its base forming a double dorsal ray, and the lateral branches are given off about the middle of the primary branches. Travassos (1921) says that a gubernaculum is present in *S. sedecimradiatus*, but from his figure of the bursa of this species the shape and position of this structure suggest that it functions as a telamon and that a gubernaculum is absent.

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## EXPLANATION OF PLATES

<i>a</i> =anus.	<i>oesb</i> =esophageal bulb.
<i>e pp</i> =excretory pore.	<i>ovj</i> =ovjector.
<i>int</i> =intestine.	<i>ut</i> =uterus.
<i>la</i> =lateral ala.	<i>vag</i> =vagina.
<i>nr</i> =nerve ring.	<i>vul</i> =vulva.
<i>oes</i> =esophagus.	

## PLATE 1

*Syphacia thompsoni*, new species

- FIG. 1. Head, end face view.  
 2. Adult male, entire.  
 3. Male, posterior end.  
 4. Spicule and gubernaculum.  
 5. Female, anterior end.

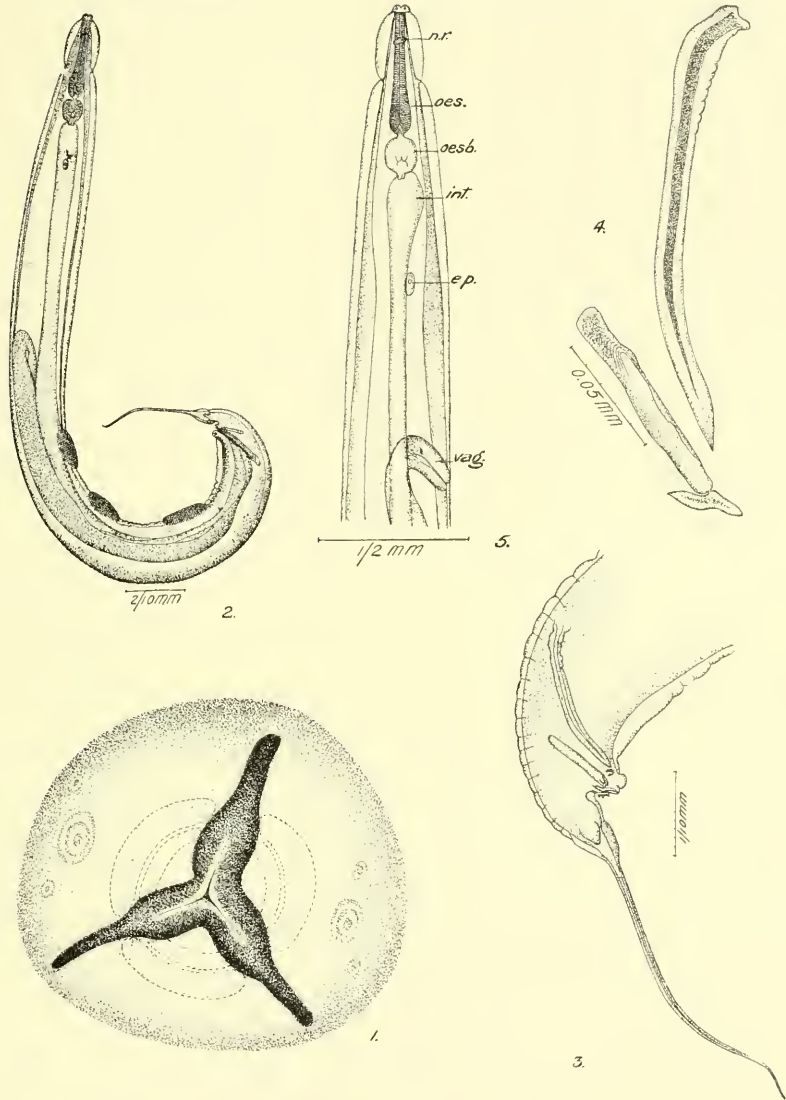
## PLATE 2

*Heligmostrongylus hassalli*, new species

- FIG. 6. Female, anterior end.  
 7. Cuticular bosses; greatly enlarged.  
 8. Head, end face view.  
 9. Bursa, dorsal view.  
 10. Telamon, ventral view; greatly enlarged.  
 11. Female, posterior extremity.

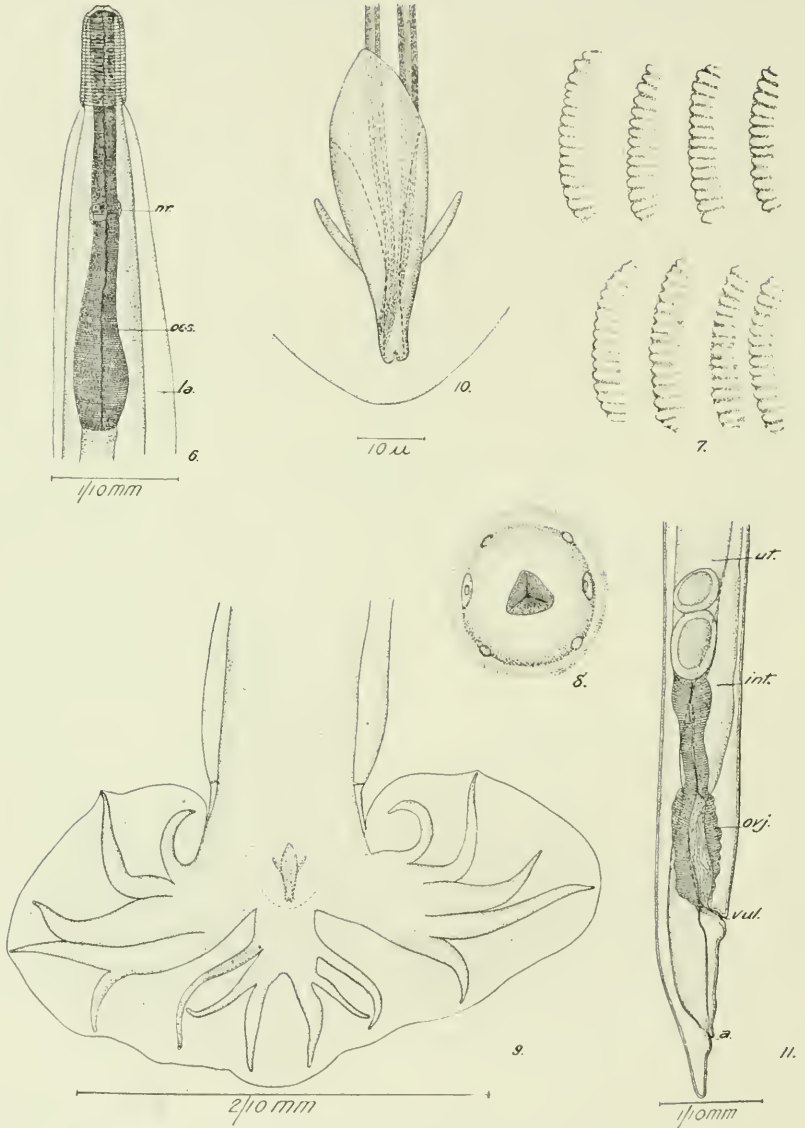






SYPHACIA THOMPSONI, NEW SPECIES

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HELIGMOSTRONGYLUS HASSALLI, NEW SPECIES

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