

THE TREMATODES AND CESTODES OF SOREX ARANEUS L. IN VALAAM ISLAND (LADOGA LAKE, USSR). 1.

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The trematode and cestode fauna was examined in 50 specimens of common shrews *Sorex araneus* L. (Insectivora: Soricidae) collected in Valaam Island, USSR during 1988 and 1989. Two species of Trematoda and seven species of Cestoda were identified; prevalence of infection was as follows: *Brachylaemus fulvus* (86%), *Rubenstrema exasperatum* (4%), *Hymenolepis scutigera* (54%), *Neoskrjabinolepis schaldybini* (26%), *Vigisolepis spinulosa* (4%), *Choanotaenia crassiscolex* (86%), *Choanotaenia hepatica* (6%), *Dilepis undula* (2%) and *Polycercus* sp. (2%).

Key words: Trematoda – Cestoda – *Sorex araneus* – Insectivora – USSR

Several papers on the parasite and parasitic fauna of European, Russian and North American Insectivorous are published at present. Especially the European shrews are well-studied. But the data from the north-east of Europe are fragmental and scanty (Cholodkowsky 1906, 1912; Vasiljev 1949; Vaucher 1971).

The present study deals with the trematodes and cestodes collected from common shrews in Valaam Island (Ladoga Lake, north-west Russia).

MATERIALS AND METHODS

The material was collected in October 1988 and 1989 from the central part of Valaam (Karelia, USSR). I carried out helminthological examination of 50 specimens of common shrews *Sorex araneus* L.

The helminths were fixed and kept in 70% ethanol, stained with aluminous carmine or iron acetocarmine and mounted with Canada balsam. The specimens are deposited in the Laboratory of Parasitic Worms, Zoological Institute, Academy of Sciences, Leningrad, USSR.

All measurements are in micrometers.

RESULTS

Trematoda
Brachylaimidae
Brachylaemus fulvus Dujardin, 1843
(Fig. 1)

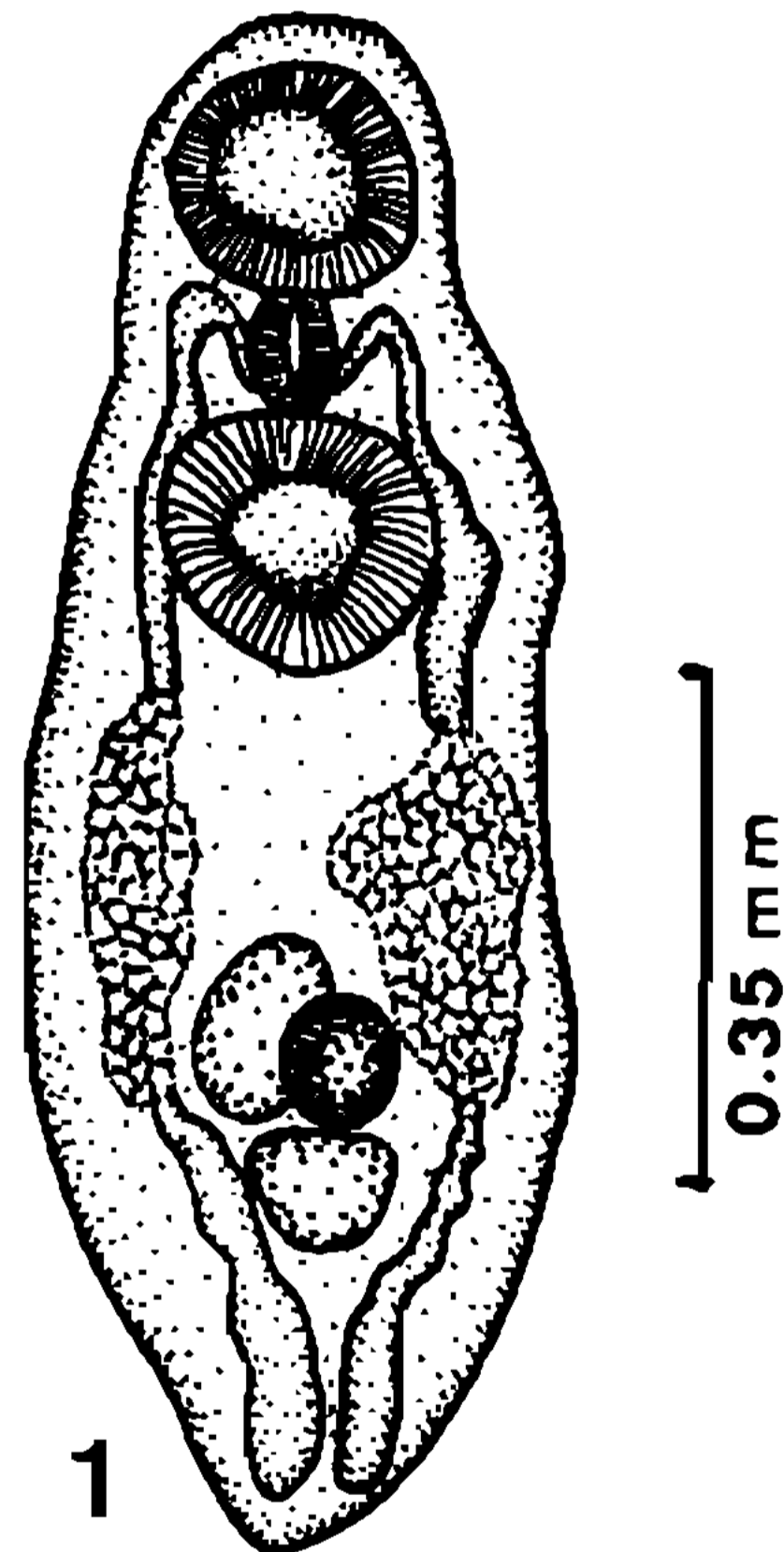


Fig. 1: *Brachylaemus fulvus* – Mature trematode, ventral view.

Body of the trematode of tongue-like form, 832-1872 in length, maximal width 299-586. Anterior part of the body (up to the level of the ventral sucker) covered with spines. The oral sucker 118-196/135-196, the ventral sucker (144-220/158-212) always bigger than oral one. Pharynx well developed, 71-152/76-165.

Testes oval two in number: anterior – 96-184/51-149, posterior – 92-166/52-140. Ovary spherical (76-156/54-120) located between testes. The genital pore between the ovary and

posterior testes. Near the genital pore there is a spherical seminal receptacle. Long vitellary glands are located laterally of the intestinal branches. The uterus filled with many small eggs is situated in the middle part of the body, from the level of the anterior testes to the posterior rim of the ventral sucker. Mature eggs are brown, 25-28/11-16. Excretory pore opens on the posterior end of the body.

Omphalometridae

Rubensrema exasperatum (Rudolphi, 1819)

Dollfus, 1949

(Fig. 2)

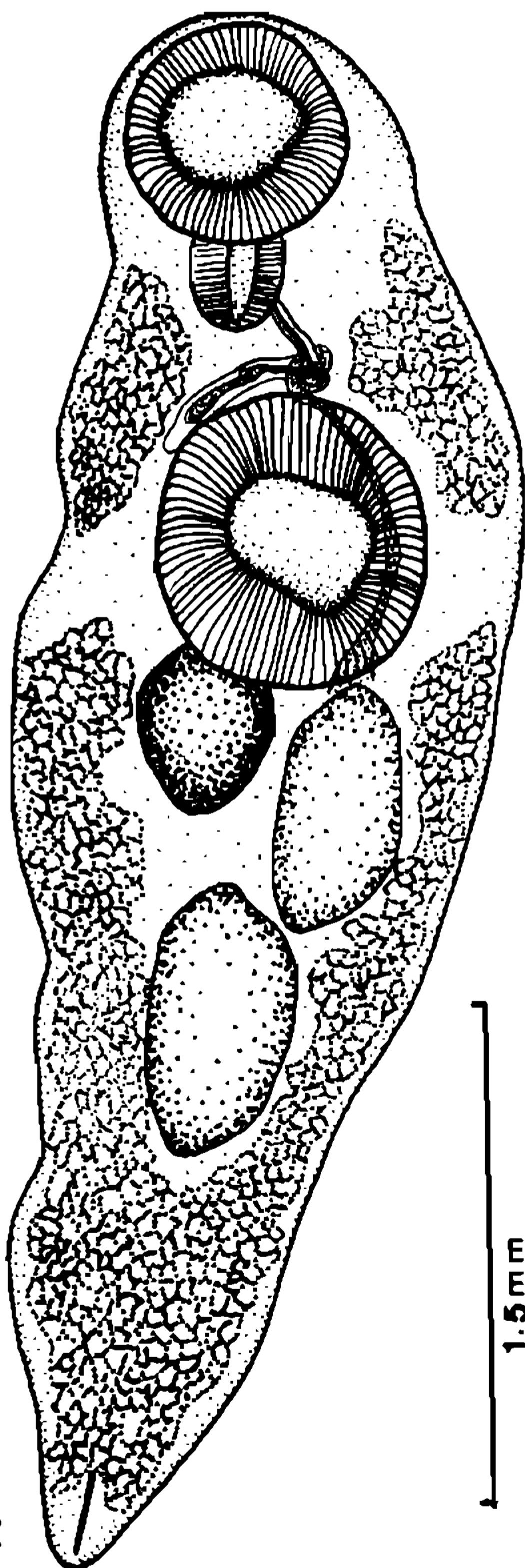


Fig. 2: *Rubensrema exasperatum* – Mature trematode, ventral view.

Specimens with great dimensions: 3200-5200 in length and 1000-1700 in width. Surface of the anterior part of the body is provided with spines. The oral sucker is situated anteroventrally, dimensions 432-610/400-624. The ventral sucker (584-976/592-864) is always bigger than the oral one. Pharynx – 157-304/189-344.

Cirrus pouch (384-768/96-208) is located between pharynx and ventral sucker. Cirrus well developed. The oviduct is extended under the ventral sucker and is opens in the genital atrium, which lies submedially between the pharynx and ventral sucker. Measurements of the mature eggs are 64-72/28-36.

In the posterior part of the body in the interintestinal space there are two oval testes: anterior – 384-640/186-400, posterior – 426-848/176-416. The rounded ovary (192-400/176-379) lies submedially behind the ventral sucker. The large vitellin extends from the pharynx to posterior end of the body. The follicles are separated on two groups: first group disposed between the pharynx and the middle of the ventral sucker, second – behind the ventral sucker. Excretory pore opens on the posterior end of the body.

Cestoda

Hymenolepididae

Hymenolepis scutigera Dujardin, 1845

(Figs 3A, B)

Strobila up to 12000 in length, 219 in maximum width. Diameter of scolex 80-160. Rostellar sheath 24-33 wide; rostellar hooks 10 in number, 32-36 long.

Three testes in one line. Cirrus sac reaching middle part of the segment. Ovary trilobated lies in the anterior part of proglottid. Spherical vitelline gland is posterior to it. Uterus U-shaped contains a few elliptic eggs.

Neoskrjabinolepis schaldybini

(Spassky, 1947)

(Figs 4A, B)

Strobila up to 35000 in length, 363 in maximum width. Spherical scolex 145-212 in diameter. Rostellum (45-72 wide) with a single circle of 10 hooks. Length of hooks – 32-38.

Three testes were arranged in a row. Ovary compact, located in the anterior part of seg-

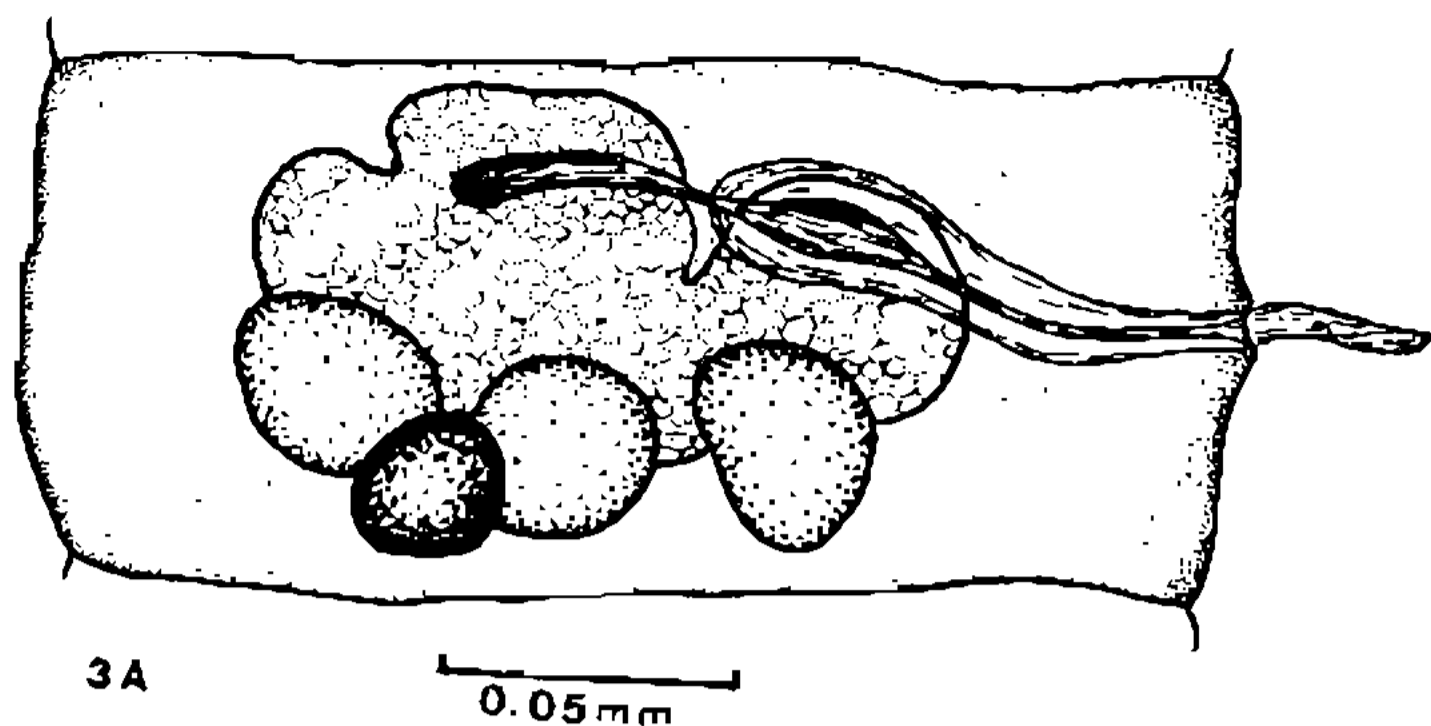


Fig. 3A: *Hymenolepis scutigera* – Mature proglottid.

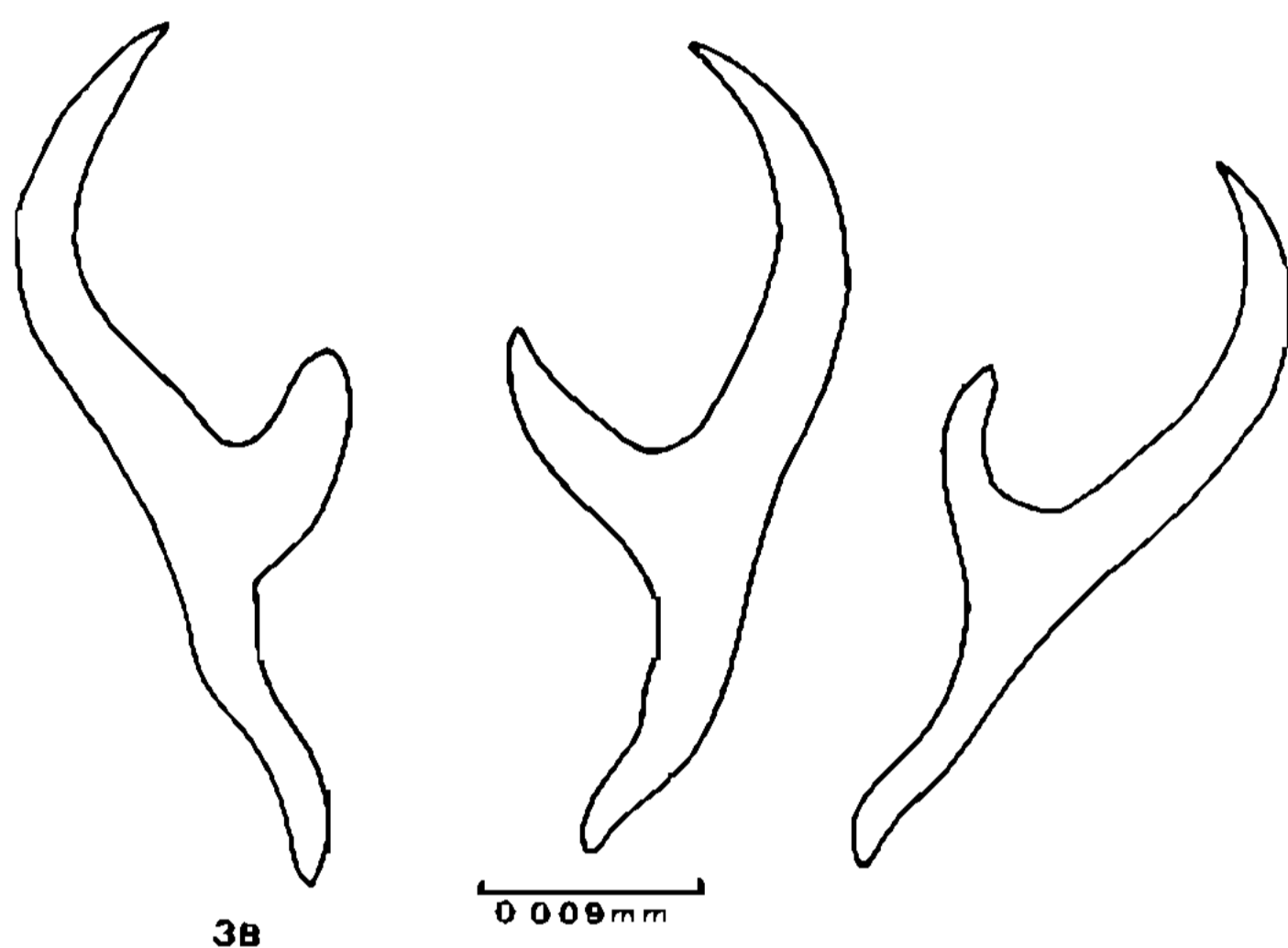


Fig. 3B: *Hymenolepis scutigera* – Rostellar hooks.

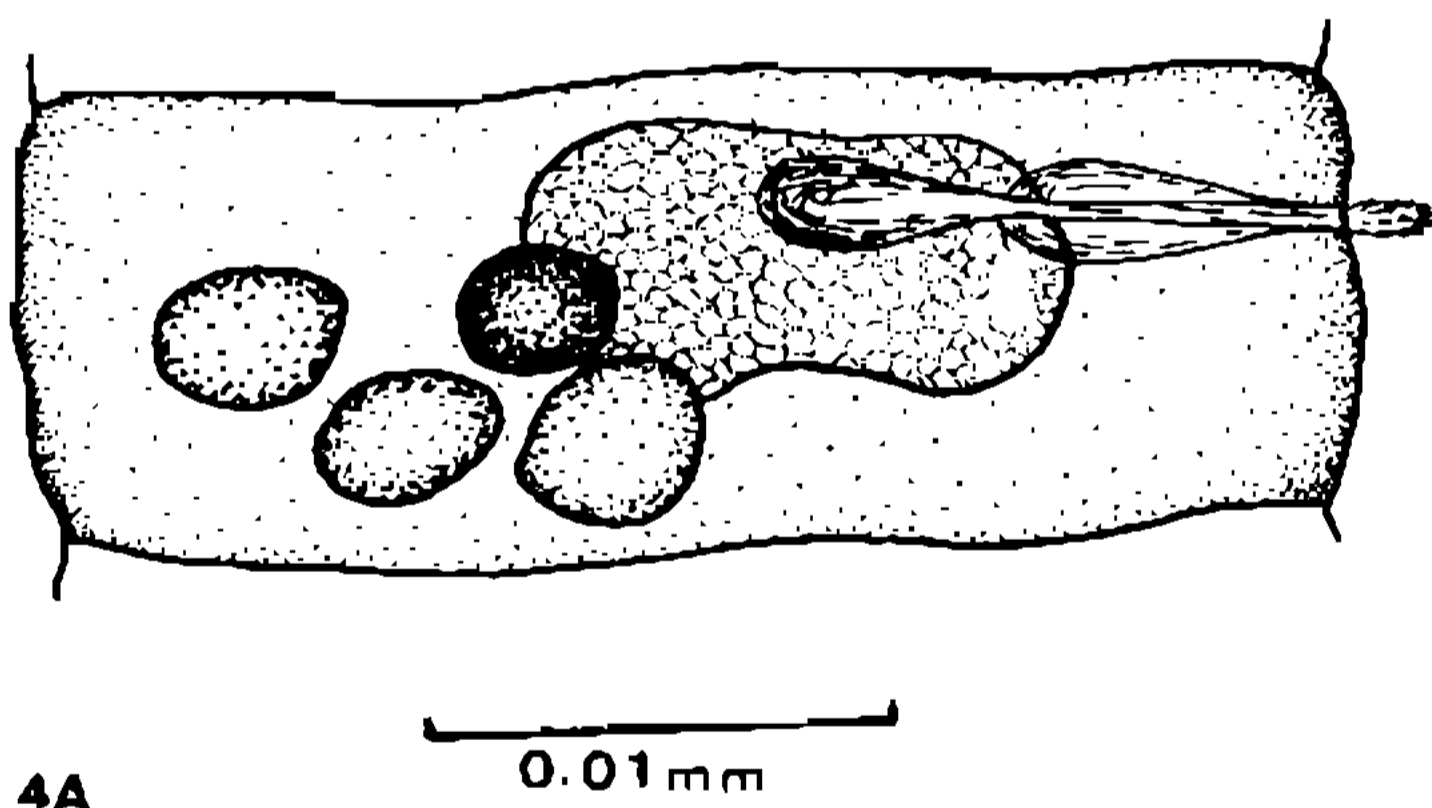


Fig. 4A: *Neoskrjabinolepis schaldybini* – Mature segment.

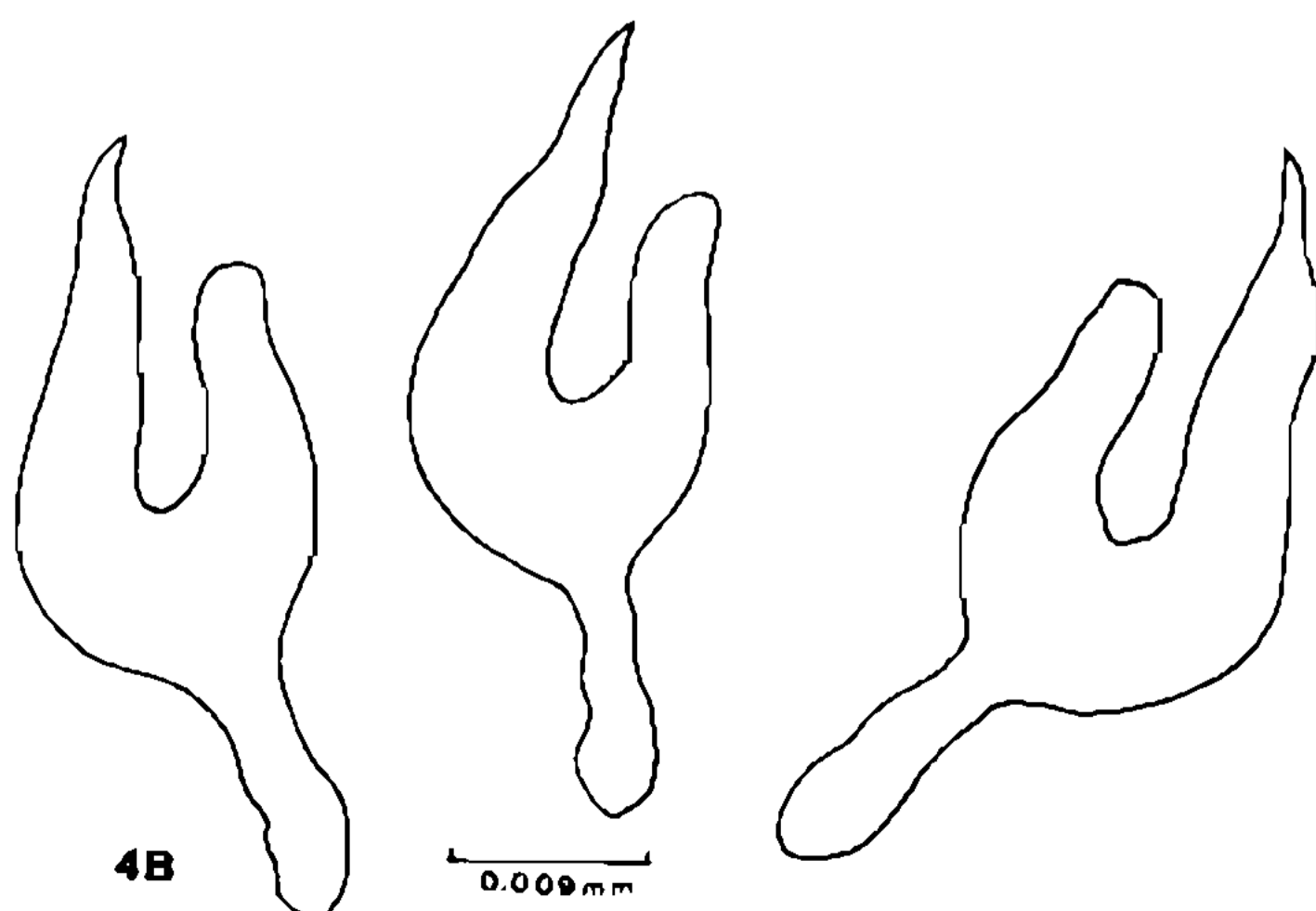


Fig. 4B: *Neoskrjabinolepis schaldybini* – Rostellar hooks.

ment. Vitelline gland is dorsal to ovary. Cirrus pouch and seminal vesicle are nearly reaching the midline of segment. Cirrus armed with sparse spines.

Vigisolepis spinulosa Cholodkowsky, 1912
(Figs 5A, B)

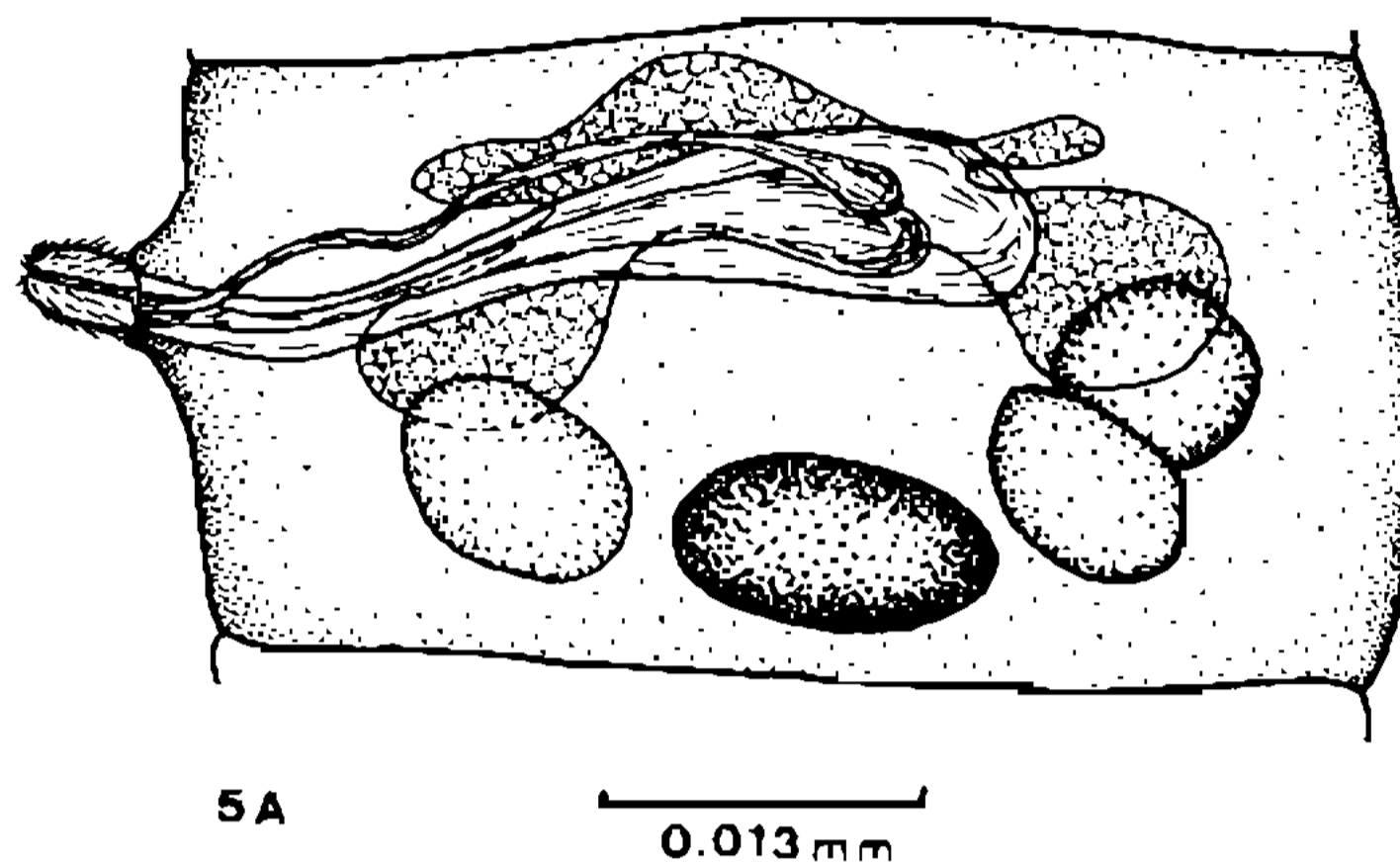


Fig. 5A: *Vigisolepis spinulosa* – Mature segment.

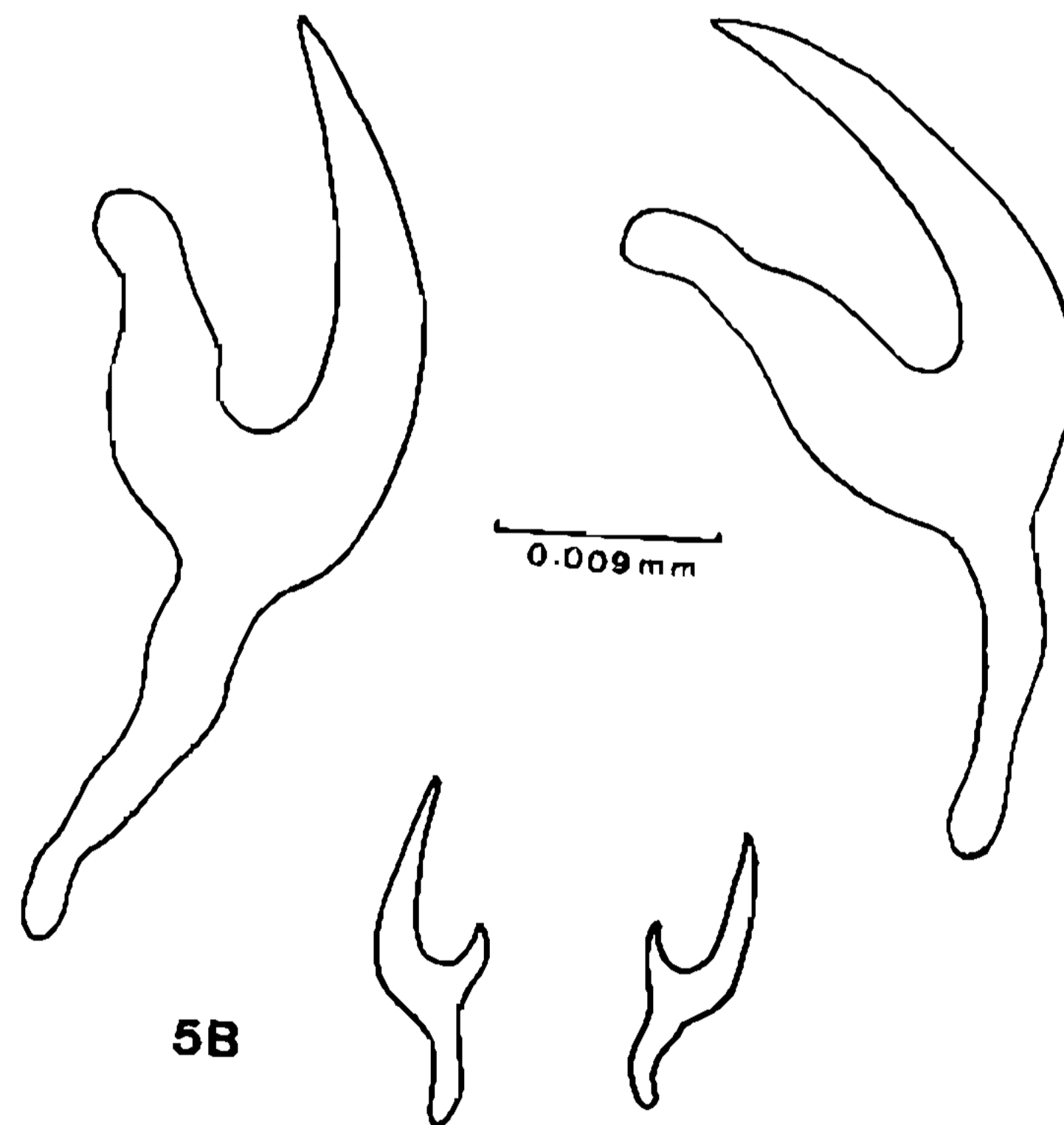


Fig. 5B: *Vigisolepis spinulosa* – Rostellar hooks.

Strobila up to 28000 in length, 560 in maximum width. Scolex 200-228 in diameter, rostellum 71-88 wide. On the top of the rostellum is a characteristic vesicle. Rostellum is armed with crown of 18 large hooks and numerous small hooks, which composed 6 elongated cone-like bands. Length of large hooks – 33-37, that of small hooks – 7-11.

Three testes disposed in triangle, one poral and two antiporal. A large, alate ovary is located in the center of segment; behind it there is a spherical vitellarium. Cirrus pouch is very large, extending nearly to the aporal side of segment. Large cirrus armed with strong spines.

There is a large seminal receptacle. Bilobate ovary extends across the proglottid. Vitelline gland with irregular form is located in the center of segment. Numerous small testes are in the posterior part of proglottid. Uterus saccular, has many small eggs.

Dilepididae
Choanotaenia crassiscolex Linstow, 1890
 (Figs 6A, B)

Choanotaenia hepatica Baer, 1932
 (Figs 7A, B)

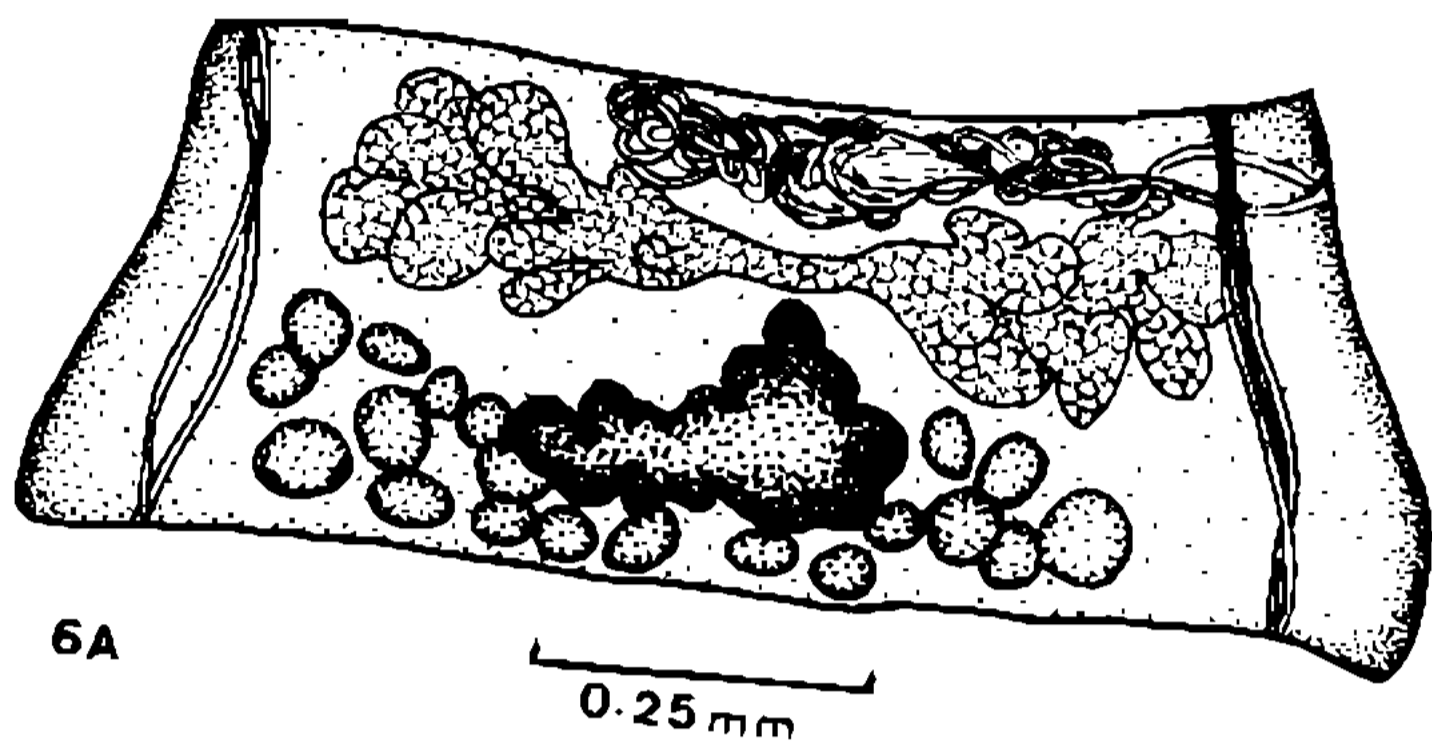


Fig. 6A: *Choanotaenia crassiscolex* - Mature proglottid.

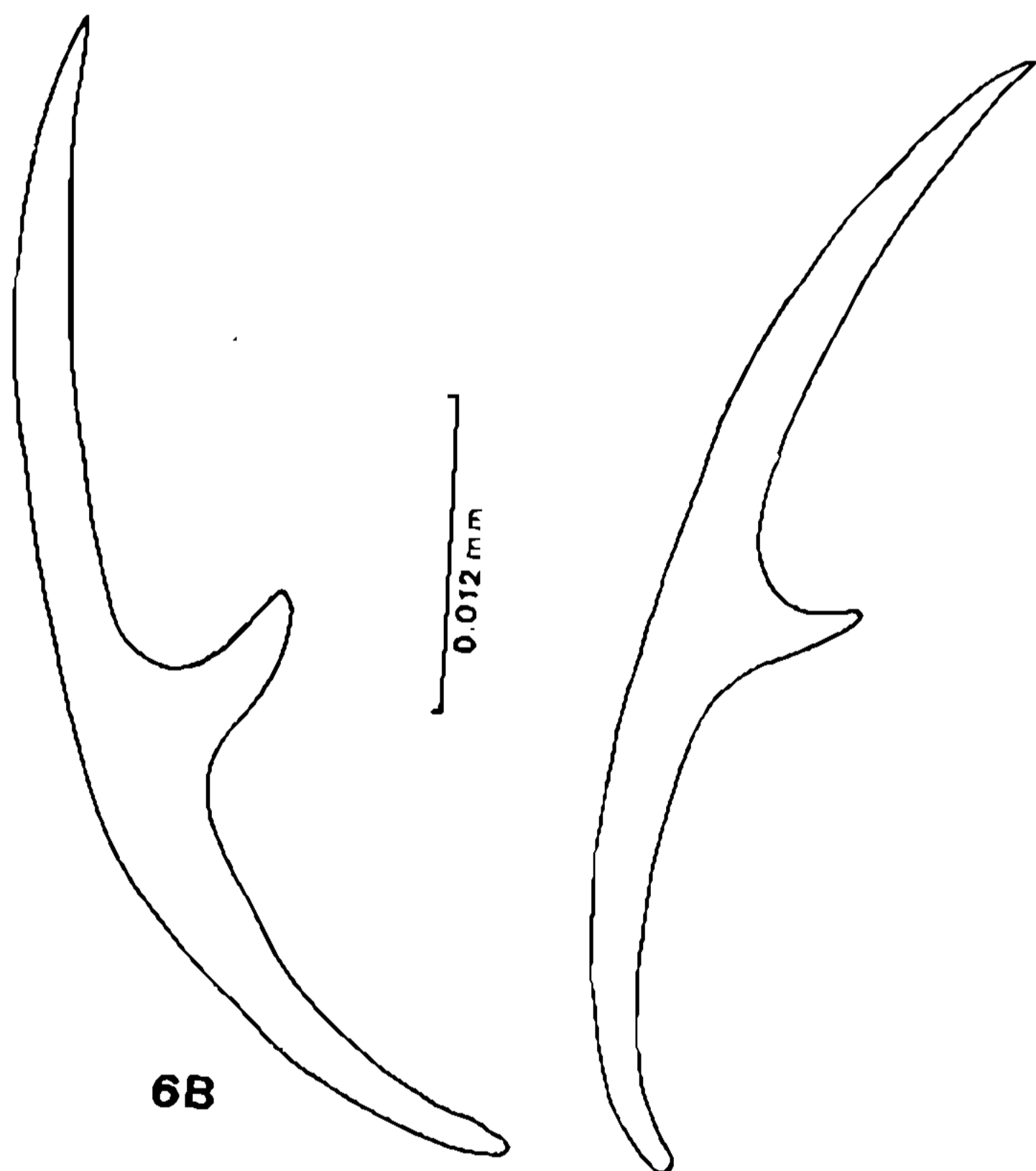


Fig. 6B: *Choanotaenia crassiscolex* - Shape of rostellar hooks.

Strobila up to 13200 in length, 1200 in maximum width. Scolex 225-464 wide, rostellum 49-84 in width. Rostellar hooks are 18-22 in number, 44-52 long.

Proglottids are wider than longer. Cirrus pouch does not reach the median line of segment. Slender cirrus is armed with minute spines. Vas deferens strongly convoluted.

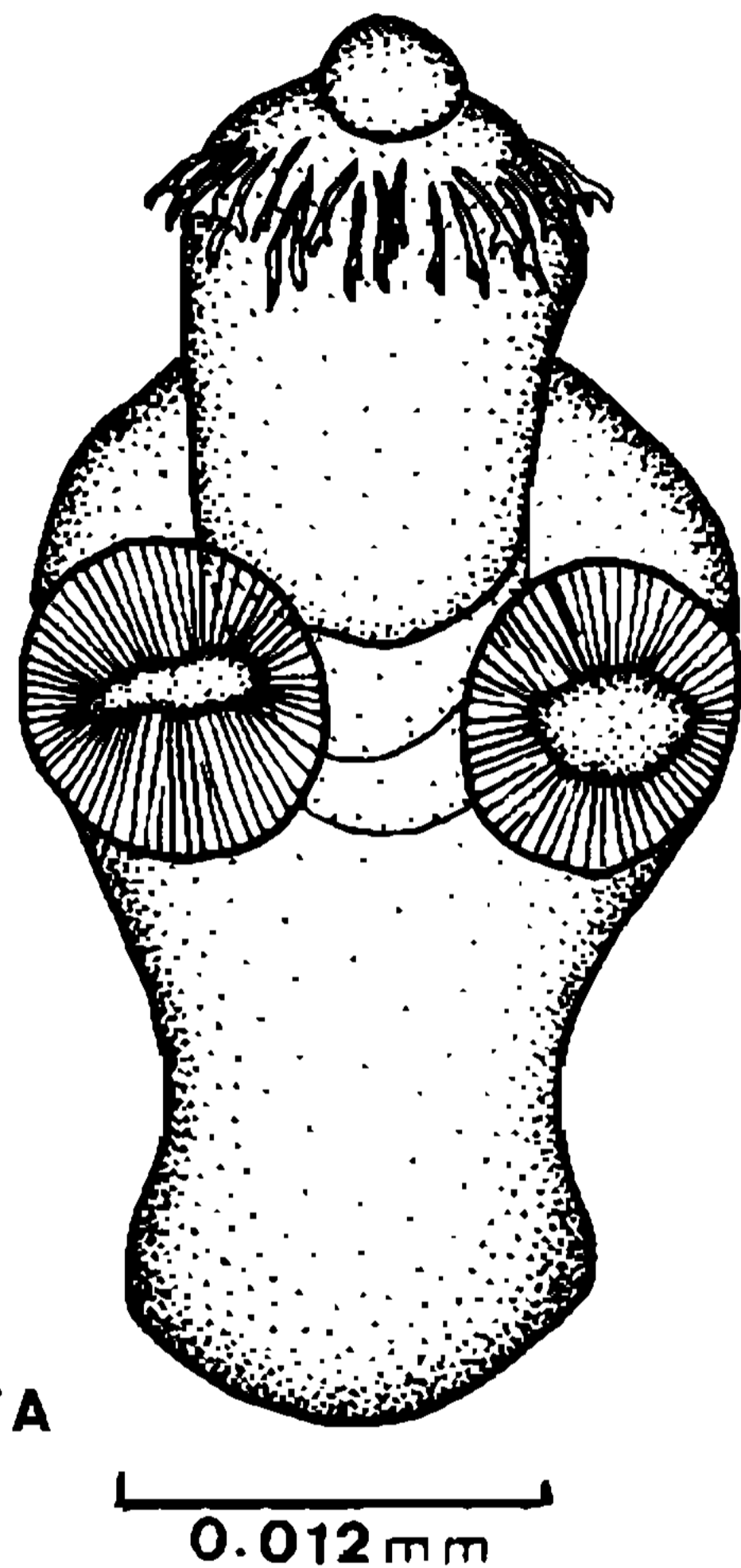


Fig. 7A: *Choanotaenia hepatica* - Juvenile.

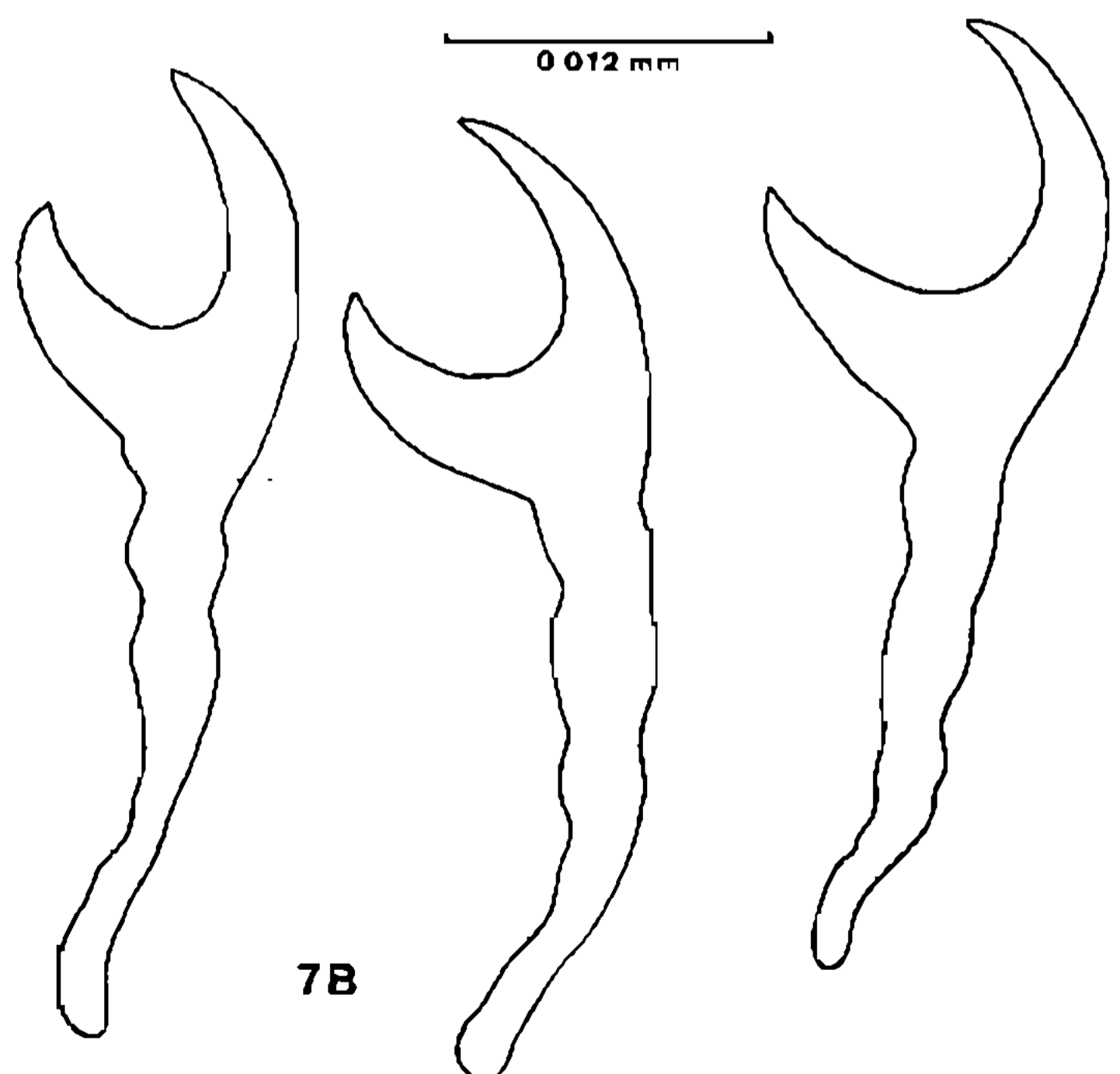


Fig. 7B: *Choanotaenia hepatica* - Rostellar hooks.

Juvenile worms up to 500 in length. Scolex – 200-208 width. Rostellum (116-120 in diameter) is armed with two circles of hooks, 40-45 in number, 36.8-41.0 long. Strobila is poor developed.

Dilepis undula Schrank, 1788
(Figs 8A, B)

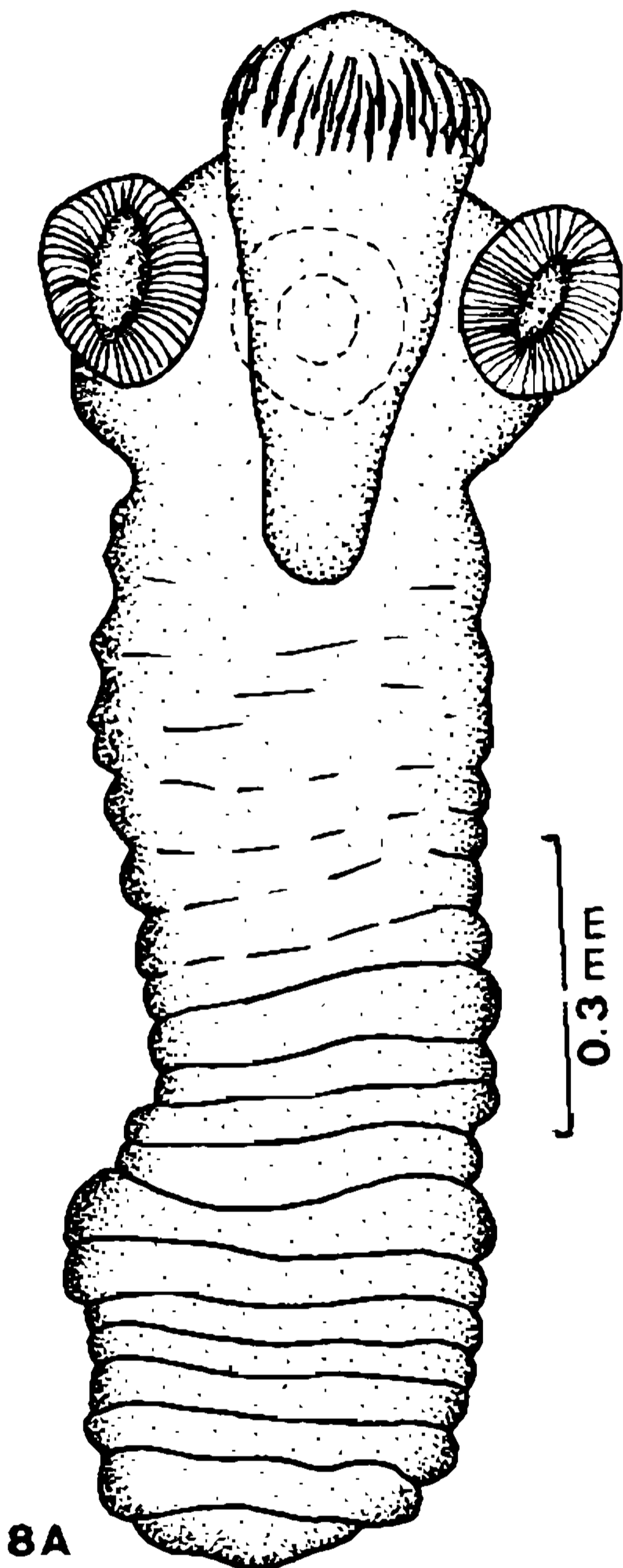


Fig. 8A: *Dilepis undula* – Juvenile.

Strobila – 1520 in length, with 18 proglottids, not containing reproductive organs. Diameter of scolex 542. Large rostellum (266 wide) armed with double crown of hooks. Rostellar hooks – 58 in number, 85-100 length. Rostellar sheath extends up to posterior part of scolex.

Polycercus sp.
(Figs 9A, B)

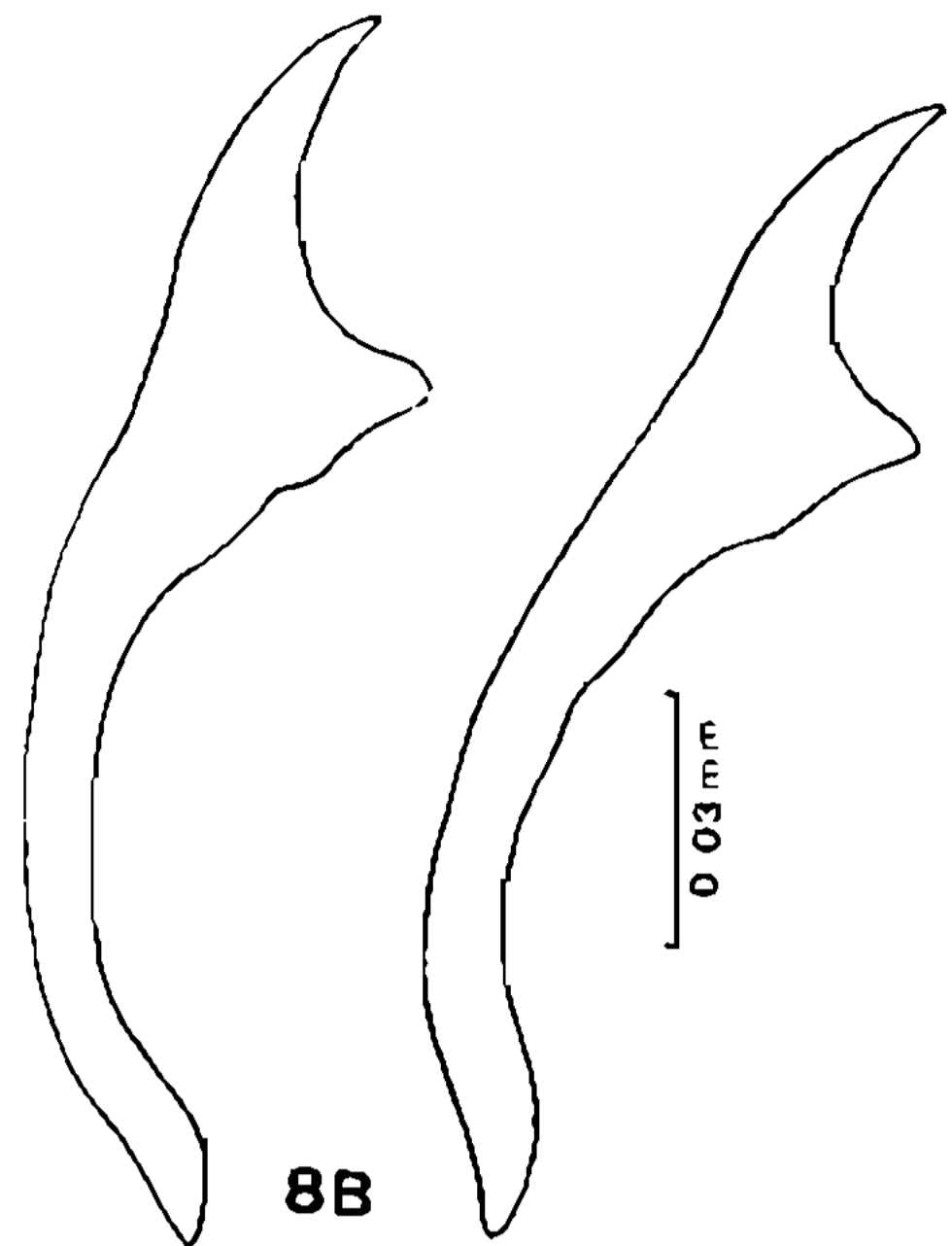


Fig. 8B: *Dilepis undula* – Rostellar hooks.

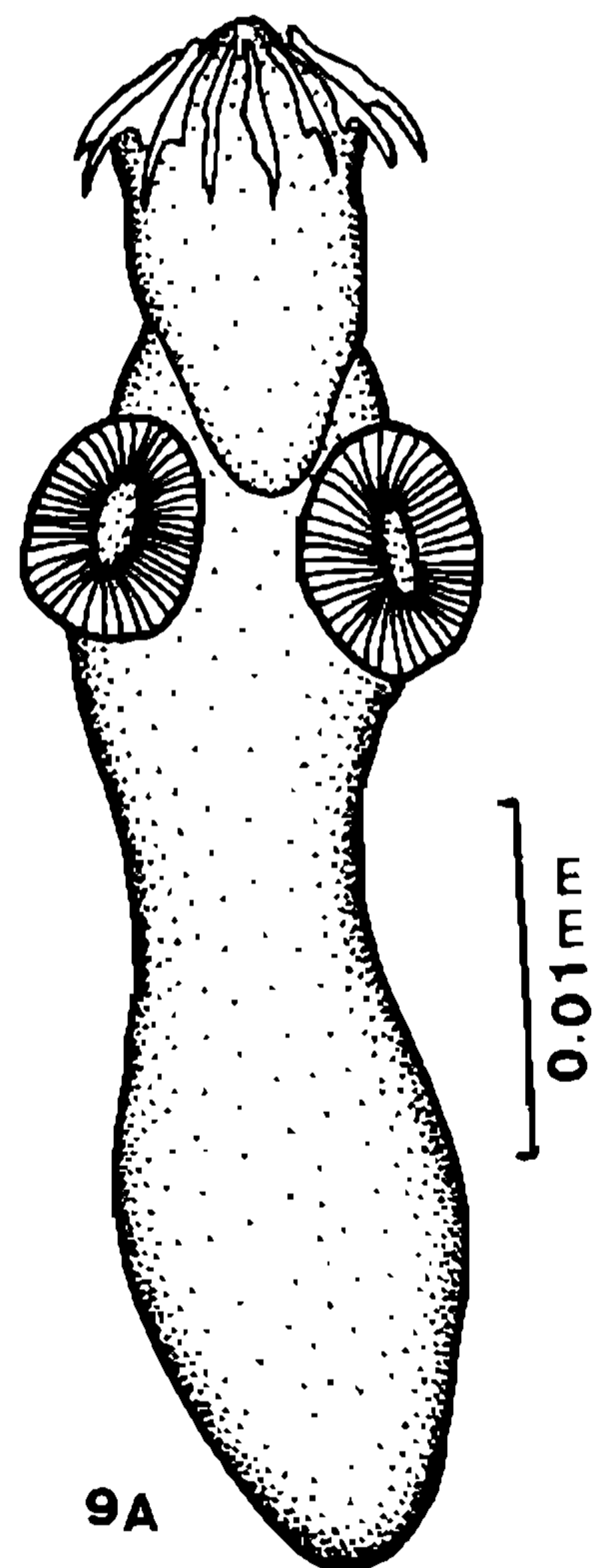


Fig. 9A: *Polycercus* sp. – Juvenile.

Measurements of worms were 352-481. Diameter of scolex – 132-144. Large rostellum (76-84 wide) armed with one circle of hooks. According to the length and number of hooks all worms were subdivided in two groups: I – number of hooks – 14-15, length – 36-41; II – number of hooks – 16-20, length 68-80. The form of the hooks in the groups was identical. Strobila of worms not developed.

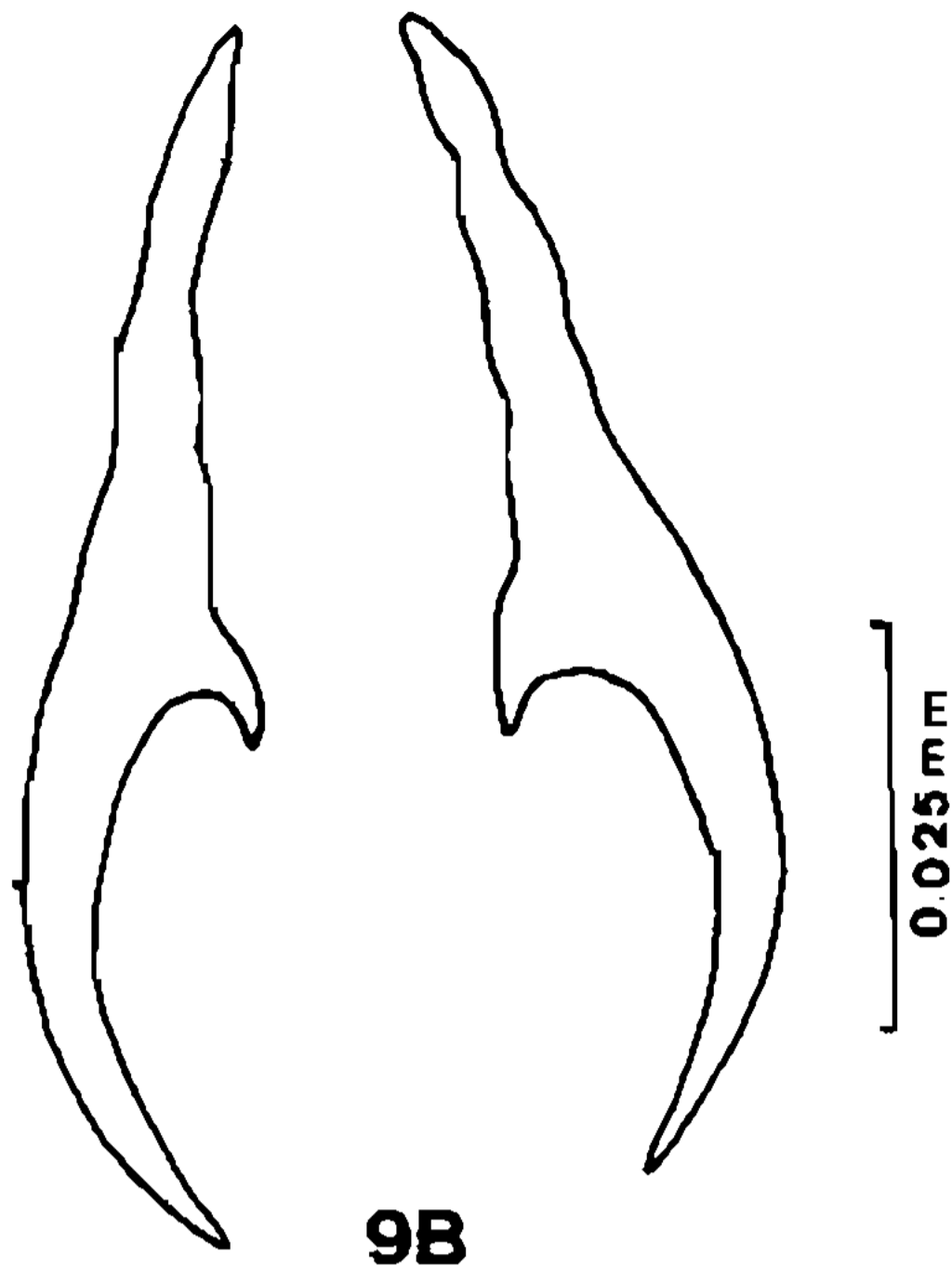


Fig. 9B: *Polycercus* sp. – Rostellar hooks.

REMARKS

Brachylaemus fulvus – I found this species in the oesophagus and the stomach of 43 shrews (86%). Largest number of trematodes was 10 specimens to one host.

Rubensrema exasperatum – Three specimens of this species were found in the stomach of two shrews.

Hymenolepis scutigera – I found this species in 27 common shrews (54%). The worms were located in middle part of ilium. Maximum number of infecting worms was 42 to one host.

Neoskrjabinolepis schaldybini – This species was found in the small intestine of 13 shrews (26%). A number of worms was 20 to one host.

Vigisolepis spinulosa – Three specimens were found in the small intestine of two shrews.

Choanotaenia crassiscolex – This species was found in small intestine of 43 shrews (86%), maximum number of infecting worms was 67, including immature specimens.

Choanotaenia hepatica – I have found only juvenile specimens of this species in three shrews (6%). The worms were located in the middle part of small intestine. The intensity of infection did not exceed five specimens to one host.

Dilepis undula – I have found only one juvenile specimen of this in the small intestine of one common shrew.

Polycercus sp. – This dilepidid was found in one shrew. About 20 juvenile specimens were located in the lumen of small intestine. As *Polycercus* species have the similar shape of hooks and the worms found by me are juveniles which have no segments with reproductive organs it becomes impossible to identify the species implement of collected helminths. Although there are cases in literature when juveniles of *Polycercus turdi* were found in shrews (Andrejko, 1973; Spasskaja & Spassky, 1977).

Helminths described in the present study are widely known and found among shrews in Europe.

For *Br. fulvus*, *R. exasperatum*, *H. scutigera*, *N. schaldybini*, *V. spinulosa*, *Ch. crassiscolex* and *Ch. hepatica* the shrews are the only definitive hosts. The juvenile stages of *D. undula* and *Polycercus* sp. are found often in shrews; the final hosts for them are birds.

The total infection level of shrews is up to 100% due to high levels of infection by *Br. fulvus*, *H. scutigera* and *Ch. crassiscolex*.

The fauna of hymenolepidid cestodes from Valaam's shrews is poor if compared to that of the nearest examined regions (Vasiljev, 1949; Vaucher, 1971). (Further investigations will show if it is a result of island isolation or if it is typical for the whole Karelia).

ACKNOWLEDGEMENTS

To Dr A. A. Dobrovolskij for the review of the manuscript.

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