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NOTES ON TWO CESTODES FROM THE SPOTTED STING-RAY

EDWIN LINTON

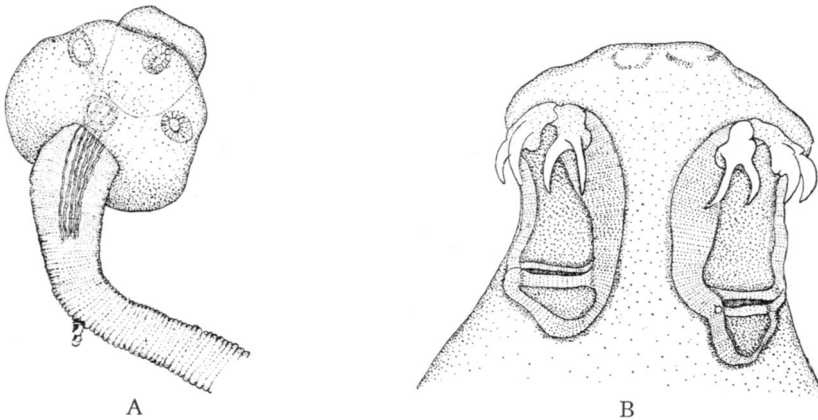
A single specimen of a species of cestode found in the spiral valve of a cow-nosed ray (*Rhinoptera bonasus*) at Woods Hole, July 29, 1887, was made the type of a new genus and species (*Tylocephalum pingue*). No other examples of this genus have been found at Woods Hole, but on June 30, 1908, at the Tortugas laboratory, I obtained two specimens of a cestode from the spotted sting-ray (*Aetobatis narinari*) which are to be referred to the genus *Tylocephalum*. The specimen from the cow-nosed ray was a less mature strobile than those from the spotted ray; a comparison of the genitalia, therefore, cannot be made. There appears to be enough difference, however, in other particulars to justify referring the Tortugas specimens to a new species. While both hosts belong to the family of eagle rays, there is enough difference between them in the way of geographical range and generic features to make it unlikely that the same species of cestodes should be found in each.

TYLOCEPHALUM MARSUPIUM *nov. spec.*

Scolex: The relatively large, muscular portion (myzorhynchus) is subglobular, its length in a living specimen 0.16 and breadth 0.21 mm.; bothria united into a subglobular disc with four auxiliary acetabula, length of disc 0.30, breadth 0.69 mm. The constriction noted in the Woods Hole specimen not present. As in the case of the specimen from the cow-nosed ray, the scoleces were rather firmly fastened to the mucous membrane of the spiral valve. One of the worms was fixed without detaching it, and was sectioned together with a small piece of the intestinal wall. The sections show that the myzorhynchus alone had entered the mucous membrane.

Strobile: The segments begin nearer the scolex than they do in *T. pingue*. Just behind the scolex, where the breadth was 0.16, the strobile was crossed by crowded lines. One-half millimeter back of the scolex the well-defined segments were 0.014 mm. in length and 0.18 mm. in breadth. Three millimeters back the length of the segments is about 0.05 and the breadth 0.24; ten millimeters back the length is 0.12, the breadth 0.28; twenty millimeters back the length is 0.28, the breadth 0.24; thirty millimeters back the length is 0.46, the breadth 0.28; forty millimeters back of the scolex the length is 0.56, the breadth 0.38 mm. The last segments are somewhat variable in their dimensions, but are about one millimeter in length and 0.5 mm.

in greatest breadth. They are vase-shaped, constricted at the anterior end, swelling out to the maximum breadth behind the middle, slightly constricted near the posterior end with a moderately projecting posterior margin. One proglottis had the following dimensions: Length 0.84; breadth, anterior 0.21, maximum 0.56, posterior 0.39 mm. The strobile is especially distinguished by the strongly developed longitudinal muscles. The longitudinal muscles are disposed in radial bundles near the scolex (Fig. 1), but farther back lie in a well-defined zone (Fig. 2). In segments in which the genitalia have become differentiated this zone of muscle bundles coincides in position with the vitellaria (Fig. 4).



Text Fig. A.—*Tylocephalum marsupium*. View of scolex in life, somewhat flattened and seen from behind. Breadth of scolex 0.7 mm.

Text Fig. B.—*Onchobothrium tortum*. Side view of scolex; balsam. Diameter at base of hooks 0.64 mm.

Genitalia: The general plan of arrangement of the genitalia is shown in Figure 7. The vitellaria are peripheral and consist of rather finely granular masses lying between and also centrally to the muscle bundles. The testes are in the median region. In the younger proglottids they occupy most of the interior, but as the proglottids mature they give way to the seminal receptacle and ovary. The cirrus-pouch is relatively small and oval, opening near the margin not far from the middle of the length. The vagina opens into the genital cloaca, passes along one side of the cirrus pouch, becomes more or less convoluted and expands into a capacious seminal receptacle. This was filled with spermatozoa in all the later proglottids. The ovary is lobed and is situated at the posterior end of the proglottis.

The uterus was still rudimentary even in the mature proglottids. In a section a small cluster of minute bodies was seen. They lay in the lumen of the uterus, were yellowish brown, and about 0.010 by 0.007 mm. in the two principal diameters.

ONCHOBOTHRIMUM TORTUM *nov. spec.*

Ten specimens of this form were obtained from a spotted sting-ray (*Aetobatis narinari*), June 30, 1908. The scolices were imbedded in the intestinal wall and had caused some ulceration. One of the worms, straightened out on a glass plate in sea water, measured 220 mm. in length. Anterior end sub-cylindrical, with a tendency to coil spirally; color dark ashy-gray. Scolex long-clavate, armed with four pairs of short, sharp, two-pronged hooks. Each pair of hooks situated at the anterior end of one of the four bothria. The latter are oblong, trough-shaped, with two costæ near the posterior end. Behind the scolex the body is at first sub-cylindrical and crossed by fine, closely crowded lines for a considerable distance. The segments outlined by these transverse lines remain closely crowded, while the adult proglottids begin rather abruptly. The average length of the first 12 adult proglottids was 0.8 mm., the breadth being about the same or slightly greater. The diameter of the sub-cylindrical portion of the strobile was about 1.5 mm. The scolex and anterior portion of the strobile are much thicker than the adult proglottids. Diameter of scolex, in alcohol, anterior 0.85, middle 0.77; diameter of neck, a short distance back of the scolex, 1.4 mm. Dimensions of one of the posterior proglottids: life, length 1.47; breadth, anterior 0.5; middle 0.8, posterior 0.6 mm. Dimensions of scolex mounted in balsam: length 0.97; breadth, at base of hooks, 0.97, behind hooks, 0.81; breadth of neck, a short distance behind the scolex, 1.27 mm. In the mounted specimen the neck is seen to be traversed by strong longitudinal muscle bundles which are closely crowded together, each bundle about 0.06 mm. in diameter. About 16 bundles were counted near the head; farther back they are divided into a larger number of smaller bundles. Two spiral vessels show distinctly in the mounted specimen. The strobile narrows as the proglottids become distinct. In the specimen which measured 220 mm. there were distinct and well-formed segments on the last 150 mm. The maturing segments were at first much broader than long, then squarish, then longer than broad, the last ones three times as long as broad. The posterior margins of the proglottids project slightly and have crenulate borders. One of the posterior proglottids of a mounted strobile has the following dimensions: length 1.86; breadth, anterior 0.36, constriction near anterior end 0.25, middle 0.40, posterior margin 0.54 mm. The genital apertures are marginal at about the middle of the length. They are irregularly alternate. No ova were seen.

The general plan of arrangement of the genitalia is shown in Figure 8. The cirrus is armed with slender, bristle-like spines; a few folds of the vas deferens are included in the oval cirrus-pouch at its

medial end. The voluminous folds of the vas deferens form the seminal vesicle and occupy the median third of the anterior half of the proglottis. The testes are situated in the anterior half of the proglottis, and occupy the median region on each side of the vas deferens. On the marginal sides of the testes are the vitelline glands which extend along each marginal border of the entire length of the proglottis, being interrupted only at the point where the cirrus pouch and the accompanying vagina approach the genital aperture. The uterus was represented by a tubular structure lying along the median line near one of the lateral faces of the proglottis, and extending from nearly one end of the proglottis to the other. The ovary is a lobed organ and fills all the space between the marginal vitellaria behind the cirrus pouch. The vagina opens at the genital pore immediately in front of the cirrus and lies alongside the anterior border of the cirrus pouch. At this point it is thick-walled and glandular. It becomes tubular at about the level of the median end of the pouch and passes along the median line beneath the uterus to about the middle of the ovary. The relative positions of vagina and uterus are shown in Figure 9, which is sketched from a transverse section of a maturing segment at a level which passes very near the genital aperture, shows a portion of the vagina near the margin, cuts into some folds of the vas deferens, and passes thru the vagina again near the middle of the segment, where it lies on the medial side of the uterus. The section also catches a few of the anterior lobes of the ovary. In this section the characteristic longitudinal muscles are seen as an inner circle of larger and an outer circle of smaller bundles. The lateral vitellaria and the median testes flanking the folds of the seminal vesicle are also shown .

SUMMARY

Two new species of cestodes, of the genera *Tylocephalum* and *Onchobothrium*, respectively, are described in this paper. One of them, *T. marsupium*, is the first cestode of this genus to be recorded since the genus was established in 1887. Thus far representatives of this genus have been found only in the eagle rays.

Altho the two genera belong to quite different families, they possess an interesting feature in common in the strongly fasciculated longitudinal muscle layers. Both species were fastened to the mucous membrane of the spiral valve which, at the point of attachment of the onchobothria, was somewhat ulcerated.

EXPLANATION OF PLATE

Fig. 1.—*Tylocephalum marsupium*. Transverse section of neck. Diameter 0.22 mm.

Fig. 2.—*Tylocephalum marsupium*. Transverse section of early proglottis, showing rudiment of genitalia and peripherally arranged longitudinal muscle bundles. Greater diameter 0.65 mm.

Fig. 3.—*Onchobothrium tortum*. Transverse section of neck, showing longitudinal muscle bundles and vessels of the vascular system. Longer diameter of section 1.12 mm.

Fig. 4.—*Tylocephalum marsupium*. Transverse section of mature proglottis in front of cirrus bulb; longer diameter 0.45 mm.

Fig. 5.—*Onchobothrium tortum*. Longitudinal view of neck showing muscle bundles. Breadth 1.17 mm.

Fig. 6.—*Onchobothrium tortum*. View of retracted cirrus, and vagina; from longitudinal section.

Fig. 7.—*Tylocephalum marsupium*. Posterior proglottis; outline from life; genitalia partly diagrammatic. Length 0.8 mm.

Fig. 8.—*Onchobothrium tortum*. Posterior proglottis; balsam. Length 1.6 mm.

Fig. 9.—*Onchobothrium tortum*. Transverse section of a somewhat younger proglottis than that shown in Figure 8. Longer diameter of section 1.12 mm.

Fig. 10.—*Onchobothrium tortum*. Details of musculature.

ABBREVIATIONS USED

<i>c</i> , retracted cirrus	<i>t</i> , testes
<i>cm</i> , circular muscle layer	<i>u</i> , uterus
<i>gp</i> , genital pore	<i>v</i> , vagina
<i>lm</i> , longitudinal muscle bundles	<i>vd</i> , vas deferens
<i>o</i> , ovary	<i>vg</i> , vitellaria
<i>sr</i> , seminal receptacle	<i>w</i> , longitudinal vessel

PLATE

