1990

Binder 134, Microphallidae N-Z [Trematoda Taxon Notebooks]

Harold W. Manter Laboratory of Parasitology

WARNING

Consult Deblock's Studies on the Microphallidae.

All are not in the notebooks.

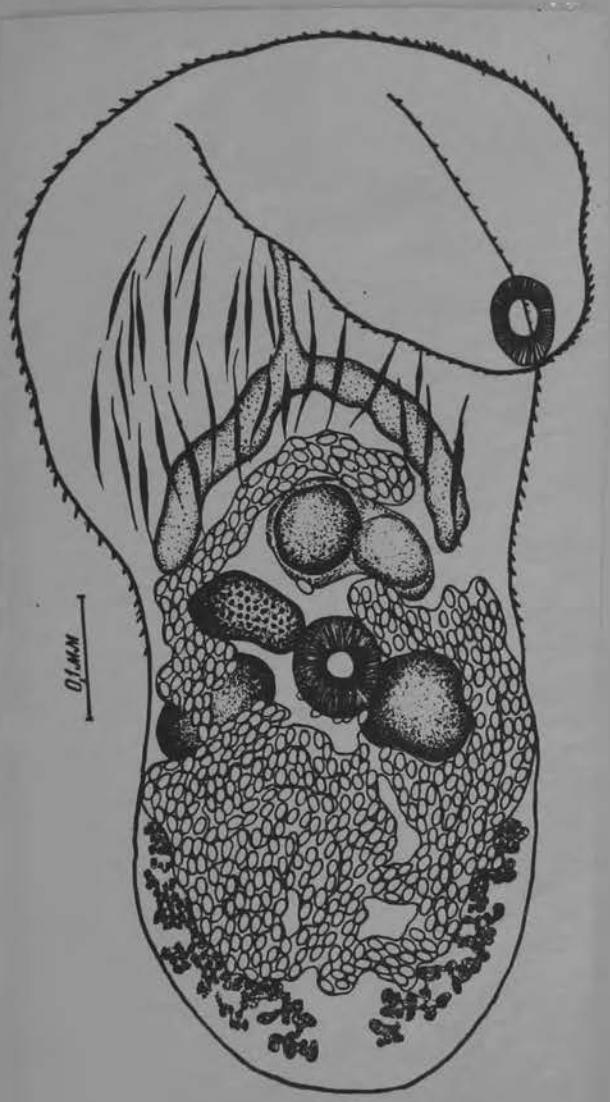
Numeniotrema Belopolskaia, 1952

Generic diagnosis. — **Microphallidae**, Maritrematinae: Body small, elongate, spinose; longitudinal muscle bundles strongly developed in esophagocecal zone. Oral sucker subterminal, comparatively small; prepharynx and esophagus long (?). Ceca short, not surpassing acetabulum. Acetabulum slightly larger than oral sucker, in posterior half of body. Testes symmetrical, posterolateral to acetabulum. Cirrus pouch large, midway between acetabulum and left cecum; seminal vesicle divided into two rounded portions. Genital pore anterosinistral to acetabulum. Ovary anterodextral to acetabulum. Vitellaria extending along posttesticular lateral margin of body. Uterus occupying most of hindbody, may intrude into space between cirrus pouch and cecal arch; eggs very small. Parasitic in birds.

Genotype: *N. musculosum* Belopolskaia, 1952 (Pl. 74, Fig. 902), in *Numenius phaeopus variegatus;* Russia.

Microphallidae
(Skrjabin, vol. 6)

Numeniotrema musculosa Belopolskaia, 1952



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NUMENIOTREMA

Odhneria Travassos, 1921

Generic diagnosis. — Microphallidae, Maritrematinae: Body very small, elongate, with rounded extremities, spinose. Oral sucker subterminal, followed by long prepharynx. Pharynx elliptical, muscular. Esophagus comparatively long; ceca short, oblique or nearly transverse, entirely preacetabular. Acetabulum larger than oral sucker, equatorial. Testes elongate, lobed, postacetabular, subsymmetrical. Cirrus pouch long, lying transversely immediately in front of acetabulum. Seminal vesicle tubular, not convoluted. Genital pore near lateral margin of body at level of acetabulum. Ovary lobed, immediately lateral to acetabulum in front of antiporal testis. Vitellaria extending from acetabular zone to testes along lateral margins of body, postcecal, largely anterolateral to testes. Uterus occupying entire post- and intertesticular areas; eggs small. Excretory vesicle? Parasitic in intestine of birds.

Genotype: *O. odhneri* Travassos, 1921 (Pl. 76, Fig. 923), in *Nyctanassa violacea;* Brazil.

Род *Odhneria* Travassos, 1921

Историческая справка

Род *Odhneria* был установлен Травассосом (1921) для трематоды *O. odhneri*, добытой в Бразилии из кишечника цапли. Автор поместил род *Odhneria* в подсемейство *Brachycoelinae* Travassos, 1921. До последнего времени в литературе нет данных о повторном нахождении этого вида. Ямагути (1958) включил род *Odhneria* в семейство *Microphallidae* (Ward, 1901), подсемейство *Maritrematinae* Lal, 1939.

Судя по описанию, приведенному Травассосом, данный род действительно должен быть помещен в семейство *Microphallidae*. К сожалению, Травассос при описании рода и вида не указывает, с какой стороны расположено половое отверстие. Судя по приведенному рисунку, оно лежит справа. Если это так, то данный род имеет право на существование, если половое отверстие расположено слева, то данный род ничем не отличается от рода *Pseudospelotrema* Yamaguti, 1939. Мы признаем самостоятельность рода *Odhneria*. Если будет получен материал по этому виду и выяснится, что половое отверстие слева, то тогда род *Pseudospelotrema* Yamaguti, 1939 должен стать синонимом рода *Odhneria*.

Диагноз рода (по Травассосу, 1921)

Maritrematinae. Тело овальное, с шипиками. Ротовая присоска субтерминальна, предглотка имеется, пищевод относительно длинный, кишечные ветви лежат почти трансверзально, брюшная присоска — экваториально. Семенники лопастные, позади брюшной присоски, сумка цирруса длинная, лежит трансверзально позади брюшной присоски, половое отверстие — латерально на уровне брюшной присоски. Яичник лопастной, расположен латеральнее брюшной присоски, впереди антипорального семенника. Желточники распространены от зоны брюшной присоски до семенников вдоль латерального края тела. Матка занимает пространство между семенниками и позади них. Паразитируют в кишечнике птиц.

Типичный и единственный вид: *Odhneria odhneri* Travassos, 1921.

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Odhneria odhneri Travassos, 1921

(Рис. 220)

Описание вида (по Травассосу, 1921). Длина тела 0,78—0,95 мм, ширина 0,27—0,34 мм, тело овальное, закруглено на обоих концах, покрыто шипиками. Ротовая присоска субтерминальна, меньше брюшной, ее диаметр 0,071—0,085 мм, предглотка 0,035—0,063 мм длины, глотка элипсоидная, мускулистая, ее размеры 0,049—0,058×0,028—0,035 мм, пищевод относительно длинный— 0,141—0,156 мм длины, ветви кишечника короткие, наклонены или почти трансверзальны. Брюшная присоска лежит экваториально, ее диаметр 0,092—0,106 мм. Семенники лопастные, расположены позади экватора латерально, их длина 0,106—0,142 мм, ширина 0,042—0,048 мм. Сумка цирруса большая, лежит трансверзально, перед брюшной присоской, содержит пенис и семенной пузырек, длина сумки цирруса 0,142—0,149 мм, половое отверстие — вблизи латерального края тела и на уровне брюшной присоски. Яичник лопастной, расположен антипорально, его диаметр 0,071—0,078 мм. Желточники — вдоль боковых краев тела, от зоны брюшной присоски до семенников. Матка занимает пространство позади и между семенниками. Яйца 0,016—0,020×0,008—0,012 мм.

Литература: Travassos, 1921, стр. 59—67.

from SKRJABIN Vol. 21

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A REVIEWAL OF *ODHNERIA ODHNERI* TRAVASSOS, 1921 (TREMATODA: MICROPHALLIDAE)

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ABSTRACT: Trematodes found in 14 species of shore birds and identified as *Odhneria odhneri* Travassos, 1921, show variations and features overlapping those of the following species which are synonymized with *O. odhneri*: *Maritreminoides raminellae* Dery, 1958 (placed in the genus *Maritrema* by Deblock et al., 1961; in *Pseudospelotrema* by Ching, 1963; and in *Odhneria* by Heard, 1970); *Pseudospelotrema charadrii* Cable et al., 1960 (placed in *Odhneria* by Heard, 1967); and *Odhneria limnodromii* Schell, 1967. Collection data indicate a winter-to-spring infection and a life span of less than a year throughout which growth continues. From the frequency and intensity of infections, size of specimens, and their longevity, the willet (*Catoptrophorus semipalmatus*) seems to be the most favorable definitive host of *O. odhneri*. Morphometric variation of the parasite depends on host species rather than size of host, some species providing a more favorable milieu than others. Hot fixation was found superior to other methods and the only one that consistently yielded preparations satisfactory for critical comparisons.

The maritrematid trematode, *Odhneria odhneri*, has not been reported under that name since Travassos (1921) described the species as an intestinal parasite of the yellow-crowned night heron (*Nyctanassa violacea*) in Brazil. Belopolskaia (1963) and Yamaguti (1958) have reiterated the description of this species. The genus *Odhneria* was included in the genus *Maritrema* by Deblock et al. (1961) but Ching (1963) discounted this grouping.

Dery (1958) described *Maritreminoides raminellae* from the redbreasted merganser (*Mergus serrator*) in Connecticut. Deblock et al. (1961) also grouped this organism with *Maritrema* as *Maritrema raminellae*. Ching (1963) subsequently recorded it as *Pseudospelotrema raminellae*. These authors, however, had not viewed the worm so had failed to note similarities with *Odhneria*. Heard (1970), recognizing Travassos' work, placed this fluke in its correct genus as *Odhneria raminellae*, based on specimens recovered from the clapper rail (*Rallus longirostris*) along the Atlantic and Gulf coasts of the United States.

Cable et al. (1960) described *Pseudospelotrema charadrii* from Wilson's plover (*Charadrius wilsonia*) in Puerto Rico. This organism was regarded as *Odhneria charadrii* by Heard (1967).

Schell (1967), recognizing Travassos' genus *Odhneria*, described what he believed was a new species, *Odhneria limnodromii*, from the dowitcher (*Limnodromus griseus*) from Idaho. He stated that his species differed from *O. odhneri* in length:width ratio of the body, 3:1 in that species and 6:1 in the species described by him. A further differentiation proposed was distance separating antiporal testis and ovary, one-third the testis length in *O. odhneri* and at least the testis length in *O. limnodromii*. Travassos' figure of *O. odhneri* shows the worm from a dorsal view and greatly flattened as witnessed by the distorted acetabulum as well as overall contour and has undoubtedly accounted for much of the confusion concerning this species. Certainly, Schell's (1967) account of a new species clearly ignores the possibility of flattening, and stage of maturity would have a strong effect on size of genital organs and spacing between them. Regardless of age, one still finds a diversity of positioning of these organs in *Odhneria odhneri*. During the present study, mature worms from a single host prepared by hot fixation exhibited a spacing of one-third to more than the total length of the testis between antiporal testis and ovary. Room-temperature fixation resulted in these organs touching or spacing up to three-fourths the length of the testis.

It is my belief that all of the above-named organisms can be assigned to *Odhneria odhneri* Travassos, 1921, a rather ubiquitous parasite with both a wide geographic range and a number of different host species, which in the main are migratory and which impart some variability upon this parasite. Table I presents available data concerning organisms considered here to be *O. odhneri*. Each "species" was observed in but a single host species, and some were represented by only a few specimens. Variability of this organism when observed in a range of hosts during a single study shows the uncertainty of species based on limited data.

MATERIALS AND METHODS

Length:width ratios of bodily proportions, as such, for comparison of specimens are relatively worthless without some consistency of treatment of specimens by systematists. Fifty-five mature specimens of *O. odhneri* obtained from a single host, a willet (*Catoptrophorus semipalmatus*), were mixed and random isolation of two groups of 10 was made from this stock. Room temperature fixation resulted in length:width ratios of 3.04 to 4.9:1 (avg 4.03:1) and hot fixation 5.44 to 6.75:1 (avg 6:1). If consistent treatment (hot fixation) is applied to all specimens of *O. odhneri* from different host species, measurements and proportions differ with host involved, generally averaging about 4:1 length to width.

Data used in the present study are derived from mature worms taken during the fall of the year, killed by immersion in hot water, and immediately placed in AFA fixative and are thus assumed to be suitable for comparison. Other fixation methods

TABLE I. *Comparative data presented by various authors concerning organisms herein considered as the species* Odhneria odhneri *Travassos, 1921. All measurements in microns.*

	Odhneria odhneri Travassos, 1921	*Odhneria limnodromii* Schell, 1967	*Maritreminoides raminellae* Dery, 1958	*Pseudospelotrema charadrii* Cable et al., 1960	*Odhneria odhneri* present study
Length	780–950	1,000–1,300	750–990	720–860	660–1,950
Width	270–340	170	200–230	210–270	180–420
Oral sucker	71–85	57–71 × 75–82	67–71 × 67–78	47–63 × 63–71	54–86 × 65–108
Prepharynx	35–63	2–3 times pharynx	47–78	longer than pharynx	11–119
Pharynx	49–58 × 28–35	39–50 × 32–42	39–47 × 34–39	39 × 30	32–59 × 32–49
Esophagus	141–156	280–390	170–270	3–4 times pharynx	140–464
Acetabulum	92–106	75–85	63–78	66–87	65–130
Testes	106–142 × 42–48	64–82 × 17–24	49–81 × 37–53	63–71 × 47–71	63–194 × 32–76
Ovary	71–78	53–71	38–60 × 25–49	47–63	40–108 × 30–119
Eggs	16–20 × 8–12	14–18 × 7–8	15–18 × 9–13	14 × 9	12–20 × 8–13
Vitellaria	follicular	follicular few in lateral fields	9–11 follicles each field	9–10 follicles each field	7–11 follicles each field more on right

were also employed (cold fixation, fixation under coverslip pressure) to duplicate morphological forms previously reported.

During the present study, *Odhneria odhneri* was found in a total of 14 species of shore birds from the Woods Hole area of Massachusetts and Sapelo Island, Georgia: Woods Hole—redbreasted merganser (*Mergus serrator*); whitewinged scoter (*Melanitta deglandi*); common eider (*Somateria mollissima*); knot (*Calidris canutus*); dunlin (*Erolia alpina*); ruddy turnstone (*Arenaria interpres*); sanderling (*Crocethia alba*); blackbellied plover (*Squatarola squatarola*); Sapelo Island—dunlin; knot; sanderling; blackbellied plover; semipalmated sandpiper (*Ereunetes pusillus*); western sandpiper (*E. mauri*); least sandpiper (*Erolia minutilla*); willet (*Catoptrophorus semipalmatus*); Wilson's plover (*Charadrius wilsonia*); shortbilled dowitcher (*Limnodromus griseus*).

RESULTS AND DISCUSSION

Odhneria odhneri Travassos, 1921, displays seasonality, not in occurrence as such, but of time of infectivity to host. The life cycle of the organism is unknown. Host records, however, appear to suffice for portraying this feature. Immature specimens have been recovered during mild winters and in spring, the preponderance in late spring. Host species are absent after late spring and most of summer from indicated collecting areas. No immature specimens are found during late summer and fall migrations in either area nor in wintering populations of the Georgia coast. *Odhneria odhneri* displays a continuing growth pattern throughout its adult life which is apparently of 1 year or less in duration. Specimens recovered from some host species in late fall were sluggish, nearly moribund. Residing in the intestinal ceca of the host, these weakened individuals are not flushed out as they would be in the harsher environment of the intestine. In all but the willet, intensity and prevalence of infection in hosts decrease as fall progresses. By all indications, prevalence, size of worms, and longevity, this host, *Catoptrophorus semipalmatus*, of the 14 species listed, appears to provide the best environment for the definitive stage of *O. odhneri*. Previously published data can be fitted into this scheme (Table I). Cable et al. (1960) reported their "species" from Wilson's plover (*C. wilsoni*) taken in spring or summer, but provided no exact indication of time of collection of *Pseudospelotrema charadrii*. Regardless, the small size of these worms fits the seasonal pattern observed in other host species, and specimens obtained from the same host species in early April at Sapelo Island, Georgia, are only slightly larger than that indicated. Dery's specimens of *Maritreminoides raminellae* from the redbreasted merganser during the fall hunting season correspond almost exactly with those obtained during the present study and are close to the maximum size attained in that host species. Neither Travassos nor Schell give time of collection of their specimens, but seasonality undoubtedly contributes to the conflict involved. *Odhneria odhneri* from the dowitcher (Schell's host species) collected in April at Sapelo Island were immature or just maturing and were smaller or within the size range reported by Schell (1967).

As an example of observed variation in its many hosts, length range of *Odhneria odhneri* (in microns) collected during autumn and early winter was as follows: redbreasted merganser (720 to 1,070); whitewinged scoter (1,080 to 1,470); common eider (830 to 1,080); ruddy turnstone (800 to 1,170); blackbellied plover (800 to 1,300); knot (820 to 1,600); sanderling (900 to 1,700); dunlin (1,000 to 1,780); semipalmated sandpiper (1,050 to 1,730); least sandpiper (1,230 to 1,700); western sandpiper (1,270 to 1,730); willet (1,470 to 1,950).

J. Parasit. 1971

Odhneria odhneri Travassos, 1921

Adult (Figs. 1, 2)

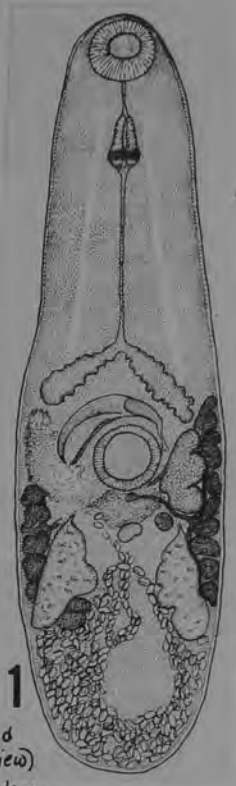
The worms, developed for three days in a young *L. argentatus*, are not fully mature since the uterine coils do not completely fill the space between and behind the testes. They vary from 0.60 to 1.10 mm in length and 0.24 to 0.32 mm in width. The body is ovate to clavate, wider posteriorly, with rounded ends. The acetabulum is located immediately posterior to the midbody and measures 0.07 to 0.085 mm in diameter. The tegument is heavier anteriorly, measuring as much as 10 μ in thickness at the level of the oral sucker and 2 μ near the posterior end of the body. Near the anterior end of the body there are broad, thin, closely set spines, 6 to 7 μ long, which diminish in size posteriorly and are absent posterior to the testes. The body wall comprises the usual circular, longitudinal and oblique fibers and the parenchyma is relatively loose.

The oral sucker is subterminal and approximately the same size as the acetabulum. In living specimens, the diameter depends on the degree of compression from the cover-glass as evaporation reduces the amount of water in the preparation. In mounted specimens, the size is dependent on the degree of flattening during killing and fixation. The prepharynx is variable in length, usually about one-half the diameter of the oral sucker. The pharynx is oval, 0.055 to 0.060 mm long and 0.035 to 0.045 mm wide; the posterior half contains a large number of nuclei. The esophagus is lined with tegumental membrane and varies in length from 0.10 to 0.20 mm with retraction and extension of the forebody. The digestive caeca are lined with tall epithelium, diverge at a wide angle and are preacetabular. In most specimens they are about as long as the esophagus. Contraction of circular muscles in the walls of the caeca may produce outpocketings and a crenate appearance.

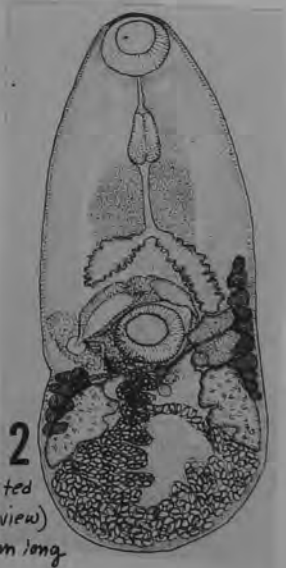
The excretory system was worked out in the metacercaria and does not change in the adult condition.

The testes are opposite, oval, 0.10 to 0.145 by 0.06 to 0.09 mm in diameter, located at the lateral margins of the body in the posterior half of the anterior third and all of the middle third of the distance from the level of the acetabulum to the posterior end of the body. They are lobed, longer in the anteroposterior axis, inclined with the anterior ends directed mediad, and in part separated from the body wall by vitelline follicles. Sperm ducts arise from the anterior ends of the testes and converge to join in the interval between the median face of the ovary, the right edge of the acetabulum and the posterior end of th right caecum. The common duct enters the right end of the cirrus sac, a muscular organ 0.15 to 0.20 mm long and 0.03 to 0.04 mm in diameter, which arches across the body anterior to the acetabulum, and opens into the genital atrium located between the acetabulum and the sinistral body wall. Within the cirrus sac, the male duct expands to form an oval seminal vesicle, 0.06 to 0.08 mm long and 0.02 to 0.025 mm wide, which is followed by a short, sometimes curved or sinuous duct that opens into the thick-walled prostatic section of the cirrus sac, 0.06 to 0.09 mm long. The lumen of this section is expanded and ends in a short duct that leads to the genital atrium which measures 0.03 to 0.05 mm in diameter and is enclosed in secretory cells.

The ovary is located on the right side at the level of or slightly posterior to the acetablulum. It is oval, longer in the anteroposterior axis, to almost spherical, 0.065 to 0.10 mm in diameter, lobed, near or contiguous to the right testes. The oviduct arises from the median face of the ovary and passes mediad along the posterior face of the acetabulum. Near the midline it receives a duct from the seminal receptacle, almost immediately another from the vitelline receptacle and then enters Mehlis' gland. From the seminal receptacle, Laurer's canal leads to the dorsal surface of the body. From Mehlis' gland, the uterus passes posteriad and toward the left, winds posteriad along the medial face of the left testis, coils about and passes forward along the medial face of the right testis, then crosses to the left behind Mehlis' gland and becomes the metraterm, the terminal section of the uterus. The metraterm is short, 0.04 to 0.06 mm long and opens into the medial face of the genital atrium. The vitellaria consist of oval to irregular follicles, 0.02 to 0.028 mm in diameter, located on the lateral margins of the body. On the right side



1
extended
(dorsal view)
1.10mm long

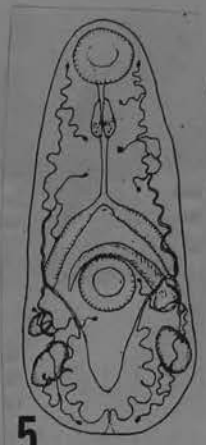


2
retracted
(dorsal view)
0.78mm long

– OVER –

they extend from a level anterior to the ovary to near the posterior end of the testis; on the left side from the level of the genital atrium to about one-half the distance from the acetabulum to the posterior end of the body. They are ventral to the testes, which may partially overlap the most posterior follicles. Longitudinal ducts pass along the median faces of the follicles, receive a short duct from each, and at the level of Mehlis' gland, transverse ducts pass mediad and join to form the vitelline receptacle, from which a common duct transmits vitelline cells to the oviduct as it enters Mehlis' gland. Typically, there are ten follicles on the right side and eight on the left side. If the body is extended, the follicles are aligned in a single file; when retracted, the follicles may be disposed in clusters, suggesting a rosette arrangement. Eggs in the initial portion of the uterus have thin, flexible shells and the embryos are readily stained, so the early course of the uterus can be observed; later the shells become thick, hard and opaque. Eggs in the terminal part of the uterus measure 0.017–0.018 by 0.011 to 0.012 mm.

Stunkard, 1979



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Metacercaria with excretory system added from study of living specimens.

sup of *O. odhneri* acc to Sinclair, 1971 g.n.

SCHELL, 1967

Odhneria limnodromi sp. nov.
(Figs. 4, 5)

Body elongate, 1 to 1.3 mm long by 0.17 mm wide, sides nearly parallel, ends rounded. Oral sucker terminal, 57 to 71 long by 75 to 82 wide; ventral sucker posterior to midbody region, round, 75 to 85 in diameter. Pharynx 39 to 50 long by 32 to 42 wide; prepharynx two to three times longer than pharynx; esophagus 280 to 390 long; intestinal ceca extend to level of ventral sucker. Nerve commissure dorsal to prepharynx with anterior and posterior trunks extending from it. Cirrus pouch transverse, curved, located at anterior margin of ventral sucker, 96 to 103 long by 32 wide; elongate seminal vesicle fills basal half and prostatic complex occupies distal half of pouch; ejaculatory duct everts to form papillalike cirrus. Genital pore to left of ventral sucker; genital atrium shallow, receiving cirrus and end of metraterm which enters lateral to cirrus. Testes lobed, opposite, 64 to 88 long by 17 to 24 wide, located close to lateral margins of body about halfway between ends of intestinal ceca and posterior end of body. Ovary lobed, 53 to 71 in diameter, lateral to ventral sucker. Seminal receptacle median to ovary, variable in size, indistinguishable in some specimens. Vitelline follicles few, in lateral rows between ends of intestinal ceca and testes with some extending lateral to testes. Uterus fills posttesticular space, ascending limb between testes. Eggs 14 to 18 long by 7 to 8 wide, brown. Excretory vesicle, Mehlis' gland, and ootype not observed.

Definitive host: Dowitcher (*Limnodromus griseus* Gmelin, 1789).

Habitat: Small intestine.

Type locality: Vicinity of Rathdrum, Kootenai County, Idaho.

Type specimens: Holotype No. 61781 and three paratypes No. 61782 deposited in the USNM Helm. Coll.

Remarks

The species is described from 10 specimens. The only other known species in the genus is *O. odhneri* Travassos, 1921, from Brazil. The length–width ratio of the body of *O. odhneri* is about 3:1, whereas in *O. limnodromi* it is 6:1. In *O. odhneri* the antiporal testis and the ovary are separated by a distance equal to approximately one-third the length of the testis while in *O. limnodromi* this distance is at least equal to the length of the testis.

4

5

spp of Odhneria odhneri acc to Linton, 1921 p v.

Microphallidae

Maritreminoides raminellae Dery, 1958

During the regular Connecticut hunting season of 1952 and 1953, twenty-three Red-breasted Mergansers, *Mergus serrator* Linnaeus, were examined for parasites (Dery, 1954). Many microphallid trematodes were recovered from the intestines of seven of the above birds, collected at Ram Island, Barn Island and Clinton, Connecticut. These appear to represent a new species in the genus *Maritreminoides* Rankin, 1939, and are described below. This study is based on 150 worms. These were fixed in A.F.A. or Bouin's fixative under slight pressure, then stained in Ehrlich's haematoxylin, Ward's haematin (Ward's Natural Sciences, 1953, page 70) or Gower's modified carmine (Gower, 1939) and mounted whole. After study, several worms were removed from slides, sectioned transversely or sagittally and restained with Delafield's haematoxylin and eosin. All measurements are in millimeters and were taken from ten specimens unless otherwise stated.

*Contribution from the Department of Zoology and Entomology, University of Connecticut, Storrs, Connecticut and the Department of Biological Sciences, Division of Zoology, Florida State University, Tallahassee, Florida.

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Present Address: Department of Biological Sciences, Florida State University, Tallahassee, Florida.

Maritreminoides raminellae, n. sp.

DESCRIPTION: *Maritreminoides*. Body elongate-oval, 0.75-0.99 × 0.20-0.23 immediately posterior to the acetabulum; except for extreme posterior end, covered with short stout spines having appearance of imbricate scales. Oral sucker subterminal, 0.067-0.071 × 0.067-0.078. Prepharnyx 0.047-0.078 long, widening toward pharynx which measures 0.039-0.047 × 0.034-0.039. Esophagus long, 0.17-0.27. Caeca short, 0.13-0.19, not extending beyond acetabulum; each lined with large cells. Acetabulum approximately same size as oral sucker, 0.063-0.078 in diameter. Testes oval; lying in lateral fields of posterior third of body, 0.049-0.081 × 0.037-0.053, long axes usually converging anteriorly. Vasa efferentia joining on the right side of body just anterior to ovary forming a short vas deferens which enters seminal vesicle. Seminal vesicle elongate oval, 0.065 long (average of 3 specimens), filled with sperm in mature specimens. Prostatic vesicle small, receiving the ducts of the numerous prostate glands which are enclosed in the cirrus pouch and surround the muscular cirrus. Cirrus present, when not everted, 0.05 long, reaching from prostatic vesicle to genital atrium. Cirrus pouch 0.117-0.133 long, considerably wider nearer genital atrium than proximally. Ovary retort-shaped, postero-dextral to acetabulum, 0.038-0.060 × 0.025-0.049, never contiguous with right testis but sometimes overlapping acetabulum and occasionally covering it. Oviduct extending postero-medially. Seminal receptacle medial to ovary. Main vitelline duct crossing oviduct ventrally, then looping posteriorly to join oviduct immediately before oötype. Oötype near postero-dextral edge of acetabulum, lined with a single layer of cuboidal cells. Mehlis' gland consisting of numerous cells surrounding dextral end of oötype and part of oviduct. Uterus filling posterior body with descending and ascending coils, finally passing forward dorsal to left vitelline duct. Metraterm thick-walled, looping dorsal to genital atrium before discharging into it. Genital atrium located on left side of acetabulum with genital pore ventral. Vitelline glands not extending beyond acetabulum anteriorly or behind testes posteriorly, composed of 9-11 follicles in each lateral field, usually overlapping testes and ovary ventrally and generally extending further anteriorly on right side. Right and left vitelline ducts joining median vitelline reservoir ventrally. Laurer's canal not observed. Eggs operculate, .015-.018 × .009-.013.

DEFINITIVE HOST: *Mergus serrator*, The Red-breasted Merganser.

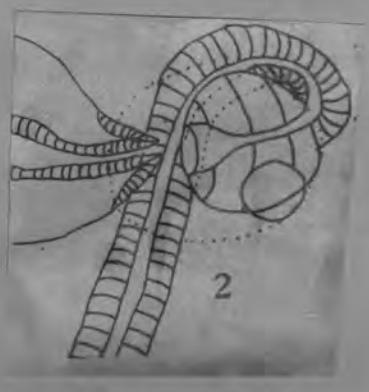
HABITAT: Intestine.

INCIDENCE OF INFECTION: 7 of 23 mergansers.

LOCALITY: Ram Island, Barn Island and Clinton, Connecticut.

HOLOTYPE: Deposited in the U.S.N.M. Helm. Col. No. 55631.

PARATYPES: Deposited in the U.S.N.M. Helm. Col. No. 55632 and also in the collections of the Univ. of Conn., Florida State Univ., and the author.



Discussion

According to Cable and Kuns (1951), the family Microphallidae includes eight genera: *Microphallus* Ward, *Levinseniella* Stiles and Hassall, *Maritrema* Nicoll, *Spelophallus* Jägerskiold, *Microphalloides* Yoshida, *Pseudospelotrema* Yamaguti, *Gynaecotyla* Yamaguti, and *Carneophallus* Cable and Kuns. *Pseudosupelotrema* was suppressed as a synonym of *Maritrema*, and *Maritreminoides* Rankin was retained by Etges (1953). Etges (1953) also synonymized *Gynaecotyla* with *Microphalloides* on the basis of the dextral genital pore, chintinous plates associated with the genital structure, and extrinsic muscles associated with the genital atrium. The author is unable to accept this latter change, since the male copulatory structures are apparently quite different and the author has found a species of *Gynaecotyla* (to be described), which has a sinistral genital pore. Actually, as in many other descriptions of species in this family, Yoshida's description of the genital apparatus is not detailed enough to ascertain the true structure of the genital apparatus. Therefore, as it is easier in general to synonymize than split, the author prefers to accept both genera until *Microphalloides* is restudied. The author does agree that *Microphalloides* and *Gynaecotyla* are closely related and believes that *Microphalloides* may represent an intermediate stage in the evolution of *Gynaecotyla*.

The microphallid genera are easily separated into two groups: Those with a cirrus pouch and those without. The four genera containing species with a cirrus pouch can be separated into two groups. One group includes species with one acetabulum and a sinistral genital pore (*Maritrema* and *Maritreminoides*). The other group includes species with two acetabula and either a dextral or sinistral (a species to be described) genital pore (*Gynaecotyla*) and species with a single acetabulum and a dextral genital pore (*Microphalloides*). *Maritrema* and *Maritreminoides* have been separated on the basis of the following characters:

1. Position and shape of the vitelline clusters.
2. Extent of the uterine coils.
3. Presence or absence of a cirrus.

It has been shown that the first two of these characters are of little taxonomic value. Etges (1953) noted that the vitellaria of *Maritrema obstipum* showed all the variations found among microphallid genera. Etges also noted that the extent of the uterine coils was dependent on the distention of the excretory bladder. As for the presence or absence of a cirrus, considerable confusion exists. For example, Yamaguti (1939) erected the genus *Pseudospelotrema* characterized by a cirrus and described the copulatory structure of *P. japonicum*, the type species, as a papilla. The uncertainty as to the presence of a cirrus in *Pseudospelotrema* caused Etges (1953) to reduce this genus to synonymy with *Maritrema*. *Maritrema obstipum* (Van Cleave and Mueller, 1932) was originally placed in the genus *Microphallus*, which is characterized by the absence of a cirrus. Rankin (1939) placed it in the genus *Maritreminoides* after deciding that a short cirrus was present. Etges (1953) concluded that it did not possess a cirrus but rather a papilla and placed it in the genus *Maritrema*. It is noteworthy that Etges (1953) pointed out that the presence or absence of a cirrus is difficult to determine. After a review of the literature and an examination of many specimens the author concludes that the only valid criterion for separating *Maritrema* from *Maritreminoides* is the presence or absence of a cirrus. Due to the difficulty of determining whether a specimen in this family has a cirrus or a papilla, it is the author's opinion that unless the cirrus is seen everted or unless sectioned material is studied, that specimen cannot be adequately described. If we accept Etges reduction of *Pseudospelotrema* and consequent retention of *Maritreminoides*, Rankin, 1939, the genus *Maritreminoides* contains the following species:

Maritreminoides nettae (Gower, 1938) Rankin, 1939
Syn: *Maritrema nettae* Gower, 1938
M. ammospizae (Hunter and Vernberg, 1953) Etges, 1953
Syn: *Pseudospelotrema ammospizae* Hunter and Vernberg, 1953
M. raminellae n. sp.

Cable, Connor, and Balling, 1960

Pseudospelotrema charadrii n. sp. (FIGURE 39)

Diagnosis based on 4 specimens, in fair condition, with the characters of the genus. Body linguiform, 0.72 to 0.86 long, 0.21 to 0.27 in maximum width. Cuticle spinose to level of testes. Ventral sucker median, nearly equatorial, spherical, 0.066 to 0.087 in diameter. Oral sucker subspherical, 0.047 to 0.063 long, 0.063 to 0.071 wide; prepharynx slightly longer than pharynx; pharynx oval, 0.039 by 0.030; esophagus 3 to 4 times as long as pharynx; ceca extend to anterior margin of cirrus sac. Testes lateral, symmetrical, approximately midway between intestinal bifurcation and posterior end of body, oval with long axes converging anteriorly; testes 0.063 to 0.071 long, 0.047 to 0.071 wide. Cirrus sac prominent, arcuate, situated transversely anterior to ventral sucker; seminal vesicle occupies basal half of cirrus sac, remainder filled with prostate and what appears to be a protrusible cirrus devoid of spines; genital atrium and pore well to left of ventral sucker. Ovary to right of ventral sucker, rounded, 0.047 to 0.063 in diameter; thin-walled, sperm-filled, saclike fertilization chamber, possibly a true seminal receptacle, between ovary and ventral sucker; uterus occupies entire hindbody posterior to testes and extends anteriorly between testes and vitellaria to posterior margin of ventral sucker; metraterm rather straight, moderately thick-walled, and entering genital atrium dorsally. Excretory bladder V-shaped, its extent not determined. Vitellaria lateral, from midlevel of ventral sucker to that of testes, composed of 9 or 10 large follicles on each side, ventral to and partly overlapping gonads. Eggs numerous, thickshelled, 0.014 by 0.009.

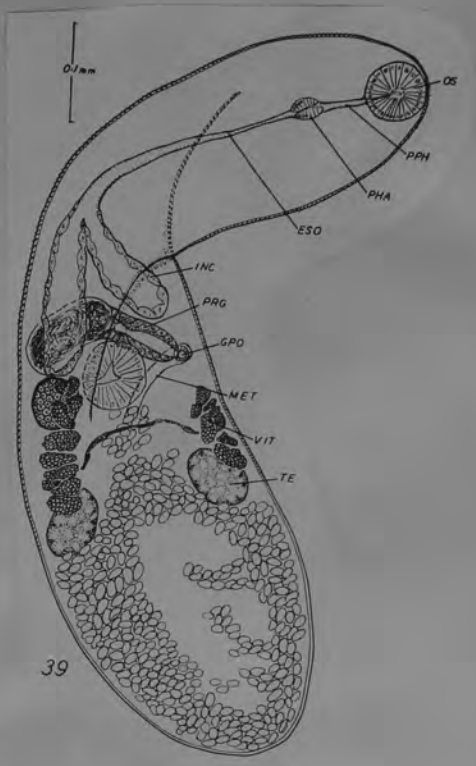
Host: *Charadrius wilsonia wilsonia* (Wilson's plover).

Site: Intestine.

Locality: Cabo Rojo, Puerto Rico.

Type specimen: Holotype No. 38222.

Of the species here considered to belong in the genus *Pseudospelotrema*, *P. charadrii* differs from *P. japonicum*, *P. uriae*, and *P. cincli* in being significantly smaller in the size of the body, gonads, and eggs, and is much nearer *P. ammospizae* in those respects. However, in *P. charadrii* the body is more slender, the prepharynx is much longer, and the suckers are smaller than in *P. ammospizae*, while the fertilization chamber is situated between the ovary and ventral sucker rather than posterior to the ovary.



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ODHNERIA

?Microphallidae

Ornithotrema ~~n. g.~~ CABALLERO, BRENES, AND ARROYO, 1963

Trematoda, Digenea. Cutícula inerme y transparente; ventosa oral escasamente muscular; presencia de prefaringe; faringe pequeña, musculosa; esófago delicado, largo y angosto; ciegos intestinales angostos y tubulosos, extendiéndose hasta la porción anterior de los testículos. Poro reproductor mediano, anterior y por detrás del arco que forma la bolsa del cirro; testículos alargados, lobulados y situados lateralmente, uno en frente del otro, ligeramente por detrás del ecuador del cuerpo.

Bolsa del cirro mayor que la longitud total del cuerpo, extendiéndose entre el testículo derecho y el izquierdo y formando un arco anterior transversal al cuerpo, por delante del ovario y por detrás de la bifurcación intestinal que se prolonga hasta el nivel del testículo izquierdo y de donde sube hasta el poro reproductor, por detrás del arco; vesícula seminal indivisa, interna que se extiende en la mitad del arco; glándula prostática circunscrita a la porción anterior de la vesícula seminal; cirro muy largo, inerme y tubular.

Ovario pretesticular, lateral, y del lado derecho del cuerpo, tangente a la porción posterior y derecha de la bolsa del cirro; lobulado; glándula de Mehlis difusa y postero-mediana al ovario; ausencia de receptáculo seminal; útero extenso que ocupa la porción posterior y media del cuerpo; huevecillos numerosos, pequeños y operculados. Folículos vitelinos situados en una banda transversal al cuerpo, por delante de los testículos y por detrás del ovario y sobre el borde externo de los testículos. Poro excretor subterminal, posterior y vesícula excretora, medio-dorsal, extendiéndose hasta por delante de los testículos y por detrás del ovario.

ESPECIE TIPO: *Ornithotrema momoti* n.g.;n.sp.

HABITAT: Intestino de aves Coraciadiformes de América Central.

DISCUSIÓN: Después de consultar los trabajos de BRAUN (1), BYCHOWSKAYA PAWLOWSKAYA (2), DAWES (3), FÜHRMANN (4), LINTON (5), SKRJABIN (6,7) y YAMAGUTI (8), hemos llegado a la conclusión de que nuestros ejemplares presentan un carácter genérico diferencial, muy particular, no observado en ningún otro tremátodo digéneo hasta el presente publicado y que corresponde a la forma, estructura y situación de la bolsa del cirro.

Secundariamente, la ausencia del acetábulo, extensión de los ciegos intestinales, arreglo y localización de las glándulas reproductoras y vitelógenas, constituyen en sí caracteres que ayudan a confirmar que *Ornithotrema* es un género nuevo de tremátodos digéneos que parasita a aves Coraciadiformes del Continente Americano.

?Microphallidae

Ornithotrema momoti ~~n. sp~~. Caballero, Bravo, and Arroyo, 1963

Tremátodos de cuerpo muy pequeño, oblongo, cutícula lisa transparente y delgada; miden de 1,061 a 1,263 mm de largo por 0,375 a 0,403 mm de ancho. Los extremos son redondeados y la cutícula tiene un espesor de 0,002 mm. La ventosa oral es pequeña, débilmente musculosa, subterminal y mide de 0,029 a 0,049 mm de diámetro antero-posterior por 0,053 mm de diámetro transversal. No existe acetábulo.

La boca es pequeña, terminal, circular y mide de 0,041 por 0,057 mm a 0,025 mm de diámetro; la prefaringe es corta y angosta y mide de 0,016 a 0,020 mm de largo por 0,004 a 0,012 mm de ancho. La faringe es un pequeño cuerpecito cilíndrico, musculoso que mide 0,033 mm de diámetro anteroposterior por 0,029 mm de diámetro transversal; el esófago es muy largo, angosto de paredes tenues y mide de 0,111 a 0,164 mm de largo por 0,008 mm de ancho. La bifurcación intestinal está por delante del arco que forma la bolsa de cirro y dista de 0,225 a 0,264 mm del borde del cuerpo. Los ciegos intestinales son angostos y se extienden latero-dorsalmente hasta el borde anterior o el tercio anterior de los testículos y miden 0,016 mm de ancho.

El poro reproductor está situado en el área media intercecal, como a la mitad de la distancia entre el ovario y el arco anterior transversal de la bolsa del cirro y dista de 0,531 a 0,553 mm del borde anterior del cuerpo. Los testículos son dos cuerpos reniformes, con el borde ligeramente lobulado, post-ecuatoriales, al inicio del tercio posterior del cuerpo, en posición lateral, uno en frente del otro y alargados en sentido anteroposterior; miden el derecho, de 0,164 a 0,201 mm de diámetro anteroposterior por 0,102 a 0,123 mm de diámetro transversal y el izquierdo de 0,152 a 0,238 mm de diámetro anteroposterior por 0,086 a 0,139 mm de diámetro transversal; los conductos deferentes desembocan individualmente, en el fondo de la bolsa del cirro; este órgano es quizá el más característico y representativo de este nuevo género, pues es muy grande y atraviesa el cuerpo de derecha a izquierda, formando en la porción anterior, un gran arco de concavidad posterior. La bolsa del cirro se inicia en el área intercecal comprendida entre el ovario y el testículo derecho, exactamente entre el ciego derecho y el borde externo del ovario, es decir en posición lateral y, de ahí se dirige hacia adelante se dobla hacia el área media del cuerpo, por detrás de la bifurcación intestinal, continúa flexionándose para formar un arco, asciende aún más, cruza al lado opuesto, es decir al izquierdo, se hace paralelo al ciego izquierdo, y juntamente con este mismo órgano, se dirige de adelante hacia atrás, por toda el área extracecal izquierda, hasta la mitad del testículo del mismo lado y, de ahí asciende nuevamente hacia la porción anterior del cuerpo, entre el testículo y las vitelógenas, paralelamente a la porción descendente izquierda, hasta alcanzar el área media intercecal del cuerpo, por delante del ovario y de la glándula de Mehlis y por detrás del arco bursocirral y, plegándose en zig zag, va a terminar al poro reproductor; todo este órgano mide de 1,230 a 1,482 mm de largo por 0,066 a 0,073 mm de ancho a nivel de su porción más amplia, es decir, que la longitud total de la bolsa del cirro es mayor que la longitud total del cuerpo.

La vesícula seminal es interna, ocupa la mitad derecha del arco bursocirral, es indivisa y mide de 0,361 a 0,414 mm de largo por 0,029 a 0,037 mm de ancho; no hay vesícula seminal externa; el cirro es un órgano largo, tubuloso y angosto, inerme que mide 0,008 mm de ancho, la glándula prostática, finamente granulosa, se extiende en torno a la mitad anterior de la vesícula seminal.

El ovario es pretesticular, paralelo a la porción posterior de la bolsa del cirro, a la cual es tangente, por lo tanto ocupa el área intercecal derecha ecuatorial del cuerpo del parásito; es de forma irregular lobulado, más largo que ancho, ligeramente menor que los testículos y mide de 0,098 a 0,156 mm de diámetro anteroposterior por 0,107 a 0,111 mm de diámetro transversal; la glándula de Mehlis es difusa, ocupa el área intercecal media del cuerpo, próxima al ovario, no hay receptáculo seminal y el conducto de Laurer no fue visible. El útero está ampliamente desarrollado, posee una asa descendente o posterior que, mediante múltiples asas transversales, sobre el lado izquierdo del cuerpo se extiende hasta el

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borde posterior y de ahí cruza al lado opuesto, es decir, al derecho y, entonces, constituye al asa ascendente, la que también posee múltiples asas transversales, mediante las cuales, se dirige hacia la parte media del cuerpo, comprendida entre los testículos y prosigue hasta terminar en el poro reproductor; por lo tanto, existen múltiples huevecillos, pequeños, ovoideos, operculados, de cáscara lisa y amarillenta que miden 0,016 mm de largo por 0,008 mm de ancho. Los folículos de las glándulas vitelógenas ocupan principalmente un área de forma de banda transversal al cuerpo, por delante de los testículos y por detrás del ovario, es decir, entre estos tres órganos, pero además, escasos folículos invaden los bordes externos testiculares y también el extremo posterior externo del ovario; no existe receptáculo vitelino. El poro excretor es subterminal y posterior; de él parte una vesícula excretora tubulosa que se extiende medio dorsalmente hasta por delante de los testículos y por detrás del ovario.

HUÉSPED: *Momotus momota conexus* Thayer & Bangs ("Bobo").

LOCALIZACIÓN: *Intestino*. 3 specimens

DISTRIBUCIÓN GEOGRÁFICA: Puerto Viejo, Sarapiquí, Provincia de Heredia, Costa Rica. Centro América.

TIPO: Colección Helmintológica del Instituto de Biología. No. 219-1.

PARATIPOS: Colecciones Helmintológicas de E. Caballero y C. y en el Laboratorio de Helmintología de la Escuela de Microbiología de la Universidad de Costa Rica.

A new digenetic trematode is described, *Ornithotrema momoti* n.g., sp., a parasite in the intestine of coraciadiform birds. The characteristics of ie new genus are: a) oral sucker very small; b) acetabulum absent; c) the diestive tract with a short prepharynx, small pharynx, long oesophagus, and short ieca; d) genital pore opening between the cirrhus pouch and the ovary, in the nterior part of the body. e) testes located in the posterior half of the body, in lateral position, facing each other, and slightly lobed. f) a large cirrhus pouch hat transversely crosses from right to left the body of the parasite, and extends rom the external lateral area of the right testis to the left one. g) long and tuular cirrhus; h) the ovary is pretesticular, to the right, lobed; i) Mehlis' gland resent; j) no seminal receptacle. k) uterus fully developed occupying the complete caudal region of the body, with numerous operculated eggs. l) vitellaria large, occupying a transversal area of the body, between the testicles and the ovary; m) excretory pore situated in a subterminal posterior area, and excretory vesicle tubular, extending from the anterior part of the testes to the posterior part of the ovaries.

ORNITHOTREMA

Paragymnophallus ~~gen. n.~~ Ching, 1973

Generic Diagnosis, Gymnophallidae: Gymnophallinae

Body small, oval to pyriform or fusiform, spinose. Oral sucker subterminal, large, about twice the size of ventral sucker, without lateral papillae. Prepharynx absent, pharynx moderately large. Esophagus fairly long. Ceca short, terminating in anterior half of body. Ventral sucker smaller than oral sucker, in middle third of body. Testes symmetrical or diagonal, postacetabular. Seminal vesicle bipartite. Pars prostatica well developed, opening into genital atrium. Genital atrium short, wide. Genital pore, wide slit anterior to ventral sucker. No ventral pit present. Ovary lateral, anterior to testis. Seminal receptacle absent or present. Laurer's canal present. Vitelline glands follicular, clustered posterolateral to ventral sucker. Uterus in either fore- or hind-body. Excretory vesicle Y-shaped, arms and stem long. Parasites of the intestine of birds. Type species: *P. odhneri*

Description of *Paragymnophallus odhneri* Chong, 1973
(Figs. 1–4)

Minimum and maximum measurements of ree specimens in microns. Body heavily spined posterior end, spines broad and slightly ointed, arranged in alternate transverse rows. ody length, 600–685; width at level of ventral cker, 256–336. Forebody from midventral cker, 354–365. Oral sucker with no lateral lips, 31–158 in diameter; ventral sucker in middle ird of body, 71–75 in diameter. Sucker ratio, 8:1–2:1:1. Pharynx large, 45–52 by 47–52. sophagus very short to 65 long. Intestinal ceca tending from anterior third of body to mid-ody. No ventral pit present. Genital pore wide, me distance anterior to ventral sucker or mid-ay between ventral sucker and bifurcation of testinal ceca. Genital atrium wide, shallow. ars prostatica well developed with prostate cells rrounding it, going anterior to genital pore efore joining metraterm at genital pore. Seminal sicle bipartite, proximal larger than distal part, terodorsal to ventral sucker. Testes oblique, at des of ventral sucker or posterolateral to it, 3–125 by 55–77. Ovary antero- or postero-teral to ventral sucker, anterior to right testis, 5–81 by 52–65. Vitelline follicles arranged in usters around posterior edge of ventral sucker. aurer's canal present, seminal receptacle not bserved. Uterus distributed anteriorly almost pharynx, posteriorly to end of body. Eggs nall, 10–19 by 9–13. Excretory bladder Y-aped, arms extending anteriorly to oral sucker. nonyms: *Gymnophallus somateriae* of Odhner 900, 1905) and *G. somateriae* of Ryzhikov *al.* (1966).

Discussion

Paragymnophallus odhneri differs from *G. so-ateriae* as described by Levinsen (1881) and ong (1973) in the body spination, sucker ratio, ture of the vitellaria, egg size, and location of genital pore. Odhner (1905) described the dy spines as short and rectangular. Compari-n of the actual specimens (Odhner's and the thor's) of both species showed those of *P. dhneri* to be broader and thicker, almost scale-e, than those of *G. somateriae*, which are row and sharply pointed. In *P. odhneri*, the l sucker is twice as large as the ventral sucker in *G. somateriae* it is only 1½ times as large. ile the vitellaria in *P. odhneri* are paired sters of follicles, they are two irregularly lobed sses in *G. somateriae*. Eggs of *P. odhneri* are small, 10–19 by 9–13, in contrast to those of *somateriae*, which are 21–28 by 12–20. Finally, wide genital pore of *P. odhneri* located some ance anterior to the ventral sucker is very erent from the narrow, inconspicuous genital e of *G. somateriae* opening adjacent and erior to the ventral sucker.

While Odhner described the uterus as mainly he hindbody (Fig. 1), the uterus may reach as anterior as the esophagus (Figs. 3, 4). The nt of uterus, body shape, well-developed bi-ite seminal vesicle, and Y-shaped excretory dder are similar in *P. odhneri* and *G. soma-ae*.

G. somateriae as described by Ryzhikov *et al.* (1966) is regarded as *P. odhneri* because of the arrangement of body spines, 2:1 sucker ratio, and small eggs. Brinkmann (1956) described *G. bilis* from a single specimen from the gall bladder of *Clangula hyemalis*. This species, with a genital pore midway between suckers and slightly to the left of the median axis, may belong to *Paragymnophallus* pending recovery and study of more specimens. *Gymnophallus minor* Ryzhikov, 1962, may be another species belonging to the new genus because the genital pore was not clearly established in the description. The large pharynx, bipartite seminal vesicle, and follicular vitellaria are similar but the smaller sucker ratio and longer ceca in the anterior two-thirds of the body are different from those of *P. odhneri*.

Except for the location of the genital pore, large sucker ratio, and large pharynx, *Paragymnophallus* is very similar to the genus *Gymnophallus* in the small body size, the bipartite seminal vesicle, clusters of vitelline follicles, and Y-shaped excretory bladder. In comparison with the type species, *G. deliciosus* (Olsson, 1893) Odhner, 1900, *P. odhneri* is only one-half of its body size, with a sucker ratio of 2:1 instead of 5:4, and with an anterior location of the wide genital pore instead of a narrow genital pore opening almost within the ventral sucker. Finally, *P. odhneri* has been reported from the cecum of diving ducks while *G. deliciosus* is found in the gall bladder of gulls.

Paragymnophallus has a wide genital pore some distance from the ventral sucker and a large oral sucker, which are similar to the genus *Parvatrema*, but in comparison to the type species, *P. borealis* Cable, 1953, *P. odhneri* is 3 times as large, with bipartite instead of club-shaped seminal vesicle, well-developed pars prostatica, follicular instead of compact vitellaria, and Y-shaped instead of V-shaped excretory bladder.

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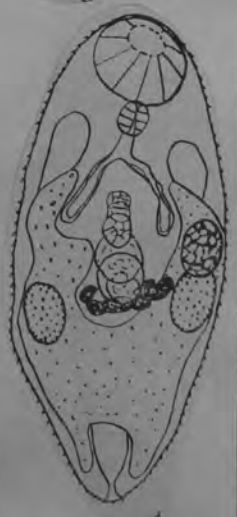
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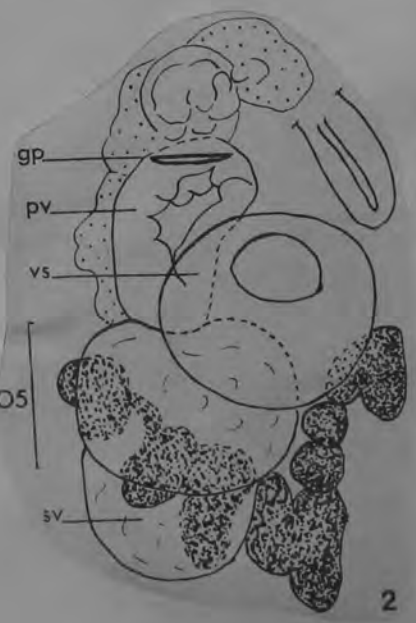

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Both Brinkmann (1956) and Loos-Frank (1971) suggested that specimens which Odhner (1900, 1905) ascribed to *Gymnophallus somateriae* (Levinsen, 1881) Odhner, 1900 were, in fact, another species. The author wrote to the Naturhistoriska riksmuseet in Stockholm and was able to borrow three specimens labeled *Gymnophallus somateriae* for study; the loan is hereby acknowledged with appreciation. Odhner collected the specimens from the cecum of *Somateria mollissima* during the Swedish expedition to Jan Mayen in 1899. These specimens were in excellent condition and although the figure and measurements given by Odhner (1905) are accurate, differences in the location and size of the genital pore necessitate placement of the species into a new genus.

Paragymnophallus

Parvatrematinae n. subfam.

Subfamily diagnosis. — Microphallidae: Body small, pyriform. Oral sucker very large, directly followed by pharynx. Esophagus short, ceca very short. Acetabulum small, postequatorial. Testes symmetrical, postacetabular. Seminal vesicle anterolateral to acetabulum. No cirrus pouch. Genital pore wide, pit-like, postbifurcal. Ovary lateral in forebody. Vitellaria forming a compact unpaired mass near acetabulum. Uterus filling most of hindbody and extending anterior to testes. Excretory vesicle V-shaped, with very long arms. Parasites of birds. *Parvatrema* is the only known genus of this subfamily.

Parvatrema Cable, 1953

Generic diagnosis. — Microphallidae, Parvatrematinae: Body small, pyriform, broadly rounded anteriorly, spinose. Oral sucker very large, subterminal, directly followed by pharynx, esophagus short. Ceca very short, saccular, transverse, terminating well anterior to acetabulum. Acetabulum small, postequatorial. Testes symmetrical, one on each side of body behind acetabulum. Seminal vesicle anterolateral to acetabulum. Prostate gland well developed. No cirrus pouch. Genital pore wide, pit-like, postbifurcal. Ovary lateral, in forebody, anterolateral to seminal vesicle. Vitelline follicles forming a compact mass lateral to acetabulum. Uterus filling most of hindbody and extending anterior to testes on both sides; eggs very small, delicate. Excretory vesicle V-shaped; each arm terminating beside pharynx. Parasites of birds.

Genotype: *P. borinquenae* Cable, 1953 (Pl. 72, Fig. 870; Pl. 73, Fig. 897), adult experimentally in chicks. Natural host probably duck. Cercaria furcocercous, developing in marine clam, *Gemma purpurea;* metacercaria free in gastropod, *Cerithidea costata*, with flame cell formula $2[(2+2)+(2)]$.

This subfamily and genus is placed in the Fellodistomatide by Cable, Connor & Balling, 1960

FAMILY FELLODISTOMATIDAE Nicoll, 1935

The fellodistomatid trematodes of birds all belong in the subfamily Gymnophallinae that was first assigned to the Heterophyidae and then to the Microphallidae until Cable (1953) placed the group in the Fellodistomatidae. The subfamily is represented here by a single species with the following description taken from his paper, which gives details of the life history and figures of the various stages.

Parvatrema borinqueñae Cable, 1953

With characters of the genus. Minute distome with thick, pyriform body broadly rounded anteriorly, more pointed posteriorly, 0.190 to 0.195 long, 0.114 to 0.129 in maximum width well anterior to ventral sucker; entire body with spines in quinunxial pattern. Oral sucker 0.050 to 0.060 long, 0.066 to 0.088 wide, subterminal, with a pair of lateral papillae noticeable only in living specimens. Ventral sucker 0.022 to 0.025 long, 0.026 to 0.030 wide; its anterior margin 0.090 to 0.110 from anterior end of body. Prepharynx absent; pharynx 0.015 long, 0.022 wide; esophagus about as long as pharynx; ceca short, widespread, terminating well anterior to ventral sucker, with thick, sparsely nucleated walls. Testes symmetrical, slightly posterior to ventral sucker, 0.033 to 0.043 long, 0.020 to 0.030 wide; seminal vesicle apparently without constriction although such may be obscured by prostate cells. Genital pore about midway between suckers, wide and pitlike. Ovary 0.038 to 0.048 long, 0.021 to 0.028 wide, anterior to right testis. Vitellaria poorly developed, consisting of an undivided mass of follicles posterodorsal to ventral sucker or displaced to right or left of sucker. Uterus extensive, with loops filling most of hindbody and extending anteriorly to testes, farther on left. Eggs thin-shelled, delicate, 0.014 to 0.016 by 0.006 to 0.008. Excretory vesicle Y-shaped with short stem and long arms reaching oral sucker; flame-cell formula probably $2[(2+2)+(2)]=12$ as in metacercaria. Cercaria minute, furcocercous, developing in the marine bivalve *Gemma purpurea*; metacercaria unencysted, in snail, *Cerithidea costata*.

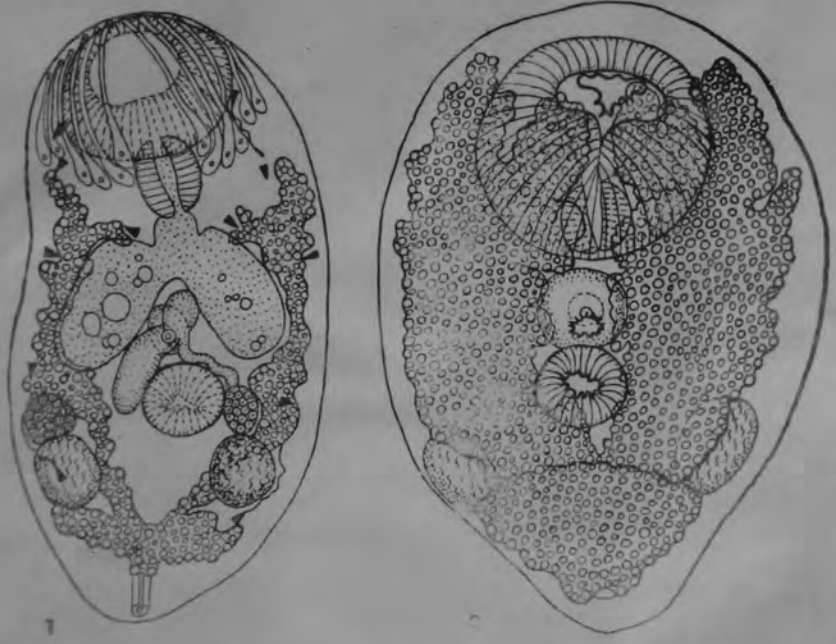
Host (experimental): *Gallus gallus* (chicken); natural host probably a duck.
Site: intestine.
Locality (larval stages): mud flat at head of Sucia Bay, Cabo Rojo, Puerto Rico.
Type specimen: Holotype No. 47875.

From: Cable, Connor, and Balling, 1960

Parvatrema donacis ~~n. sp.~~ HOPKINS, 1958

Cable (1953) described the adult, metacercaria, and cercaria of a new gymnophalline, *Parvatrema borinqueñae*, from Puerto Rico. The new genus *Parvatrema* was said to differ from *Gymnophallus* Odhner, 1900, by having a large pit-like genital pore anterior to the ventral sucker, a short genital atrium, a well-developed pharynx, only one group of vitelline follicles, and the excretory formula 2 [(2 + 2) + (2)]. Metacercariae of *Parvatrema borinqueñae* were found in the snail *Cerithidea costata*, and sporocysts and cercariae in the small clam *Gemma purpurea*. Cable obtained adults five days after feeding metacercariae to baby chicks, and guessed that the natural final host might be a wild duck.

Metacercariae of the gymnophalline type, found in at least 85 per cent of the *Donax variabilis* on Mustang Island beach, have the features listed by Cable as distinctive for the genus *Parvatrema* but differ from *P. borinqueñae* in some morphological details as well as in host and locality. They are therefore considered to represent a new species, *P. donacis*. All metacercariae from *Donax variabilis* have lateral diverticula of the excretory bladder, posterior to the testes, which are not mentioned or illustrated by Cable. These and other structures are shown in Figure 1. Lateral papillae on the oral sucker,



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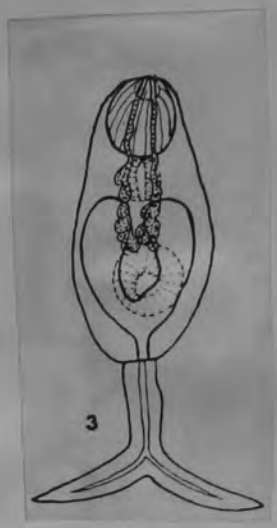

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Fig. 1. *Parvatrema donacis* metacercaria, living, dorsal view, drawn with camera lucida. Length 0.29 and width 0.18 mm. Note lateral diverticula of excretory bladder posterior to testes, ovary anterior to right testis, and vitellarium, anterior to left testis.

Fig. 2. *Parvatrema donacis*, older metacercaria with expanded excretory bladder, living, ventral view, drawn with camera lucida. Length 0.30 and width 0.21 mm. Note common genital pore anterior to ventral sucker.

Fig. 3. Cercaria of "dichotoma" type, believed to be *Parvatrema donacis* cercaria, from sporocyst in *Donax variabilis*, alive, dorsal view, drawn with camera lucida.

Fig. 4. Cercaria believed to be *Parvatrema donacis* cercaria, alive, ventral view, drawn with camera lucida.

—OVER—

like those of *P. borinqueñae*, were seen on some specimens. Cephalic glands could not be counted accurately, even when stained with neutral red. Twelve flame cells, placed exactly as in Cable's Figure 1, were observed and drawn before Cable's drawings were seen. Connections of all tubules were not traced, but there seems to be no reason to doubt that *P. donacis* has the same excretory formula as *P. borinqueñae*, 2 [(2 + 2) + (2)]. Young, active metacercariae (Fig. 1) average 0.33 mm. in length and 0.17 mm. in width, with the oral sucker averaging 0.090 by 0.080 mm., the ventral sucker 0.037 by 0.039 mm., and the pharynx 0.036 by 0.030 mm. Older metacercariae (Fig. 2), up to 0.80 mm. long and 0.50 mm. wide, are nearly motionless and so full of excretory concretions and other minute spherical bodies (parasites?) that they are quite opaque. Many of these older metacercariae eventually become calcified and sealed into the inner lining of the shell not far below the hinge, as has been reported for the metacercariae of *Gymnophallus* in Europe. Like other gymnophallines, the metacercariae of *P. donacis* remain unencysted but are surrounded by a zone of liquid or semi-liquid secretions.

A furcocercous cercaria of the "dichotoma" type was found in eight of the 1017 *Donax variabilis* examined by Loesch in 1951 and 1952, but was not found in any of the 100 clams dissected by the author in 1957. All of the known cercariae of this type, named for *Cercaria dichotoma* Mueller, 1855, develop from sporocysts in marine bivalves. Markowski (1936), partly on the basis of a clue furnished by Pelseneer (1906), suggested that "dichotoma" cercariae are larvae of gymnophallines. Loesch (1957) called the metacercariae of *P. donacis* "*Gymnophallus* metacercariae" because of their resemblance to the European species assigned to that genus, and called the "dichotoma" cercariae "*Gymnophallus* cercariae" because of Markowski's theory, the close association of cercaria and metacercaria in Mustang Island *Donax*, and the absence of any other cercaria which might be a gymnophalline. The cercaria of *P. borinqueñae* Cable, described in 1953, is so similar to the one found in *Donax variabilis* that it now seems virtually certain that the latter is the cercaria of *P. donacis*.

The *Donax* cercaria (Figs. 3 and 4) is somewhat larger than the Puerto Rican cercaria from *Gemma*, live specimens averaging 0.132 mm. in length and 0.058 mm. in width, with a range of 0.120 to 0.145 mm. in length and 0.050 to 0.065 mm. in width. The oral sucker averages 0.036 by 0.032 mm., the ventral sucker 0.033 by 0.032 mm., and the pharynx 0.017 by 0.016 mm. The tail is 0.044 mm. from body to fork, and 0.050 mm. from fork to tips of furci. No papillae were noted, and no setae, either on the body or on the tail. Cephalic glands are so inconspicuous that they could not be counted accurately. Flame cells and excretory tubules are exactly as in *P. borinqueñae*, but the connection of the tubule from the second pair of flame cells could not be seen, and excretory openings in tail furci, if present, were not noticed. These cercariae develop in short sporocysts, 0.40 to 0.60 mm. long and 0.14 mm. wide, in the gonad of *Donax variabilis*. Each sporocyst bears approximately six cercariae. The gonads of the eight infected clams contained no gametes.

Parvatrema and *Gymnophallus* are fellodistomatids of the subfamily Gymnophallinae which have their adult forms in the intestines of birds. Cable (1953) obtained adults of *Parvatrema borinqueñae* experimentally in baby chicks, and thought wild ducks might be the natural final hosts. Wild ducks do not feed on the Mustang Island beach. The final host of *P. donacis* is probably some wading bird or shore bird. Loesch (1957) observed black-bellied plovers, sanderlings, and Eastern willets feeding on *Donax*, but did not find trematodes in the few individuals he examined. The author fed metacercariae

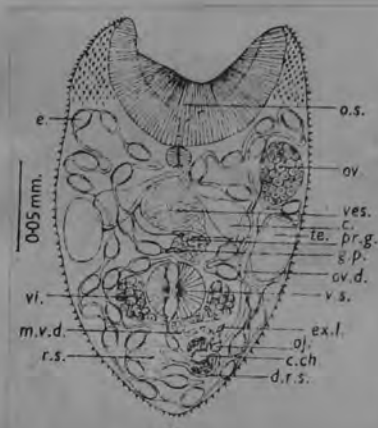
of P. donacis to 2 wk-old chicks in July, 1957. No trema. 5 days later. Possible that younger chicks would have given positive results.

Parvatrema homoeotecnum ~~sp.nov.~~ JAMES, 1964

SPECIFIC DIAGNOSIS. Gymnophallidae: Parvatreminae. Body plump, pyriform, with broad anterior end and bluntly pointed posterior end. Extremely minute, smallest contracted specimens 0·14 × 0·11 mm., largest expanded specimens 0·30 × 0·15 mm. Cuticular spines 0·0025–0·003 mm., in uniform alternating rows. Oral sucker 0·065–0·075 × 0·085–0·112 mm. Body length : oral sucker diameter ratio 11:5. No lateral projections or glandular cells associated with oral sucker. Ventral sucker 0·026–0·031 × 0·027–0·035 mm. Oral sucker : ventral sucker ratio 3:1. Centre of ventral sucker two-thirds body length from anterior end, 0·092 mm. in smallest contracted specimens and 0·21 mm. in largest expanded specimens. Prepharynx absent. Pharynx very small, 0·011–0·014 × 0·014–0·018 mm. Oesophagus 0·009–0·012 mm., shorter than pharynx. Caeca short, wide-spread, often dilated, only reaching mid body in expanded specimens but just in front of ventral sucker in contracted specimens, cavity lined with vacuolated, nucleated cells with absorption processes. Testes 0·030–0·042 × 0·02–0·027 mm., oval, opposite, near lateral margins of body, position varies from well in front of, to level with ventral sucker. Vesicula seminalis large, oval, undivided, lies in median line in front of genital atrium and between caeca. Cirrus pouch absent. Pars prostatica absent. Large conspicuous prostate gland cells open directly into genital atrium. Genital pore a long transverse median slit, 0·01 mm. wide, position varies from just in front of anterior border of ventral sucker to a third of the distance from ventral sucker to oral sucker. Genital atrium shallow. Ovary 0·029–0·034 × 0·020–0·025 mm., in fore body just anterior to left or right testis. Laurer's canal, central chamber of Mehlis' gland and ovijector present. Receptaculum seminis present, observed only in living material, situated to one side of the mid-line on the side opposite to the ovary just behind ventral sucker. Vitelline glands paired, compact, 0·013–0·022 × 0·014–0·021 mm., almost spherical, situated close to ventral sucker. Uterus extensive, in gravid worms descending and ascending coils fill entire body. Eggs 0·012–0·016 × 0·006–0·009 mm., thin-shelled, light yellow, operculate and embryonated. Excretory vesicle V-shaped, thin-walled, arms reaching level of posterior margin of pharynx, no diverticula, filled with translucent spherical granules 0·003–0·004 mm. in diameter. Flame cell formula 2 ((2 + 2) + (2)) = 12.

HOST. *Haematopus ostralegus occidentalis* Neumann.

The above description and diagrams (Text-figs. 27–31) of the adult show how very similar it is to the metacercaria in *Littorina saxatilis tenebrosa*. In developing into the adult the length of the metacercaria doubles and most of the organs show a proportionate increase in size. The spines, however, remain at about the same size as they are in the metacercaria. The size of the oral sucker is increased enormously. In the metacercaria the oral sucker : ventral sucker ratio is approximately 1:1 and the body length : oral sucker diameter ratio 5:1. In the adult the relative size of the oral sucker has increased so that oral sucker : ventral sucker ratio is now 3:1, and the body length : oral sucker diameter ratio is only 11:5. This enormous increase in the relative size of the oral sucker may be necessary for attachment to the villi of the final host. The relative size of the oral sucker in the adult of this species is similar to that in other species of the genus (Table 4), but the growth of the oral sucker occurs at a different stage in development. As already indicated above in the two other species of the genus in which the life cycle is known, most of the increase in size occurs between the cercaria and metacercaria in the second intermediate host. The oral sucker : ventral sucker ratio is 1:1 in the cercaria of both these species but this increases to 2:1 in the metacercaria. In *Parvatrema homoeotecnum* very little increase in size occurs when the cercaria develops into the metacercaria and the oral sucker : ventral sucker ratio is 1:1 in both but this increases to 3:1 when the metacercaria grows into the adult.



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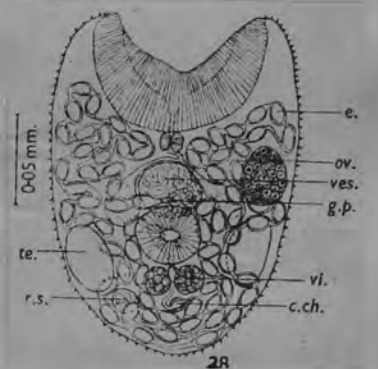

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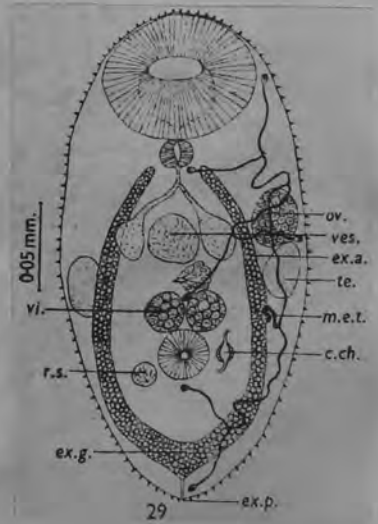

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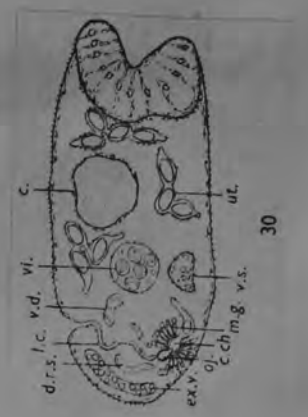
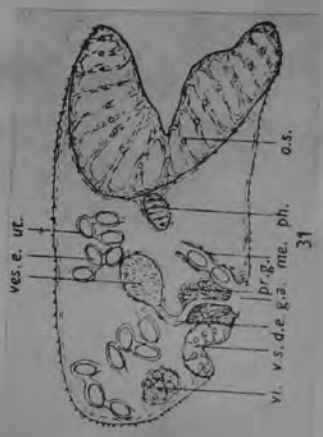
The position of the genitalia in the adult, as shown in the diagrams (Text-figs. 27–29) varies a little with the state of contraction but essentially the positions found in the metacercaria (Text-fig. 24) are retained. Slight differences in the position of the vitelline glands (Text-figs. 27–29) were used by Nicoll (1907) as a specific character to distinguish between *Gymnophallus bursicola* Odhner (1900) and *G. dapsilis* Nicoll (1907), but in the present species and in others, as described by Yamaguti (1939) and Isaitchikow (1924), the position varies with the state of contraction and cannot be considered, therefore, as important in specific diagnosis.

The position of the genital pore (Text-figs. 27–29) varies from specimen to specimen in the present species. In some it is close to the anterior border of the ventral sucker (Text-figs. 27, 28), but in others it is much further forward (Text-fig. 29) reaching one-third of the distance between the ventral sucker and oral sucker. Cable (1953) used the position of the genital pore as one of the characters for distinguishing between the genera *Gymnophallus* and *Parvatrema*, and Yamaguti (1958) to distinguish between the subfamilies Gymnophallinae and Parvatreminae. At that time the subfamily Parvatreminae contained only one species, *P. borinqueñae* Cable, 1953. The position of the genital pore in the present species varies almost from the position previously described for the genus *Gymnophallus* to the position described for *Parvatrema*. Thus this character can no longer be considered so important taxonomically. The structure and arrangement of the rest of the reproductive system, including the course of the uterus, is shown in the diagrams (Text-figs. 27–31).

The excretory system (Text-fig. 29) is the same as in the metacercaria (Text-fig. 26) except that the vesicle now contains excretory granules which were not present in the larval stages. In contrast both the cercaria and metacercaria of *P. borinqueñae* Cable (1953) and *P. borealis* Stunkard & Uzmann (1958) have granules in the excretory vesicle. This difference may be due to the fact that the cercaria and metacercaria of *P. homoeotecnum* remain within the daughter germinal sacs in the intermediate host where their excretory system may not function fully. The arrangement of the excretory tubules and flame bulbs is shown in the diagram (Text-fig. 29).





(3) *Discussion*

P. homoeotecnum sp.nov. is very similar in many respects to the six previously described species now placed in the genus. In this species the body size, the relative oral sucker size, the structure of the genital pore, genital atrium, prostate glands, vesicula seminalis and excretory system are all characteristic of the genus. *P. homoeotecnum* sp.nov. can be distinguished from all other species of the genus, among other features, by the relative size and position of the internal organs and by the details of the life cycle. It can be distinguished from *P. borinqueñae* Cable, 1953, *P. borealis* Stunkard & Uzmann, 1958, and *P. obscurum* (Ching, 1960) by the absence of lateral projections on the oral sucker and by the position of the ventral sucker, ovary and testes: from *P. borealis* Stunkard & Uzmann, 1958, by the relative size of the pharynx and by the position and size of the vesicula seminalis; from *P. borinqueñae* Cable, 1953, by the number of vitelline glands; from *P. lintoni* n.n. (= *Distomum* B Linton, 1928), *P. affine* (Jameson & Nicoll, 1913) and *P. borinqueñae* Cable, 1953, by the position of the ovary and distribution of the gravid uterus; from *P. affine* (Jameson & Nicoll, 1913) by the shape of the vitelline glands and the size of the eggs and, finally, from *P. ovoplenum* (Jameson & Nicoll, 1913) by the relative size of the oral sucker and size of the eggs.

Text-figs. 27–31. *Parvatrema homoeotecnum* sp.nov., adult.

Text-fig. 27. Relaxed specimen showing reproductive system, dorsal view.

Text-fig. 28. Contracted specimen showing position of genitalia and coils of almost gravid uterus, ventral view.

Text-fig. 29. Expanded specimen showing position of genitalia and excretory system, ventral view.

Text-fig. 30. Longitudinal section showing Laurer's canal and associated ducts.

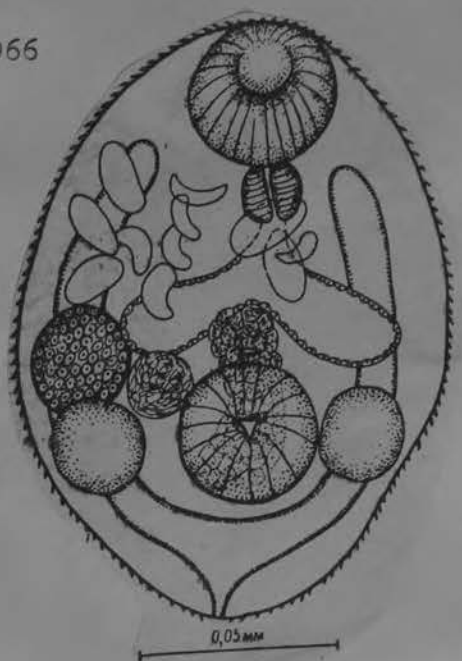
Text-fig. 31. Longitudinal section showing terminal part of reproductive ducts.

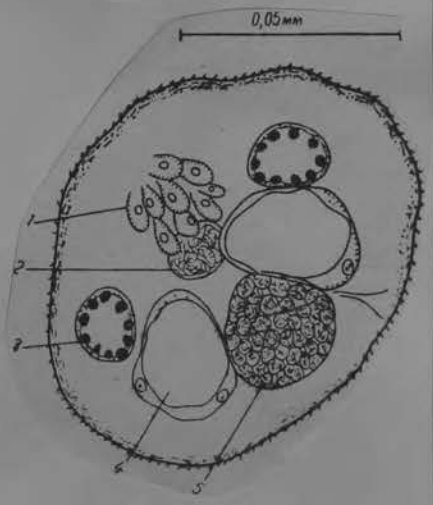
Microphallidae

Parvatrema isostoma, Belopolskaya 1966

Summary

The article deals with description of new species Parvatrema isostoma (*Gymnophallidae Trematoda* found in the sandpipers (*Recurvirostra avosetta, Squatarola squatarola, Limicola falcinellus*) on the shore of the Black Sea.





Parvatrema rebunense Shimazu, 1975

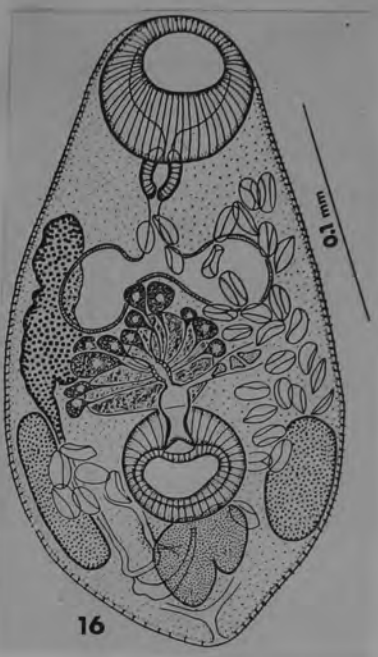
SHIMAZU, 1975

Parvatrema rebunense ~~sp. nov.~~, Adult, Text-figs. 16 and 17

Specific diagnosis: Gymnophallidae: *Parvatrema*. Body small, elongate-oval in shape, spinose, 170–256 μ long by 115–146 μ wide. Oral sucker 46–56 μ long by 48–60 μ wide, with no lateral papillae. Prepharynx absent. Pharynx 16–23 μ long by 14–18 μ wide. Oesophagus short, 10–24 μ long. Intestinal caeca 32–48 μ long by 15–32 μ wide, diverging widely in anterior half of body. Ventral sucker smaller than oral sucker, 36–50 μ long by 40–51 μ wide, embedded half in body at level of two-thirds body length from anterior end. Sucker width ratio 1 : 0.73–0.94. Testes 32–56 μ long by 18–27 μ wide, opposite on level with ventral sucker. No cirrus pouch. Seminal vesicle voluminous, undivided, 21–40 μ long by 32–44 μ wide, lying between intestinal caeca and ventral sucker. Pars prostatica well differentiated, ovoid, 8–10 μ long by 7–11 μ wide, usually on ventral side of seminal vesicle, provided with several large prostate cells. Neither cirrus nor ejaculatory duct. Genital atritum fairly large, diverted vase-shaped, 11–24 μ long by 6–14 μ wide. Genital pore wide, 6–10 μ ong by 8–13 μ wide, opening on ventral sucker. Ovary 36–80 μ long by 21–40 μ wide, sometimes largely elongated longitudinally, just anterior to left or right testis. Laurer's canal present. Seminal receptacle absent. Ootype usually dorsal to vitellarium. Mehlis' glands developed weekly. Uterus extensive, with loops filling most of body in older gravid worms. Eggs 15–17 μ by 8–10 μ. Vitellarium forming a single compact mass, generally constricted weekly into two parts, 24–46 μ long by 28–52 μ wide, postero-dorsal to ventral sucker. Excretory vesicle V-shaped, with arms reaching level of intestinal bifurcation. Flame cell formula 2[(2+2+2+2)+2]=20 as in metacercarial stage. Excretory pore postero-terminal.

Final host and habitat: Small intestine of mouse (experimental).

Specimens: Holotype and 2 paratypes deposited in National Scientific Museum, Tokyo, Coll. No. NSMT-PL-1767; 8 other paratypes in author's cellection.



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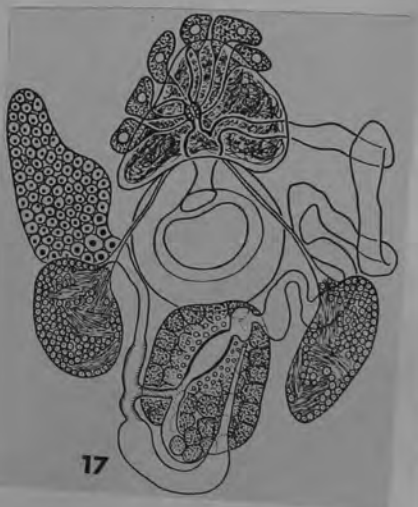
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Parvatrema timondavidi Bartoli, 1963

Localisation : *inter pallium et conchas*, isolément ou par petits groupes. Le taux d'infestation atteint 60 % à raison de 1 à 40 parasites par Moule. L'enveloppe kystique n'est pas individualisée mais les métacercaires sont entourées d'un sac muqueux à fines striations rayonnantes. La forme du corps est grossièrement losangique, arrondie en avant, pointue en arrière. Longueur : 0,310-0,348 mm; largeur : 0,148-0,256 mm. Les épines, disposées en quinconce, couvrent toute la surface de la cuticule. La ventouse orale, de 0,075-0,081 mm de longueur sur 0,09-0,092 mm de largeur, présente latéralement une paire d'auricules bien développées. Les glandes céphaliques, assez nombreuses mais difficiles à compter, coiffent la ventouse orale. Le prépharynx est absent; le pharynx, ovoïde, mesure 0,027-0,036 mm de longueur sur 0,025-0,032 mm de largeur. Il n'y a pas d'œsophage; au pharynx font suite deux énormes cæcums couvrant le tiers médian et pouvant déborder sur le tiers postérieur. La ventouse ventrale, située à la fin du tiers médian, mesure 0,029-0,037 mm de longueur sur 0,036-0,046 mm de largeur. Les testicules, ovoïdes et symétriques, ont 0,041-0,075 mm de longueur sur 0,025-0,035 mm de largeur. L'ovaire, subcirculaire, situé latéralement et en avant soit du testicule droit soit du testicule gauche, mesure 0,025-0,035 mm. Les follicules vitellogènes, aux limites imprécises, sont groupés en une seule masse, symétrique par rapport à l'ovaire, au contact et plutôt en arrière de l'acétabulum. L'orifice génital est placé à une distance du bord antérieur de la ventouse ventrale égale au diamètre de celle-ci. Le système excréteur comporte 12 paires de flammes vibratiles, disposées selon la formule $2[(2 + 2) + 2]$; la vessie a une forme en « lyre », caractéristique du groupe, et ses deux branches, remplies de nombreuses granulations brunes, atteignent l'extrémité antérieure du corps.

Diverses tentatives pour obtenir l'adulte chez des poussins ou des canetons ont échoué. Ces formes adultes, difficiles à retrouver en raison de leur petite taille, ont probablement échappé à mon observation. La culture *in vitro* (milieu de Ringer additionné d'antibiotiques à l'étuve maintenue à 40°C) m'a fourni par contre d'intéressants résultats. L'élévation de la température provoque assez rapidement un accroissement de la motilité ainsi qu'un éclaircissement des granulations remplissant les branches de la vessie. Mais les plus profondes modifications portent sur l'ensemble de l'appareil génital.

Les spermatozoïdes apparaissent en grand nombre, résultat d'une importante gamétogenèse, et remplissent la vésicule séminale; chez certains exemplaires ils atteignent l'atrium génital.

La masse des follicules vitellogènes s'individualise nettement et les cellules vitellines, qui se colorent en jaune, se déversent dans l'utérus sur presque toute sa longueur.

Après cinq jours il y a, chez certains sujets, apparition d'un nombre restreint d'œufs (4 à 8), de 0,011-0,015 mm de longueur sur 0,006-0,011 mm de largeur, à coque transparente et à contours parfois peu réguliers.

Il est intéressant de souligner que, dans ces conditions expérimentales, les divers processus de l'activité génitale (spermatogenèse, vitellogenèse, production d'œufs) sont échelonnés dans le temps.

L'ensemble des caractères morphologiques et anatomiques, tant de la métacercaire que des individus arrivés expérimentalement à maturité, me permettent de séparer cette forme des espèces du genre *Parvatrema*. Elle se distingue de *P. borinquenae* Cable, 1953 ([2]) et de *P. borealis* Stunkard et Uzmann, 1958 ([1]) par sa taille plus importante, la forme et l'étendue de sa vessie différentes; de plus, chez *P. borealis*, les follicules vitellogènes sont répartis en deux masses distinctes.

L'espèce mytilicole du golfe de Marseille se rapproche de *P. donacis* Hopkins, 1958 ([3]) par l'ensemble de ses dimensions, son rapport ventousaire et la forme de sa vessie. Mais les figures données par Hopkins pour *P. donacis* montrent que la taille des cæcums et la distance séparant l'orifice génital du bord antérieur de l'acétabulum sont plus petites, tandis que le diamètre de l'atrium génital est beaucoup plus grand. En outre, l'hôte de *P. donacis* est *Donax variabilis* Say de Mustang Island (Texas).

Je propose pour cette nouvelle espèce le nom de *Parvatrema timondavidi* n. sp.

L'historique du genre *Gymnophallus* Odhner 1900, présenté par Stunkard et Uzmann en 1958 ([1]) montre la confusion qui règne dans la systématique de ce « groupe » homogène constitué de nombreuses espèces. Le genre *Parvatrema* Cable, 1953 ([2]), très voisin du genre *Gymnophallus*, s'en distingue par un pore génital grand, « pit-like », non contigu à l'acétabulum, en avant de celui-ci, par un atrium génital court, un pharynx bien développé et par sa formule excrétrice : $2\,[(2 + 2) + 2] = 12$.

Les recherches que je poursuis sur les distomes de *Mytilus galloprovincialis* du golfe de Marseille m'ont conduit à la découverte d'une métacercaire margaritigène nouvelle que je rattache à *Parvatrema*, genre jamais cité chez les Moules, alors que ce lamellibranche est connu pour héberger *Gymnophallus margaritarum* (Dubois, 1901), *G. duboisi* Dollfus, 1923 et *G. perligena* Palombi, 1940. J'en donne ici une description préliminaire :

Parvatrema timondavidi Bartoli, 1963

Toutes les larves examinées se sont toujours montrées dans le même état avancé de maturation.

J'ai à plusieurs reprises obtenu le développement expérimental de ces métacercaires.

Le 9 juillet 1963, un caneton est infesté, puis autopsié cinq jours après ; j'ai retrouvé dans l'intestin moyen cinq sujets adultes, mais morts.

Le 18 septembre 1963, un jeune poussin est disséqué 18 heures après le repas infestant ; j'ai pu retrouver dans l'intestin moyen un individu vivant, mais immature.

Le 1er juin 1964, un jeune *Larus argentatus michaellis* Naumann est contaminé, puis tué 48 heures après ; 14 sujets vivants, montrant tous quelques œufs, sont retrouvés dans le troisième quart de l'intestin.

Le 11 juin 1964, un autre jeune goéland de la même espèce est tué 88 heures après sa contamination. 53 individus vivants et parfaitement mûrs sont retrouvés. Leur répartition le long de l'intestin était la suivante : 2e quart : 2 individus ; 3e quart : 32 individus ; 4e quart : 19 individus.

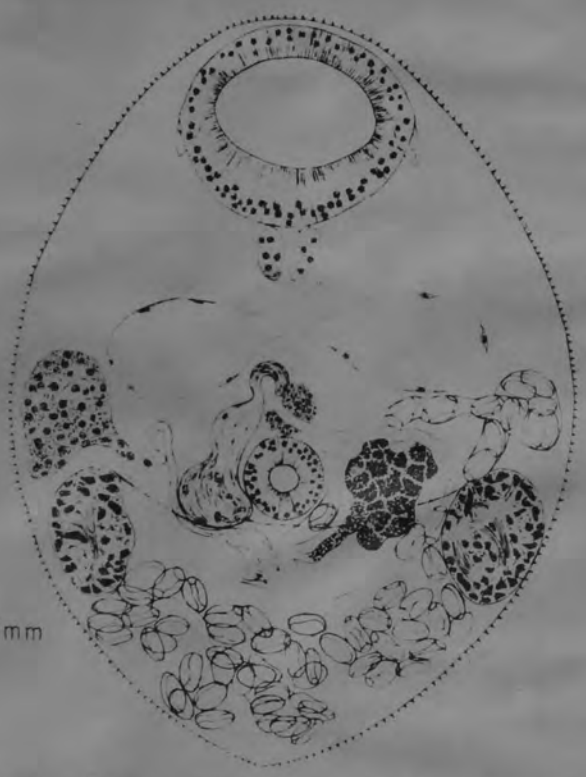


FIG. 5. — *Parvatrema timondavidi* Bartoli, 1963. Adulte obtenu expérimentalement chez *Larus argentatus michaellis* Naumann (vue dorsale)

Les principales modifications subies au cours de cette maturation ont lieu au niveau de la taille de l'animal, de son tube digestif et de son appareil génital.

Les dimensions des individus colorés et montés entre lame et lamelle sont : 330-670 µ × 231-317 µ. La ventouse orale (79-102 µ × 96-125 µ) présente la paire d'auricules de la métacercaire. La ventouse ventrale (36-46 µ × 40-46 µ) est située à la fin du tiers médian. Le rapport de la longueur du corps sur celle de la ventouse orale varie entre 3,5 et 5 ; le rapport ventousaire est compris entre 2,2 et 2,6. Le pharynx (25-46 µ × 25-40 µ) est beaucoup moins compact. Les caecums présentent une direction transversale ; leur taille diminuant beaucoup, il apparaît un œsophage.

FIG. 3. — *Parvatrema timondavidi* Bartoli, 1963. Région antérieure de la métacercaire montrant les glandes céphaliques (vue dorsale)

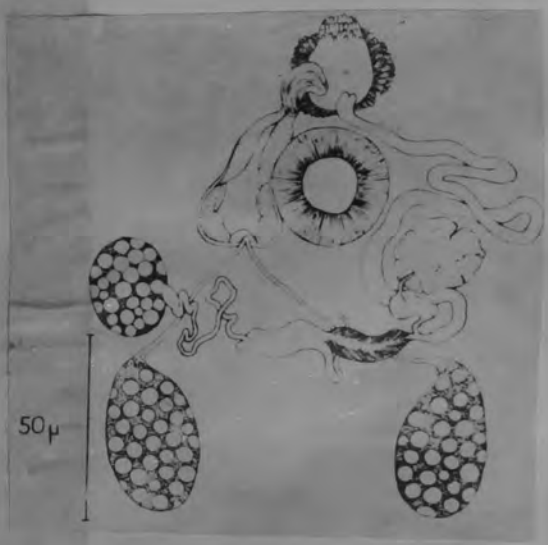


FIG. 4. — *Parvatrema timondavidi* Bartoli, 1963. Appareil génital de la métacercaire (vue ventrale)

-OVER-

La presque totalité de l'appareil génital est contenue dans la seconde moitié du corps. Les testicules (56-82 µ × 40-69 µ) sont légèrement repoussés vers l'avant du fait du grand développement de l'utérus dans la région post-acétabulaire. La vésicule séminale s'accroît ; sa longueur varie de 60 µ à 76 µ.

L'ovaire est aussi repoussé vers l'avant ; ses dimensions sont : 36-40 µ × 20-60 µ. Je n'ai pas observé de réceptacle séminal, mais cet organe semble remplacé dans ses fonctions par la chambre située à la fin de l'oviducte. L'utérus décrit plusieurs circonvolutions dont la première est toujours située en avant du testicule opposé à l'ovaire. Les œufs mesurent : 18-22 µ × 9-14 µ. Les cellules vitellines sont groupées en une seule masse, entre l'acétabulum et le testicule opposé à l'ovaire.

Le nombre et la position des néphridies demeurent inchangés. La vessie ne varie pas dans sa forme générale, mais les granulations s'éclaircissent et deviennent plus rares.

Discussion

Parvatrema timondavidi est la seule espèce de ce genre à avoir été signalée dans les Moules. Elle se différencie aisément des métacercaires du genre *Gymnophallus* parasitant ces lamellibranches par la présence d'auricules à la ventouse orale et par son rapport ventousaire. Ce dernier est cependant assez proche de celui de *G. dubois* et de celui de *G. australis*. Ces deux dernières espèces sont en fait de taille plus restreinte (23-27 µ × 12-17 µ pour *G. dubois* et 23 µ de longueur pour *G. australis*) et les branches de la vessie ne possèdent pas de diverticules. En outre, chez *G. dubois* l'orifice génital est situé sur la bordure antérieure de la ventouse ventrale.

En dehors de la métacercaire de *P. timondavidi*, on connaît six de ces formes se rapportant au genre *Parvatrema* : *P. borinqueñae* Cable 1953, *P. borealis* Stunkard et Uzmann 1958, *P. donacis* Hopkins 1958, *P. homocotecnum* James 1964, *P.* sp. 1 et *P.* sp. 2, Rebecq 1964. A l'exception de *P. donacis*, l'espèce provençale se distingue facilement des autres par sa grande taille, les rapports ventousaires différents, l'absence d'œsophage, la grande taille des caecums et sa vessie qui, pourvue de diverticules, atteint la ventouse orale. Cependant sa ressemblance avec *P. donacis* est assez frappante. Les renseignements que nous possédons à son sujet étant assez restreints, les éléments de comparaison sont peu nombreux. En dehors de la nature du premier hôte intermédiaire (*Donax variabilis*), *P. donacis* est caractérisé par un rapport ventousaire plus important (2,7), ses caecums sont de taille plus réduite, l'orifice génital est placé plus près du bord antérieur de la ventouse ventrale et des auricules n'ont été vues que chez quelques spécimens. La différence la plus importante réside dans le fait que les métacercaires de l'espèce américaine sont d'âges divers, ce que je n'ai jamais observé chez *P. timondavidi*. En effet les divers organes et notamment ceux du système génital sont au même degré d'évolution.

L'adulte obtenu expérimentalement ne s'apparente à aucune des espèces déjà connues du genre *Parvatrema*. Il s'en distingue d'abord par sa très grande taille. Si l'on met à part *P. ovoplenum* (Jameson et Nicoll, 1913) Stunkard et Uzmann, 1958, dont on ne possède qu'une diagnose restreinte, l'espèce mytilicole est seule à posséder, avec *P. borinqueñae*, une unique glande vitelline ; chez tous les autres, il y a deux masses vitellines distinctes. En outre, les auricules sur la ventouse orale ne sont présentes que chez *P. borinqueñae*, *P. borealis* et *P. obscurum* (Ching, 1960) James, 1964. Chez cette dernière espèce, l'orifice génital est contigu à la ventouse ventrale et chez *P. borealis* l'utérus remplit la presque totalité du corps. Chez *P. borinqueñae*, la ventouse orale n'est pas terminale ; le rapport ventousaire et celui de la longueur du corps sur celle de la ventouse orale sont différents ; la vessie excrétrice a une forme différente de celle de *P. timondavidi*.

Bien que l'espèce provençale soit nettement individualisée, il faut noter sa ressemblance, au niveau de la métacercaire avec *P. donacis* et à celui de l'adulte expérimental avec *P. borinqueñae* ; ceci permet d'envisager le genre *Parvatrema* comme très homogène.

FROM BARTOLI (1965)

ALSO: RESUMÉ OF LARVAL FORMS FROM MYTILUS
FURTHER DESCRIPTION OF THE METACERCARIA.

PARVATREMA

LOOSE LEAF
ORGANIZER

SCHEDULE

PERIOD OR TIME								
COURSE								
MON. INSTRUCTOR								
COURSE								
TUE. INSTRUCTOR								
COURSE								
WED. INSTRUCTOR								
COURSE								
THU. INSTRUCTOR								
COURSE								
FRI. INSTRUCTOR								
COURSE								
SAT. INSTRUCTOR								

NAME _____

ADDRESS _____

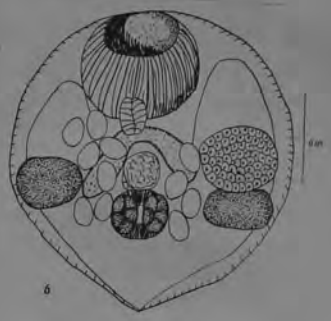
SCHOOL _____ TELEPHONE _____

CHING, 1960

Microphallidae

6. *Plenosoma minimum* ~~n. gen., n. sp.~~ (Fig. 5)

HOST: *Haematopus bachmani* Audubon, black oystercatcher
HABITAT: Intestine
LOCALITY: Goose Island
DESCRIPTION (based on ten specimens, average in parentheses): Body pyriform, spined, very small; length 0.180 to 0.260 (0.229); width at acetabular level 0.120 to 0.150 (0.130). Oral sucker round, 0.035 to 0.049 (0.044); mouth subterminal. Acetabulum same shape and size as oral sucker, immediately post-equatorial. Prepharynx very short in most specimens to 0.020 in one. Pharynx round to oval, 0.017 to 0.025 by 0.014 to 0.019 (0.017 by 0.014). Esophagus variable, often obscured by the uterus; in five specimens the esophagus was lacking or up to 0.017. Ceca short, extending to midbody, lined with a single layer of cells. Entire digestive system lies in anterior half of body. Genital opening a longitudinal slit to the left and antero-lateral to acetabulum. Genital atrium oval to round, 0.017 to 0.029 (0.025) with muscular folded walls. Cirrus sac lying transversely anterior to and partly overlapping acetabulum, containing cirrus, prostatic vesicle and cells, and seminal vesicle; cirrus enters anterior part of genital opening. Seminal vesicle globular, posterior portion lying dorsal to acetabulum. Prostatic cells numerous. Pars prostatica well developed with cells that taper sharply within the vesicle; vesicle 0.017 to 0.032 by 0.012 to 0.021 (0.023 by 0.014). Testes ovoid, smaller or equal to acetabulum, their anterior levels overlapping acetabular level, widely separated laterally, slightly oblique in posterior half of body. Ovary oval to pyriform, located on the right of acetabulum overlapping it dorsally. Seminal receptacle pear-shaped, extending over posterior edge of acetabulum dorsally and posteriorly, approximately same size as ovary. Yolk reservoir with distinct follicles, superimposed dorsally on anterior part of seminal receptacle. Laurer's canal not observed. Vitelline follicles distributed lateral to digestive system reaching the level of pharynx, confluent dorsally at level of esophagus, not extending past ceca. Uterus fills hindbody, extends anteriorly on right side of acetabulum to form anterior transverse loop at level of pharynx. Eggs relatively large, not more than 100 per worm (average 50), 17 to 27 by 10 to 14 microns (22 by 12 microns). Excretory bladder V-shaped with rounded lobes reaching the level of the testes. Excretory pore terminal.



The genus name *"Plenosoma"* means full body; *"minimum"* refers to the small size of the body.

DISCUSSION: *Plenosoma* resembles *Pseudospelotrema* Yamaguti, 1939 and *Maritreminoides* Yoshida, 1938 in the extent of the uterus into the forebody. However, it differs from these genera in the extent of the vitellaria, and the presence of a large muscular genital atrium and a longitudinal genital opening. In *Pseudospelotrema*, the vitallaria are marginal at the ovariotesticular level. In *Maritreminoides*, the vitellaria are largely anterior and lateral to the acetabulum. In *Plenosoma*, the vitellaria commence at the posterior level of the ceca, reach the level of the pharynx, and are lateral to the digestive system. The small, distinct follicles which are confluent dorsally at the esophagus are characteristic of the species.

Another genus with vitellaria located more anteriorly than usual in the microphallids is *Pseudosellacotyla* Yamaguti, 1954. The vitellaria are clustered symmetrically at the level of the esophagus and ceca. The type and only species, *P. lutzi* (Freitas, 1941) Yamaguti, 1954 differs fom *P. minimum* in having no cirrus sac, a bipartite seminal vesicle and a genital pore opening ventral to the acetabulum.

The presence of a muscular genital atrium recalls the complicated male copulatory organ of *Levinseniella* Stiles and Hassall, 1902. The atrium in *P. minimum* is much simpler, containing no male papilla or thimble-shaped pockets. *Levinseniella* does not have a cirrus sac.

GENERIC DIAGNOSIS OF PLENOSOMA CHING, 1960

Very small, spined-microphallids with pyriform shape. Oral sucker and acetabulum round, of equal size, the latter postequatorial. Digestive system in anterior half of body. Prepharynx short, pharynx round to oval, esophagus short, ceca reaching only to genital atrium. Genital opening a longitudinal slit to the left of acetabulum. Genital atrium large and muscular, with no distinct pockets within. Cirrus sac with cirrus, prostate cells, pars prostatica, seminal vesicle; extending transversely anterior to acetabulum. Testes oval, far apart, subsymmetrical, in posterior half of body. Ovary oval, on right of acetabulum partly overlapping it dorsally. Seminal receptacle and yolk reservoir present. Laurer's canal not observed, probably present. Uterus with coils anterior and posterior to acetabulum, extends into forebody. Eggs large but not numerous, often filling most of the body. Vitellaria consist of small distinct follicles lateral to the digestive system and extending from pharynx to level of ceca. Excretory bladder V-shaped, excretory pore terminal.

TYPE SPECIES: *P. minimum*.

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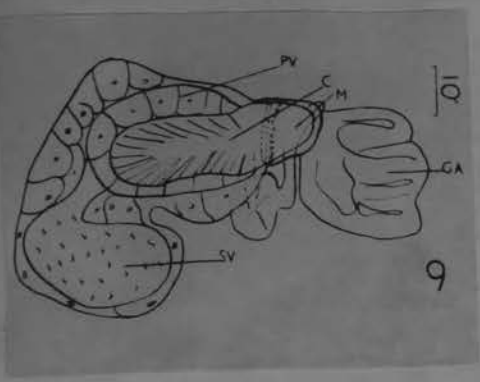


Plenosoma minimum Ching, 1960 (Fig. 9)

An enlarged drawing of the terminal genitalia is presented. All ten specimens recovered from the oystercatcher, *Hematopus bachmani*, showed the cirrus withdrawn into the cirrus sac with the interior of the cirrus containing sharply tapered cells; the exterior appears to be spined. Dorsal to the oval to elongate cirrus is the prostatic vesicle containing large, delicate cells. These characteristics were not described fully in the original description. The metraterm joins the genital pore superficially and dorsally at the anterior edge so that the organ to the left of the genital pore can only be described as part of the genital atrium. However, this part of the genital atrium looks similar to the thick-walled female pouch of *Ascorhytis*. Additional, live specimens should immeasurably improve the concept of this interesting genus.

PLENOSOMA

PSEUDOLEVINSENIELLA Tsai, 1955

Ref.: Tsai, S.-T. A new trematode, Pseudolevinseniella cheni gen. & sp. nov. (Microphallidae)from Canton. Acta Zool. Sinica 7: 147-157, 2 pls.

Deblock & Pearson, 1968

Pseudolevinseniella anenteron n. sp.

HÔTES : *Macrobrachium australiense* Halthuis et *M. australe* Halthuis (Crustacés).

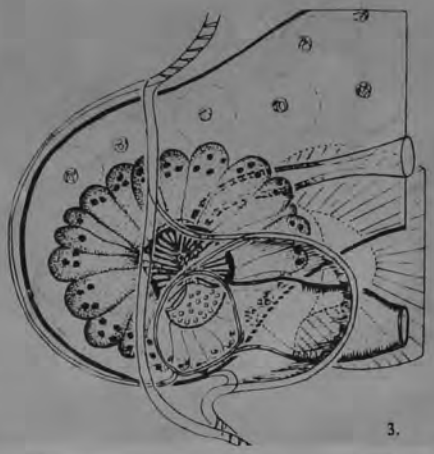
HABITAT : Système musculaire.

LOCALISATION GÉOGRAPHIQUE : Goondiwindi (Mc Intyre River) et Moggill Creek, Queensland.

MATÉRIEL EXAMINÉ : huit métacercaires mûres, fixées et colorées. Syntypes deposés à l'U.S.N.M., Helm. coll., sous le n° 70.992.

Description de l'espèce : (fig. 1).

Le kyste métacercarien mesure, à l'état fixé, 500 × 230 µ (extrêmes : 460-540 × 200-270 µ).



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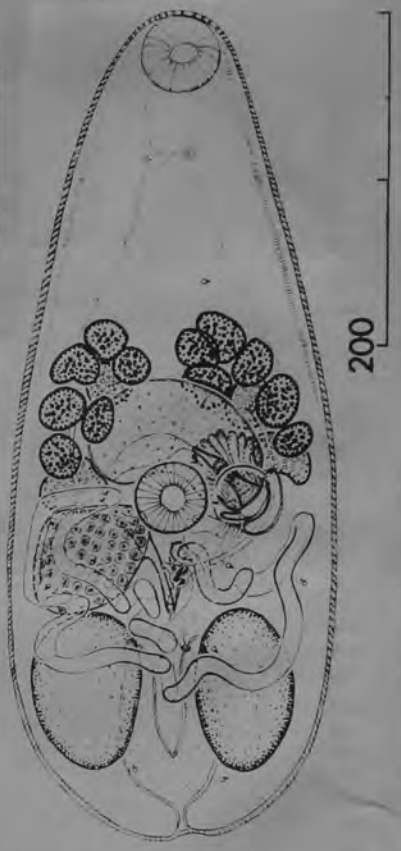


FIG. 1. — *Pseudolevinseniella anenteron* n. sp. Métacercaire mûre dékystée de *Macrobrachium australe*, Moggill Creek, Queensland. Vue ventrale.

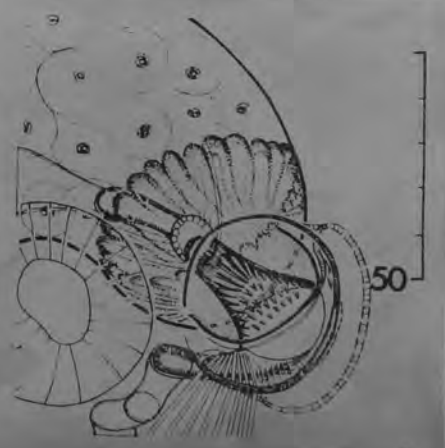
Corps allongé, légèrement aplati dorso-ventralement, long de 450-500 µ × 175-200 µ de largeur maximale, celle-ci située en arrière de l'acétabulum. Cuticule épaisse de 3,5 µ, garnie sur toute sa surface de fortes épines en écailles de 3,5 × 3 × 2 µ disposées en quinconce ; celles de la partie postérieure du corps sont encore bien figurées, aussi longues mais plus fines. Ventouse orale sub-termino-ventrale, circulaire mesurant 45 µ de ø. Son fond n'est perçé d'aucun orifice digestif. Prépharynx, pharynx, œsophage et caeca totalement absents, même à l'état de trace ; le ganglion nerveux, bien développé, se situe isolément dans le parenchyme à son emplacement classique, qui devrait normalement correspondre au dos du pharynx. Ventouse ventrale arrondie de 40 µ de diamètre située un peu en arrière du niveau équatorial. Rapport V.O./V.V. = 1.

Appareil génital. Pore génital ventral, largement dimensionné (30 à 40 µ de ø) situé à quelque distance (10 µ) du bord gauche de l'acétabulum. Une douzaine environ de fibres musculaires sous-cuticulaires ventrales longues d'une cinquantaine de microns convergent du niveau de la région ootypique vers la paroi atriale postérieure où elles s'enfoncent (2).

a) *Appareil génital mâle.* Deux testicules largement dimensionnés (90-100 × 50-65 µ), ovoïdes, à grand axe longitudinal, se situent très postérieurement de part et d'autre de la vessie excrétrice. Les spermiductes naissent à leur pôle antérieur, convergeant directement sous la ventouse ventrale pour confluer en un court (40 µ) spermiducte commun qui aborde la partie postérieure de la poche du cirre sans former de vésicule séminale externe. Poche du cirre présente, nettement figurée sous la forme d'une limitante fine (1 à 1,5 µ), continue, dont les fibres musculaires ne sont pas individualisées. La poche se situe en arc de cercle en avant de l'acétabulum, symétrique par rapport à l'axe longitudinal du distome ; du côté droit, son fond est en rapport avec l'ovaire et l'utérus ; toute sa paroi antérieure est en rapport avec les follicules vitellins des glandes droite et gauche. Avec une vésicule séminale vide de spermatozoïde, elle est courte et boudinée et mesure 110 × 50-60 µ de ø. P.C./L.C. = 1/5. Elle contient une vésicule séminale simple qui se différencie plus en avant en un canal déférent intraprostatique long de 20 µ, puis en une petite *pars prostatica* sphérique de 11 µ de ø ; il n'y a pas de cirre ni de papille mâle anatomiquement différenciés. L'orifice génital mâle est plus ou moins évasé en forme d'entonnoir, mesurant environ 22 µ de profondeur sur 11 µ de diamètre ; il est tapissé dans son fond de papilles longues de 3 à 5 µ, correspondant aux conduits excréteurs des cellules glandulaires de l'apex de la poche du cirre. L'état complètement évaginé du système n'a pas été observé (fig. 2).

FIG. 3. — *P. anenteron.* Vue latérale gauche de la poche du cirre partiellement protruse. Métacercaire de *M. australiense*, Mac Intire River, Queensland.

(2) Elles présentent une certaine analogie avec celles du genre *Levinseniella* décrites par Deblock et coll., 1966, p. 46, et doivent sans doute jouer un rôle dans l'évagination des voies génitales terminales mâles.



2.

FIG. 2. — *P. anenteron.* Terminaison des conduits génitaux mâle et femelle. Vue ventrale.

Les voies génitales mâles sont entourées 1) d'une glande prostatique bien développée constituée de grandes cellules claires arrondies de 12-14 μ de ø à gros noyaux (3,5 μ de ø) situées dans les 3/4 postérieurs de la poche et dont les conduits se jettent dans la *pars prostatica* sub-terminale ; 2) d'une glande d'un second type, constituée de cellules granuleuses, plus petites et plus denses, moins nombreuses, à petit noyau (1,5 μ de ø), et disposées en couronne au sommet de la poche du cirre. Leurs conduits excréteurs convergent superficiellement par-dessus la *pars prostatica*, entourant le pore génital mâle de la couronne de papilles allongées spiniformes décrites plus haut (fig. 3).

b) *Appareil génital femelle* (fig. 4). Ovaire situé du côté droit, entre le fond de la poche du cirre et le testicule un peu en arrière du niveau acétabulaire ; son grand axe est disposé obliquement et il mesure 80 × 70 μ. Du côté acétabulaire, il fournit un oviducte long de 40 μ qui se dirige en direction caudale ; il émet un court canal de Laurer dont l'orifice se situe entre les pôles antérieurs des testicules, puis l'ootype revient en direction antérieure. Il n'y a pas de réceptacle séminal. L'utérus franchit ventralement les vitelloductes et, d'abord pelotonné dans la région ootypique, se poursuit à droite puis à gauche en deux larges boucles à peu près symétriques, pré-testiculaires et testiculaires ; elles l'entraînent du côté droit jusqu'en avant de l'ovaire, mais il ne semble pas devoir dépasser antérieurement le niveau de la poche du cirre (fig. 4).

Les glandes vitellogènes sont formées de deux masses droite et gauche de gros follicules en grappe, peu nombreux (6 à 9), situés le long de toute la périphérie antérieure de la poche du cirre. Chaque follicule mesure 17 à 40 μ ou 20 à 30 μ de diamètre : il est vraisemblable que chez les distomes âgés, l'aspect folliculeux compact doit plus ou moins disparaître pour être remplacé par un aspect plus diffus. Les vitelloductes naissent au milieu des grappes, courent longitudinalement de part et d'autre de la poche du cirre, franchissant ovaire et atrium génital du côté dorsal ; ils convergent ensuite vers la région ootypique en arrière de l'acétabulum, du côté ventral. Le métraterme, peu différencié de l'utérus et peu musculeux, est court (35 × 45 μ × 11 μ de diamètre) ; il vient de la profondeur dorsale du distome pour s'ouvrir dans le fond de l'atrium, du côté ventral et en regard de l'orifice génital mâle. Il n'existe pas de massif glandulaire développé à son contact.

L'atrium génital, très développé, est limité latéralement par une paroi aussi épaisse que la cuticule, mais qui s'amincit dans le fond. A partir du pore génital, l'atrium s'invagine en contournant la tête de la poche du cirre par le côté gauche, où il forme une assez vaste cavité en forme de croissant, de 40 μ de long ; cette dernière se recourbe ensuite du côté acétabulaire en direction ventrale, pour venir rejoindre les orifices génitaux mâles et femelles ; bien que demeurés plutôt à proximité de la cuticule ventrale, ces derniers s'ouvrent donc néanmoins dans le fond de l'atrium (cartouche, fig. 4).

Système excréteur : Le nombre et la position des solénocytes n'ont été que partiellement définis (cf. fig. 1) ; il est peu douteux que leur nombre total soit différent de 16. La vessie excrétrice est située dorsalement par rapport aux testicules, ou entre les deux organes ; les branches du V qu'elle forme ne remontent pas au-delà du niveau de leur bord antérieur. Le pore excréteur est terminal. Toute la cuticule est régulièrement parsemée des orifices excréteurs des glandes profondément situées dans le parenchyme.

Discussion.

L'anatomie de l'espèce décrite répond assez exactement à la définition du genre ***Pseudolevinseniella*** Tsai, 1955 ainsi qu'à son illustration (*in* Belopolskaïa 1963). L'absence de tube digestif la différencie de *P. cheni* Tsai, 1955 seule espèce du genre. Nous la considérerons donc comme nouvelle sous le nom de *P. anenteron n. sp.* (1).

FIG. 4. — *P. anenteron*. Detail de la région ootypique, vue ventrale. Dans le cartouche, anatomie semi-schématique de l'atrium génital indiqué en projection sur une coupe transversale pratiquée au niveau du pore génital.

PSEUDO LEVINSENIGLLA

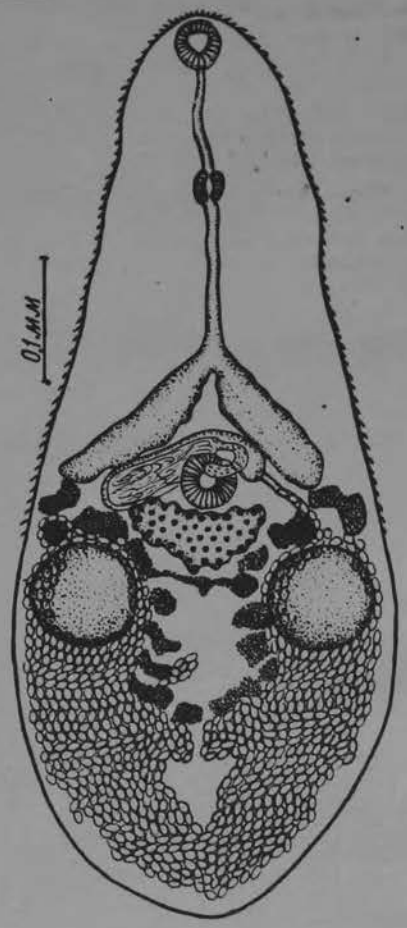
Pseudomaritrema Belopolskaia, 1952

Generic diagnosis. — Microphallidae, Maritrematinae: Body very small, elongate pyriform, flattened, spinose. Oral sucker small, subterminal; prepharynx very long; esophagus moderately long; ceca short, spread at right angles, not surpassing acetabulum. Acetabulum small, about equatorial. Testes round, symmetrical, postequatorial, postovarian. Cirrus pouch between right cecum and acetabulum, containing large seminal vesicle and protrusible cirrus. Genital atrium simple, opening

immediately anterosinistral to acetabulum. Ovary indented, median, immediately postacetabular. Vitellaria extending obliquely from lateral pretesticular area to median posttesticular area. Uterus mainly posttesticular; eggs very small. Parasitic in birds.

Genotype: *P. posterolecithale* Belopolskaia, 1952 (Pl. 73, Fig. 898) in *Tringa incana brevipes;* Russia.

Microphallidae



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208. *Pseudomicrophallus posterolecithale* Belopolskaia, 1952
(по Белопольской, 1952)

from Skrjabin
vol. VI

Host: Tringa incana brevipes

PSEUDOMARITREMA

YAMAGUTI, 1958

Pseudosellactoylinae ~~n. subfam.~~

Subfamily diagnosis. — Microphallidae: Body more or less pyriform in outline, spinose. Oral sucker and pharynx well developed, esophagus and ceca short, latter not surpassing acetabulum. Acetabulum small, in middle third of body. Testes symmetrical, near posterior extremity. Seminal vesicle bipartite, immediately postacetabular. Genital atrium opening over acetabulum. Ovary submedian, pretesticular, with large seminal receptacle behind. Vitelline follicles clustered symmetrically at level of esophagus and ceca. Uterine coils mostly in postacetabular central area. Excretory vesicle transversely elongated, slightly bicornuate. Parasites of fishes.

Pseudosellacotyla Yamaguti, 1954

Generic diagnosis. — Microphallidae, Pseudosellacotylinae: Body very small, more or less pyriform, spinose. Oral sucker subterminal, larger than acetabulum. Pharynx well developed. Esophagus short; ceca voluminous, very short, not surpassing acetabulum. Acetabulum small, in equatorial third. Testes symmetrical or nearly so, near posterior extremity. Seminal vesicle curved, constricted into two portions, immediately postacetabular. No cirrus pouch. Genital pore in acetabular zone. Ovary submedian, medial to anterior half of left testis. Seminal receptacle large, postovarian. Laurer's canal? Vitelline follicles extending on each side of body from level of pharynx to ceca. Uterus occupying most of hindbody; eggs small. Excretory vesicle transversely elongated, slightly bicornuate; pore terminal. Intestinal parasites of fishes.

Genotype: *P. lutzi* (Freitas, 1941) Yamaguti, 1954, syn. *Sellacotyle l.* F. (Pl. 31, Fig. 407), in *Hoplias malabaricus;* São Paulo, Brazil.

This genus differs from *Sellacotyle* Wallace, 1935, in the seminal vesicle being postacetabular, with its base far posterior to the genital pore which is stated to be in the acetabular area, in the seminal receptacle lying posterior to the ovary, in the more limited extent of the vitellaria, and in the more extensive uterus. In *Sellacotyle*, which is parasitic in mammals, the relative position of the seminal vesicle and seminal receptacle is just reverse to that of the present genus, and the Laurer's canal opens anterior to the acetabulum! Though not mentioned by Freitas, it seems probable from his figures that the acetabulum is embedded in the body parenchyma and the genital pore opens to the outside over the acetabulum.

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PSEUDOSELLA COTYLA

Pseudospelotrema Yamaguti, 1939

Generic diagnosis. — Microphallidae, Maritrematinae: Body small, flattened, claviform, spined. Oral sucker subterminal, rather small. Prepharynx long. Pharynx small, esophagus slender, long; ceca wide, short, terminating at level of acetabulum or in front of it. Acetabulum small, postequatorial. Testes symmetrical, postacetabular. Cirrus pouch distinct, containing relatively large seminal vesicle, prostatic complex and well developed ductus ejaculatorius. Genital atrium close to acetabulum on its left side. Ovary dextral to acetabulum. Receptaculum seminis and Laurer's canal present; shell gland postacetabular. Vitellaria consisting of small number of follicles, extending along lateral margins of body from behind cecal ends to level of testes. Uterus occupying entire posttesticular region as well as marginal fields at ovariotesticular level; eggs small, embryonated. Excretory vesicle V-shaped. Parasitic in digestive tract of birds.

Genotype: *P. japonicum* Yamaguti, 1939 (Pl. 76, Fig. 921), in ceca of *Histrionicus historionicus pacificus* and *Melanitta fusca stejnegeri;* Japan.

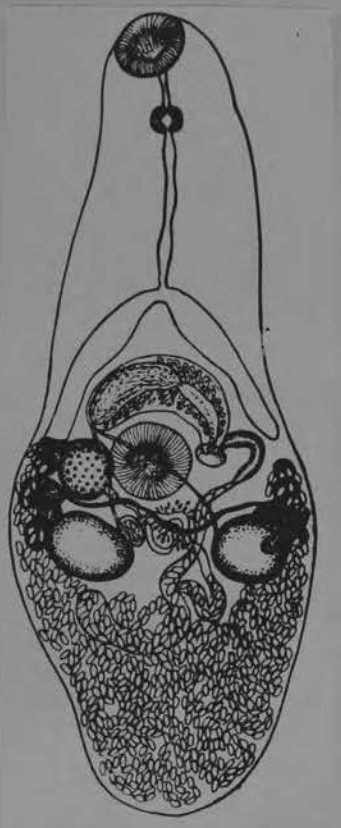
Other species:

P. ammospizae Hunter et Vernberg, 1953, in *Ammospiza maritima macgillivaraii;* Beaufort. Transferred to *Maritreminoides* — Etges (1953).

P. uriae Yamaguti, 1939, in ceca of *Uria carbo;* Japan.

Microphallidae
(Skrjabin, vol. 6)

Pseudospelotrema japonicum Yam.,1937



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Family Microphallidae

1 *Pseudospelotrema japonicum* Yamaguti, 1939

Nineteen specimens were collected from the two birds (2 in one, 17 in the other). Measurements of organs and body size were similar to those given by Yamaguti (3) but eggs of five specimens measured 18–27 by 10–13 μ instead of the 24–29 by 13–14 μ quoted. Large gland cells surround the muscular metraterm but were not mentioned previously. This is the first report of the worms in North America; they were described from the same host and from *Melanitta fusca steinegeri* in Japan and from *Tringa incana* in USSR.

Host: harlequin duck, From Hilda Ching, 1961
Histrionicus histrionicus pacificus
Friday Harbor

Cable, Connor, and Balling, 1960

Pseudospelotrema nyctanassae ~~n. sp.~~ (FIGURE 40)

Diagnosis based on 14 mature specimens with the characters of the genus. Body broadly oval, with somewhat pointed posterior end, 0.56 to 0.81 long, 0.31 to 0.44 wide. Cuticle spinose to mid-level of hindbody. Ventral sucker median, somewhat pre-equatorial, subspherical, 0.088 to 0.113 by 0.101 to 0.118. Oral sucker 0.071 to 0.087 by 0.082 to 0.102; prepharynx very short but evident in well-extended specimens; pharynx spherical, 0.032 to 0.039 in diameter. Ceca long for a microphallid, extending halfway between ventral sucker and posterior end of body. Excretory vesicle dorsal in position, described in notes on living specimens as being a narrow tube extending to level of ovary, obscured by eggs in whole mounts; excretory pore terminal. Ovary entire, to right of seminal vesicle, subspherical to triangular in shape, 0.055 to 0.079 by 0.071 to 0.087. Fertilization chamber as in preceding species. Uterus nearly fills hindbody posterior to ventral sucker; metraterm simple, to left of sucker, entering genital atrium dorsally. Vitellaria extend posterolaterally from mid-level of ventral sucker to posterior margin of testes, composed of 10 to 14 large follicles on each side. Testes symmetrical, subspherical, 0.063 to 0.103 in diameter. Cirrus sac prominent, strongly recurved, with end containing seminal vesicle directly posterior to ventral sucker; remainder of cirrus sac filled with prostate and gonoduct terminating in a long, protrusible, unspined cirrus; seminal vesicle 0.103 to 0.126 long, 0.032 to 0.047 wide. Genital atrium and pore to left of ventral sucker, about halfway to edge of body. Eggs numerous, 0.021 to 0.023 by 0.011 to 0.013.

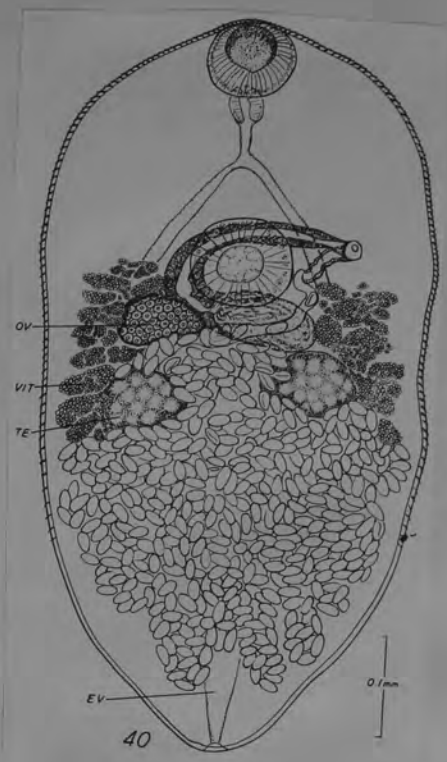
Host: *Nyctanassa violacea violacea*, (yellow-crowned night heron).

Site: small intestine.

Locality: Mona Island, Puerto Rico.

Type specimen: Holotype No. 38223.

The strongly curved cirrus sac immediately distinguishes *P. nyctanassae* from all species of *Pseudospelotrema* except *P. cincli*, which, however, is much the larger of the two, and has shorter ceca, smaller eggs, and a less strongly curved cirrus sac, with the seminal vesicle not extending posterior to the ventral sucker.



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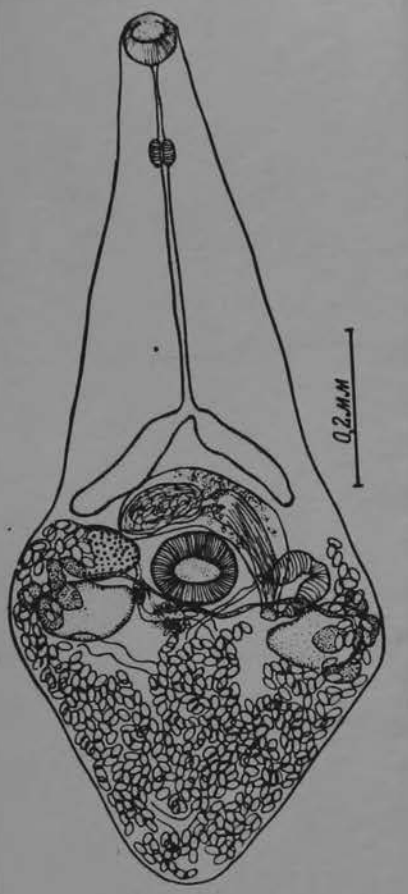
Microphallidae
(Skrjabin, ### vol. 6)

Pseudospelotrema uriae Yam., 1939



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Host: Uria carbo

PSEUDOSPELOTREMA

Pseudospelotrematoides (Yamaguti, 1939) [1])

Generic diagnosis. — Microphallidae, Maritrematinae: Body small, plump, spined. Oral sucker small, subterminal. Prepharynx practically absent; esophagus short; ceca short, not reaching to middle of body. Acetabulum pre-equatorial, well developed. Testes symmetrical, post-acetabular. Cirrus pouch large, arched in front of acetabulum, containing tubular, convoluted seminal vesicle, distinct prostatic complex and short narrow ejaculatory duct. Genital pore immediately anterosinistral to acetabulum. Ovary in front of right testis. Receptaculum seminis large,

[1]) Raised to generic rank.

postacetabular. Uterus posttesticular; eggs small. Vitelline follicles grouped immediately in front of testes. Excretory vesicle? Excretory pore ventroterminal. Intestinal parasites of birds.

Type species: *P. cincli* (Yamaguti, 1939) (Pl. 76, Fig. 930), in intestine of *Cinclus pallasii hondoensis;* Japan.

Microphallidae
(Skrjabin, vol. 6)

Pseudospelotrema cincli Yam.,1939

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Host: Cinclus pallasii hondoanensis

PSEUDOSPELOTREM-
ATOIDES

Spelophallus Jägerskiöld, 1908

Generic diagnosis. — Microphallidae, Microphallinae: Body small, biscuit-pyriform, spined. Oral sucker subterminal, prepharynx distinct, esophagus long, ceca short, terminating at level of acetabulum or in front of it. Acetabulum small, about one third of body length from posterior extremity. Testes symmetrical, postacetabular. Seminal vesicle and strongly developed pars prostatica between acetabulum and cecal arch. No cirrus pouch. Cirrus projecting into genital atrium in form of a muscular cone. Genital pore sinistral to acetabulum. Ovary dextral to acetabulum, just medial to right cecal end. No receptaculum seminis. Uterus confined to hindbody, opening into genital atrium just at the external aperture of the latter and not at its base in contrast with *Spelotrema*. Vitelline follicles grouped behind each testis. Excretory vesicle V-shaped. Intestinal parasites of birds.

Genotype: *S. primas* Jägerskiöld, 1908 (Pl. 63, Fig. 771), in intestine of *Somateria mollissima* and *Haematopus ostralegus;* Europe. Stunkard (1951) transferred this species to *Microphallus*, and Belopolskaia (1952) to *Spelotrema*.

Spelophallus Jagerskiold 1909

Body small, delicate, biscuit-pear shaped. Skin spined. Suckers rather small. Esophagus long. Pharynx near the oral sucker (this character probably specific); a pre-pharynx present. Ceca short and wide. Ventral sucker about at the beginning of the third body third (specific character). Genital pore close to the ventral sucker to the left. The vagina opens into the genital sinus at the genital pore (and not as in Spelotrema species at the base of the genital sinus). The genital sinus is at first narrow but widens deep in the body and encloses there a muscular cone-shaped body which is penetrated centrally by a wide hole. Prostate glands very well developed (contrasting with Spelotrema). Seminal vesicle large, in front of ventral sucker. Testes symmetrical equally behind ventral sucker. Cirrus sac lacking. Ovary to the right at level of ventral sucker. Seminal receptacle lacking. The rather large but compace rosette shaped vitellaria lie symmetrically equally behind the testes, the yolk resevoir close behind the ventral sucker. Uterus limited to the hind body. Excretory bladder V-shaped. Intestinal parasites of birds

1908 is correct

Type: Spelophallus primas Jagerskiold, 1909.

S. primas in Somateria mollissima
Haematopus ostralegus

Stunkard (1951) transferred this species to Microphallus
Belopolskaia (1952) to Spelotrema

SPELOPHALLUS

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Spelotrema Jägerskiöld, 1901

Syn. *Paraheterophyes* Afanassjew, 1941

Generic diagnosis. — Microphallidae, Microphallinae: Body small, elongate pyriform to claviform, covered with spines. Oral sucker subterminal, prepharynx conspicuous, esophagus long; ceca short, terminating in front of testes. Acetabulum small, at or near junction of middle with posterior third of body. Testes symmetrical, immediately postacetabular; two zones may partly overlap each other or coincide. Vesicula seminalis between acetabulum and cecal arch, prostatic complex usually very poorly developed; no cirrus pouch; cirrus projecting into genital atrium in form of a large simple muscular papilla, at the base of which opens the metraterm. Genital atrium without lateral outgrowth in contrast with ***Levinseniella***, opening beside acetabulum. Ovary sub-

median, anterior to antiporal testis. Uterus filling most of hindbody; eggs small. Vitelline follicles grouped behind testes. Excretory vesicle V-shaped. Intestinal parasites of birds, occasionally of mammals.

Genotype: *S. pygmaeum* (Lev., 1881) Jägerskiöld, 1901 (Pl. 70, Fig. 852), in *Somateria mollissima;* Egedesminde. Also in *Nyroca fuligula, Melanitta nigra;* England. *Glaucionetta clangula americana, Somateria mollissima, Oidemia nigra;* Michigan. *Littorina rudis, L. obtusata,* E. Murman — Belopolskaia (1949). Additional hosts — Balopolskaia (1952). Baer (1944) transferred this species to *Microphallus* Ward, 1901.

Other species:

S. arenaria Belopolskaia et Uspenskaia, 1953, in *Amphithoē rubricata, Arenaria interpres;* Russia.

Metacercariae from *Amphithoë rubricata* were fed to *Larus argentatus* and *Fratercula arctica,* in which they developed to maturity in 3 days — B. & U. (1953).

S. brevicaeca (Africa et Garcia, 1935) Tubangui et Africa, 1939, [1]) (syn. *Heterophyes b.* A. et G.) in *Sterna albifrons sinensis;* Philippines. Also in man.

S. capellae Yamaguti, 1939, [2]) in *Capella solitaria;* Japan.

S. claviforme (Brandes, 1888) Nicoll, 1907, [3]) in rectum of *Tringa alpina;* Europe. Also in *Charadrius hiaticula, Larus ridibundus, Motacilla flava, Numenius arquatus;* Europe.

S. longicolle Yamaguti, 1939, syn. *Spelophallus primas* of Yamaguti, 1934, in *Erolia alpina sakhalina, Squatarola squatarola hypomelaena;* Japan. Larva encysted in *Macrophthalmus dilatatus;* Japan.

S. excellens Nicoll, 1907, [4]) syn. *S. feriatum* Nicoll, 1907 — Rankin (1940), in *Larus argentatus, L. marinus, Calidris, Tringa, Charadrius, Vanellus, Himantopus;* Europe, Tunis.

Cercaria excellens Nicoll encysts in *Carcinus moenas* and *Cancer pagurus* — Nicoll (1909); Nicoll and Small (1909); *Cercaria ubiquita* Lebour (young form of *S. excellens*) with a stylet and 6 pairs of penetration glands develops in *Paludestrina stagnalis, Littorina obtusata* and *L. rudis,* encysts in *Carcinus moenas* and *Cancer pagurus* — Lebour (1911); *Cercaria littorinae-rudis* sp. inq. from *Littorina rudis* considered by Nicoll very likely to be the larval form of *S. claviforme* from *Tringa alpina* — Lebour (1911); *Cercaria minor* sp. inq. of *Spelotrema* group encysts in *Carcinus moenas* — Lebour (1911).

S. nicolli Cable et Hunninen, 1938. [5]) Adult in *Ammospiza maritima macgillivrayi;* N. Carolina — Hunter and Quay (1953).

[1])—[5]) Transferred to *Microphallus* Ward, 1901, by Baer (1944).

Cercaria develops in sporocyst in *Bittium alternatum,* penetrates the gills of blue crab, *Callinectes sapidus* and passes by way of the blood stream to muscle-like fibers, in which encystment occurs. Metacercaria grows until practically as large as adults. Metacercariae from naturally infected crabs were fed to young herring gulls, from all of which numerous adult worms were recovered after varying intervals — Cable & Hunninen (1939), Rankin (1940).

S. oedemia Belopolskaia, 1952, in *Oidemia fusca deglandi;* Russia.

S. papillorobustum Rankin, 1940, in *Arenaria interpres morinella, Pisobia minutilla, Crocethia alba;* Massachusetts.

Spelotrema Jägerskiöld, 1901

Generic diagnosis. — See p. 728.

Representatives from mammals:

S. pirum (Afanassjew, 1941) Belopolskaia, 1952, (Pl. 103, Fig. 1251), syn. *Paraheterophyes p.* A.; *Microphallus enhydrae* Rausch et Lucker, 1951, in *Alopex lagopus beringensis, Enhydra lutris;* Russia, Alaska.

Spelotrema brevicaeca Africa et Garcia, 1935 (= *Heterophyes b.* A. et G., 1935) may occur as an accidental parasite of man.

MICROPHALLUS

Syn. SPELOTREMA Jagerskiold, 1901

Small flukes, with spined skin. Intestines not reaching beyond anterior border of testes. Excretory bladder small, not extending to the testes. Testes lie at the same level. Vitellaria lateral, composed of 6-8 separate follicles. Genital atrium always opening through a muscular papillae. No complicated diverticula as in the case of Spelophallus, present. The vagina opens in the base of the male papilla. Pars prostatica and seminal vesicle well developed.

Type species: Spelotrema pygmaeum (Levinsen, 1881)

. *Spelotrema pygmaeum* (Levinsen, 1881) Jägerskiöld, 1901

Синонимы: *Distomum pygmaeum* Levinsen, 1881; *Levinsenia pygmaeum* (Levinsen, 1881) Stossich, 1899; *Levinsenia pygmaeum* (Levinsen, 1881) of Jägerskiöld, 1900; *Levinseniella pygmaeum* (Levinsen, 1881) of Stafford, 1903

(Рис. 165)

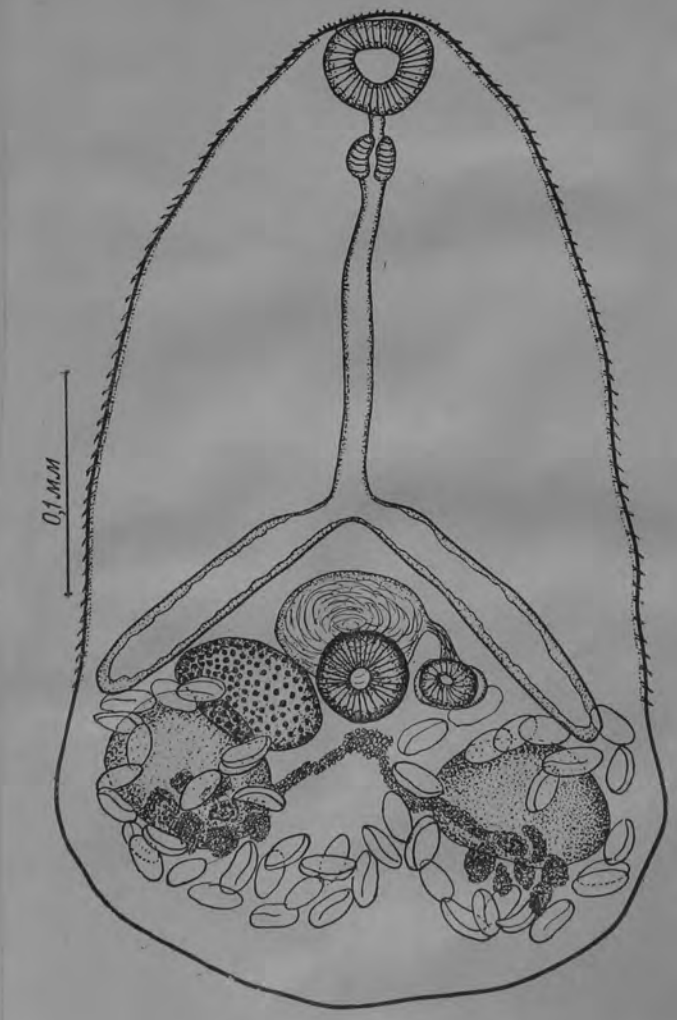
Дефинитивные хозяева: *Somateria mollissima, S. spectabilis, Oedemia nigra, O. fusca, Calidris maritima, Larus argentatus.*

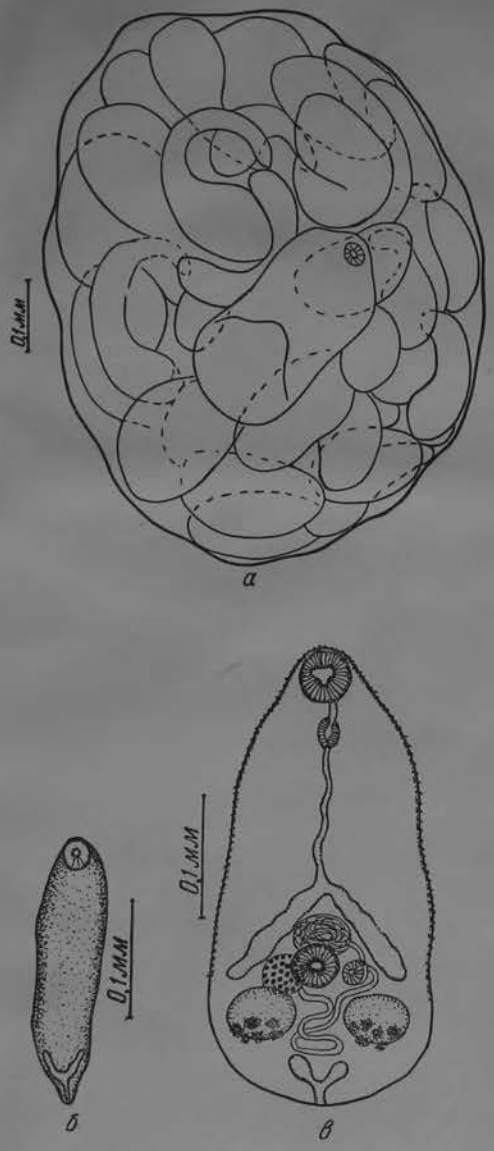
Промежуточные хозяева: *Littorina rudis, L. obtusata.*

Локализация: кишечник.

Места обнаружения: СССР, Швеция, Германия, Англия, Северная Америка.

Описание вида (по Однеру, 1905, пополненное). Тело удлиненное, грушевидное, 0,30—0,50 мм длины и 0,20—0,30 мм ширины на уровне семенников. Кутикула покрыта шипиками. Ротовая присоска 0,04—0,05 мм в диаметре и всегда больше брюшной присоски; брюшная присоска у переднего края задней трети тела, диаметр ее — 0,037—0,048 мм. Префаринкс очень короткий, 0,008—0,010 мм; овальный фаринкс 0,021—0,022 × 0,025—0,029 мм; пищевод 0,119—0,128 мм длины; ветви кишечника тянутся до заднего края брюшной присоски. Семенники лежат симметрично, размеры их 0,060—0,068 мм в поперечнике. Семенной пузырек больше брюшной присоски. Мужская папилла очень маленькая, достигает половины диаметра брюшной присоски; размеры ее 0,021—0,023 мм. Семяпровод короткий и прямой. Яичник расположен позади





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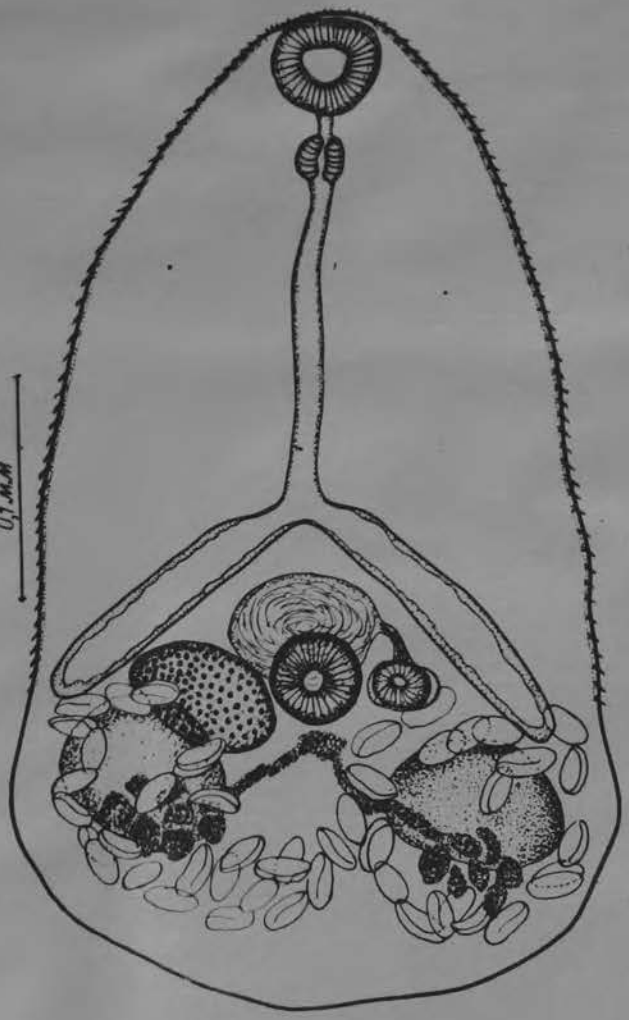
166. Стадия развития *Spelotrema pygmaeum* (Levinsen, 1881) (по Белопольской, 1952)

а — спороциста, содержащая зрелых церкариев; *б* — молодой церкарий; *в* — сформированный церкарий



165

Spelotrema pygmaeum (Levinsen, 1881)

From Skrjabin
vol. VI

Hosts: Somateria mollissima
S. spectabilis
Oedemia nigra
O fusca
Calidris maritima
Larus rudis
L. obtusata

Snail: Littorina rudis, L. obtusa

2. *Spelotrema pygmaeum* (Levinsen, 1881) Jägerskiold, 1901 Ching, 1961

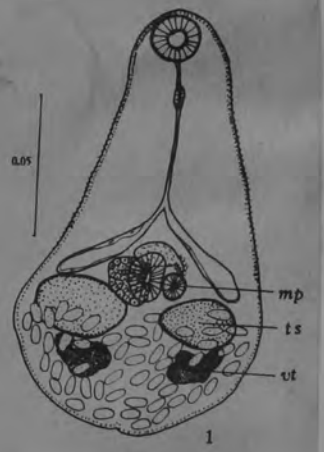
Eight very small worms were found in equal numbers in the two birds and resemble *S. pygmaeum* most in body shape, extent of ceca, ratio of male papilla to ventral sucker, and egg sizes (Fig. 1). The body shape varied from that shown in Fig. 1 to that in Fig. 2. The size range of these specimens is more nearly that of *S. claviforme* (Brandes, 1888) Nicoll, 1907. Measurements of six specimens, average in parentheses: length, 0.211–0.313 (0.273); width, 0.114–0.217 (0.156). Oral sucker, 0.027–0.039 (0.034); ventral sucker, 0.026–0.032 (0.028) in transverse diameters. Prepharynx lacking to 0.017 (0.008); esophagus, 0.065–0.088 (0.076) in length. Male papilla, 0.018–0.021 (0.019). Ovary, 0.026–0.045 (0.036); testes, 0.026–0.058 (0.050) in transverse diameters. Eggs, 20–25 by 9–12 μ (22 by 10) in length and width.

The trematodes appear to be cosmopolitan in distribution in a variety of birds. Belopolskaya (1) reported that sporocysts containing metacercariae of *S. pygmaeum* were found in *Littorina rudis* and *L. obtusata*. Two of over

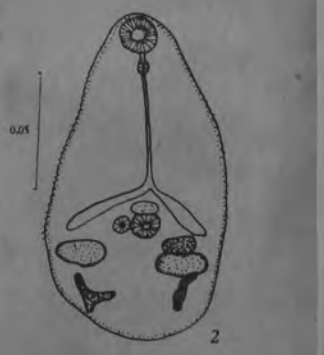
[1]Manuscript received March 16, 1961.
Contribution from the Department of Zoology, University of British Columbia, Vancouver British Columbia.

Can. J. Zool. Vol. 39 (1961)

five hundred *L. scutulata* examined at the Friday Harbour Laboratories by me were infected with yellow sporocysts containing *Spelotrema*-like metacercariae (Fig. 3). The metacercariae were slightly smaller than the smallest adults found in the ducks. Additional infections of *L. scutulata* and *Spelotrema* sp. were found in Vancouver, B. C. The sporocysts were fed to two mice; immature worms were recovered after 24 hours and ovigerous forms, after 72 hours. The mature worms had few eggs in the uteri and were larger than those found in the harlequin duck. Their size range, however, is still within that given for *S. pygmaeum*.



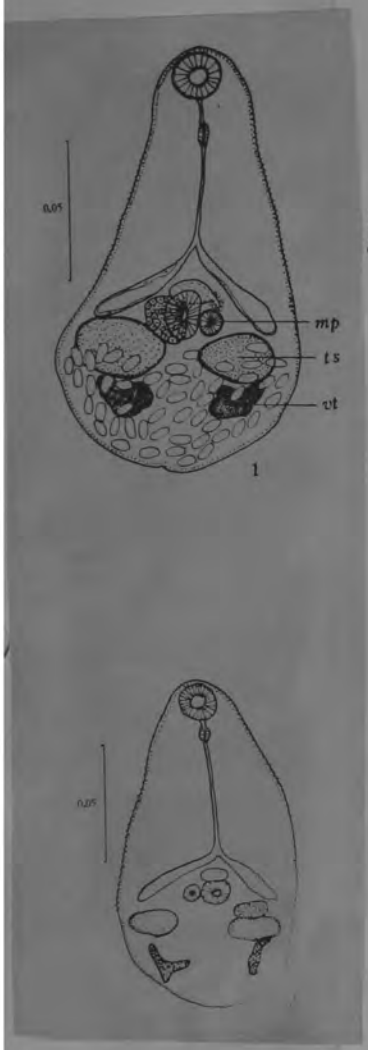
1

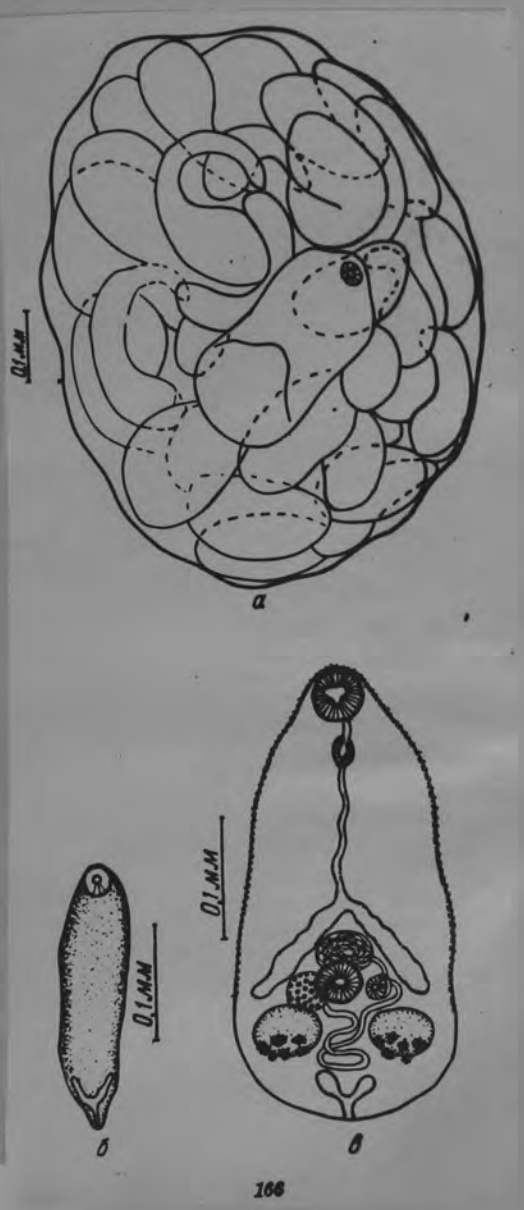


2

Microphallidae

Spelotrema pygmaeum (Levinsen, 1881) Jägerskiold, 1901





166

Spelotrema pygmaeum (Levinsen, 1881) Jägerskiold, 1901

Eight very small worms were found in equal numbers in the two birds and resemble *S. pygmaeum* most in body shape, extent of ceca, ratio of male papilla to ventral sucker, and egg sizes (Fig. 1). The body shape varied from that shown in Fig. 1 to that in Fig. 2. The size range of these specimens is more nearly that of *S. claviforme* (Brandes, 1888) Nicoll, 1907. Measurements of six specimens, average in parentheses: length, 0.211–0.313 (0.273); width, 0.114–0.217 (0.156). Oral sucker, 0.027–0.039 (0.034); ventral sucker, 0.026–0.032 (0.028) in transverse diameters. Prepharynx lacking to 0.017 (0.008); esophagus, 0.065–0.088 (0.076) in length. Male papilla, 0.018–0.021 (0.019). Ovary, 0.026–0.045 (0.036); testes, 0.026–0.058 (0.050) in transverse diameters. Eggs, 20–25 by 9–12 μ (22 by 10) in length and width.

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From Ching, 1961
Host: Histrionicus histrionicus pacificus
Friday Harbor

Microphallidae

Spelotrema arenaria Belopol'skaia,1953

Host: Arenaria interpres, woodcock

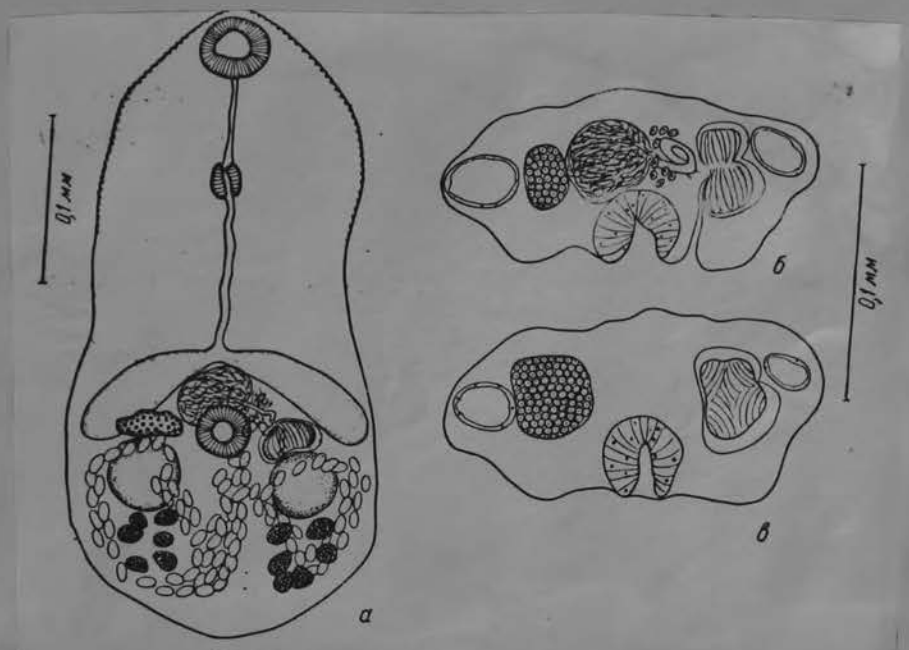


Рис. 1. *Spelotrema arenaria* nov. sp.
а — общий вид; *б* — поперечный разрез на уровне полового отверстия.

Ref. Skrjabin Memorial volume, p /52-53

Spelotrema brevicaeca (Africa. et Garcia, 1935) Tubangui et Africa, 1938

Синоним: *Heterophyes brevicaeca* Africa et Garcia, 1935

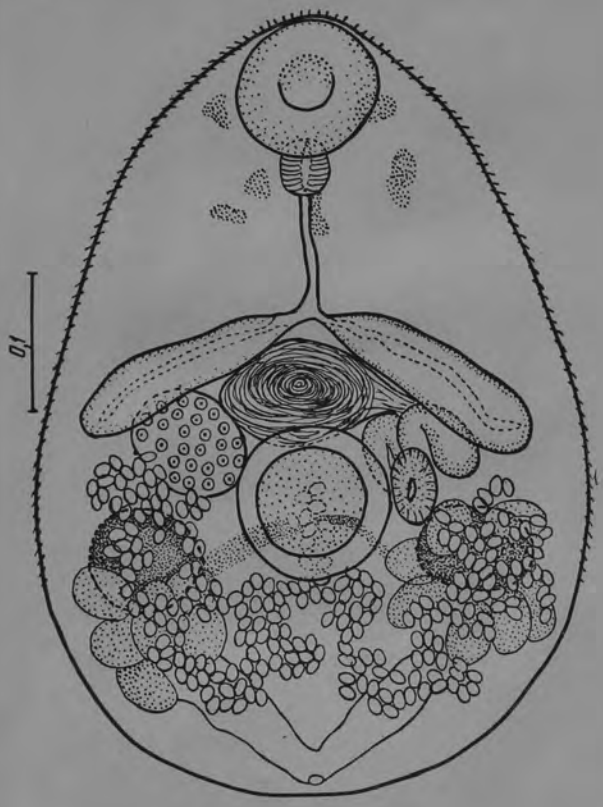
(Рис. 171)

Хозяин: *Sterna albifrons sinensis*, а также человек.

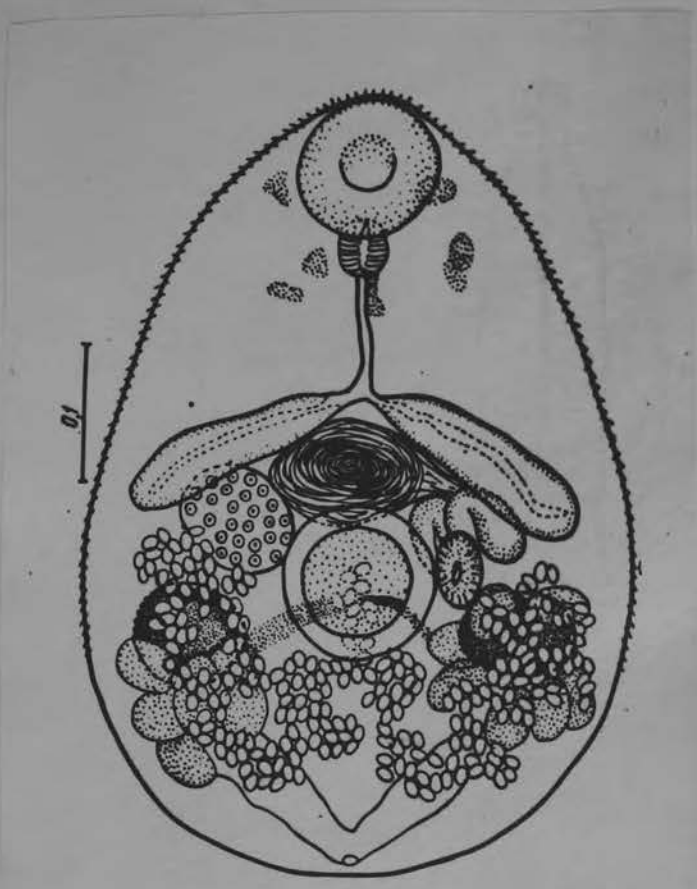
Локализация: кишечник.

Место обнаружения: Филиппинские острова.

Описание вида (по Тубангуи и Эфрика, 1938). Тело грушевидное, тоньше впереди, чем позади, 0,5—0,7 мм длины и 0,3—0,4 мм ширины. Кутикула вооружена чешуевидными шипиками от переднего конца тела до заднего уровня желточников. Ротовая присоска субтерминальная, 0,065—0,095 мм в диаметре; брюшная присоска 0,080—0,105 мм в поперечнике, лежит в середине тела или несколько позади этого уровня. Префаринкс очень короткий, так что практически почти отсутствует; фаринкс 0,032—0,034 × 0,034—0,043 мм в диаметре; пищевод 0,08—0,09 мм длины; кишечные ветви 0,15—0,19 мм длины, не достигают центра брюшной присоски. Половое отверстие подле левого края брюшной присоски, [illegible] маленькой [illegible] полостью. Семенники круглые или



171



171

171. *Spelotrema brevicaeca* (Africa et Garcia, 1935)
(по Тубангуи и Эфрика, 1938)

Syn. Heterophyes brevicaeca

Host: Sterna albifrons sinensis

From Sbrjabin
vol VI

Spelotrema capellae Yamaguti, 1939

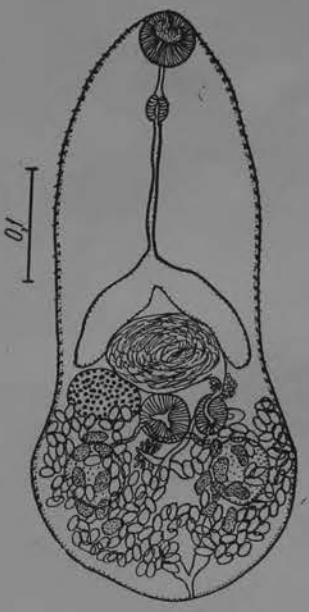
(Рис. 172)

Хозяин: *Capella solitaria*.

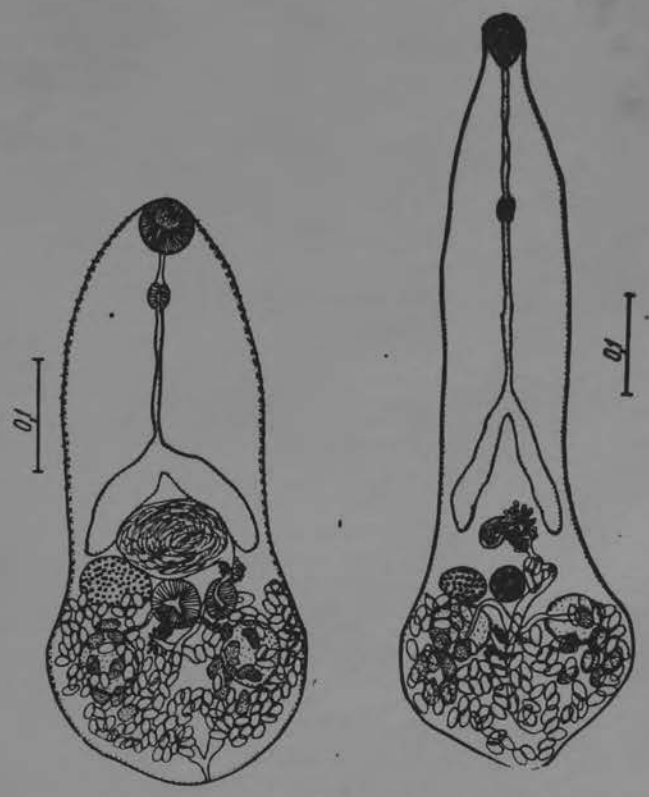
Локализация: тонкие кишки.

Место обнаружения: Япония.

Описание вида (по Ямагути, 1939). Тело почти грушевидное, сплющено дорзо-вентрально, покрыто тонкими шипиками, 0,4—0,51 мм длины и 0,17—0,24 мм ширины на уровне семенников. Ротовая присоска 0,033—0,045 × 0,036—0,048 мм в диаметре. Префаринкс 0,020—0,050 мм длины; фаринкс 0,018—0,024 × 0,018—0,020 мм в диаметре. Пищевод узкий, 0,05—0,13 мм длины, разветвление пищевода впереди середины тела. Ветви кишечника широкие, не достигают уровня брюшной присоски. Брюшная присоска 0,033—0,040 мм в диаметре, лежит медиально [illegible]



172



172 173

172 *Spelotrema capellae* Yamaguti, 1939 (по Ямагути, 1939)

From Skrjabin
vol. VI

172. Spelotrema capellae
Host: Capella solitaria
173. Spelotrema longicolle Yamaguti, 1939
Host: Erolia alpina sakhalina

Spelotrema claviforme (Brandes, 1888) Nicoll, 1907

Синонимы: *Distomum claviforme* Brandes, 1888; *Lecithodendrium claviforme* (Brandes, 1888) Stossich, 1899; *Levinsenia claviforme* (Brandes, 1888), Looss, 1899

(Рис. 167)

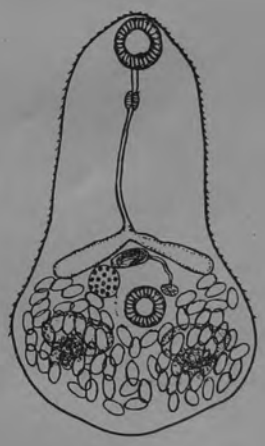
Хозяева: *Tringa alpina, Charadrius hiaticula, Anthus obscurus, Numenius arquata, Motocilla flava, Larus ridibundus.*

Локализация: кишечник.

Место обнаружения: СССР, Германия, Франция, Англия, Швеция.

Описание вида (по Николю, 1907). Тело дубинковидное, суживающееся на уровне разветвления пищевода. Кутикулярные шипики покрывают тело до уровня семенников. Длина тела 0,23—0,40 мм, ширина 0,13—0,17 мм. Ротовая присоска несколько больше, чем брюшная; ее диаметр 0,038 мм. Брюшная присоска расположена на расстоянии одной трети длины тела от заднего конца. Фаринкс 0,020—0,025 × 0,010—0,013 мм; префаринкс длиннее фаринкса, но размеры его могут варьировать от степени сокращения. Пищевод 0,012 мм длины. Ветви кишечника 0,08 мм длины, оканчиваются не доходя до уровня брюшной присоски. Мужская папилла расположена левее брюшной присоски; ее диаметр 0,013—0,014 мм. Семенной пузырек овально-вытянутый, лежит симметрично в развилке кишечника впереди брюшной присоски. Семяизвергательный канал прямой или слегка изогнут. Яичник не соприкасается ни с брюшной присоской, ни с семенным пузырьком, ни с ветвью кишечника.

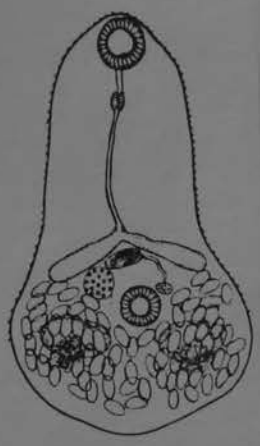
FROM NICOLL, 1909



167

Microphallidae

Spelotrema claviforme (Brandes,1888)



from Skrjabin, vol.6

Spelotrema excellens Nicoll, 1907

Синоним: *Spelotrema feriatum* Nicoll, 1907

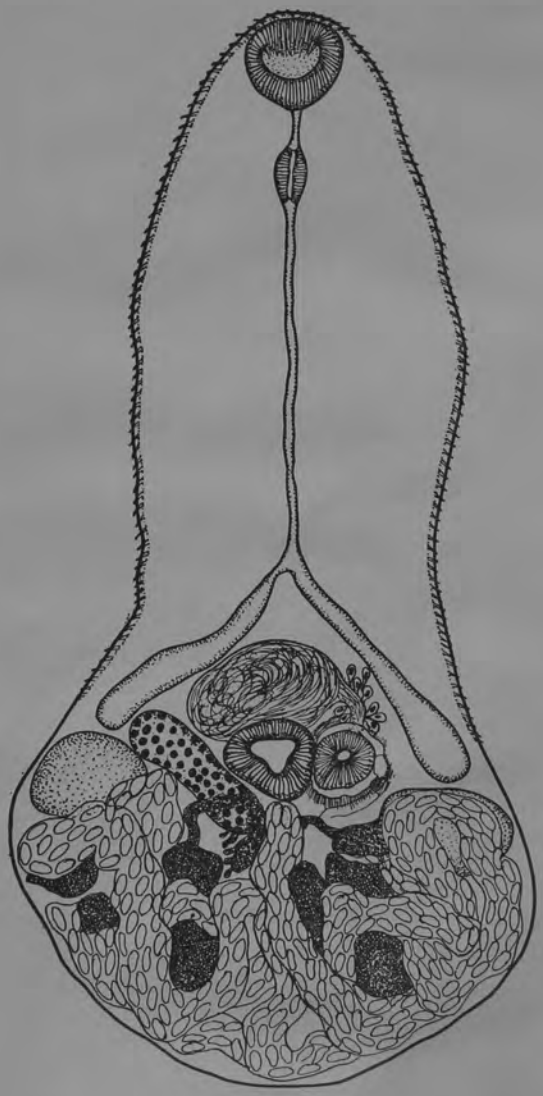
(Рис. 169)

Хозяева: *Larus argentatus, L. marinus, Calidris alpina, Tringa totanus, Charadrius hiaticula, Haematopus ostralegus, Vanellus vanellus.*

Локализация: кишечник.

Места обнаружения: СССР, Англия, Швеция.

Описание вида (по Николю, 1907). Тело булавовидное, 0,66—1,39 мм длины, наибольшая ширина в передней части тела 0,23—0,37 мм, в задней 0,37—0,49 мм. Ротовая присоска 0,068—0,086 мм в диаметре. Брюшная присоска 0,062—0,081 мм, расположена на расстоянии одной трети длины тела от заднего конца. Фаринкс достигает 0,037—0,062 × 0,026—0,044 мм; префаринкс составляет три четверти длины фаринкса. Пищевод

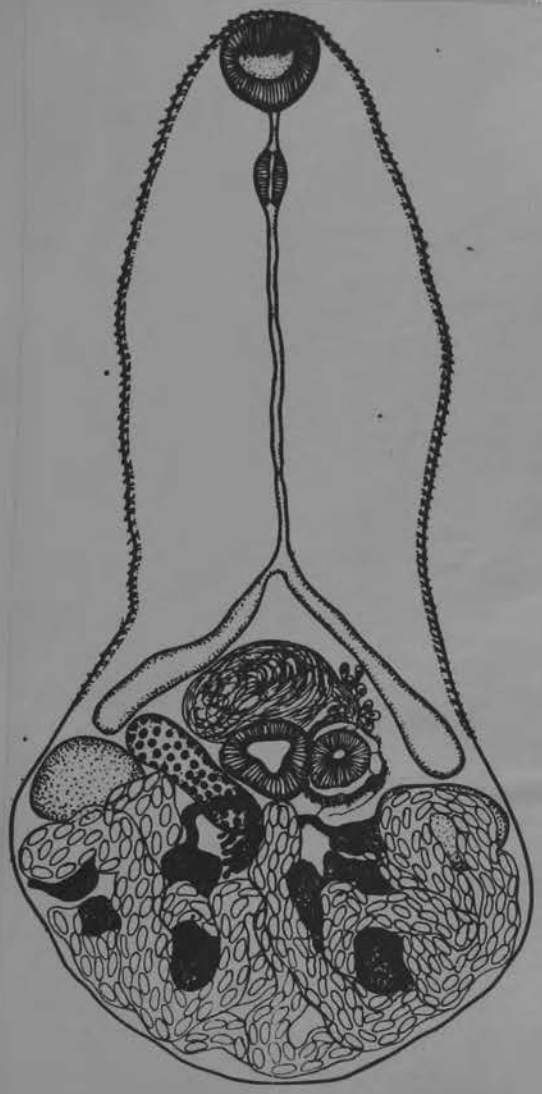


169

169. *Spelotrema excellens* Nicoll, 1907 (по Егершельду, 1909)

Microphallidae
(Skrjabin, vol. 6)

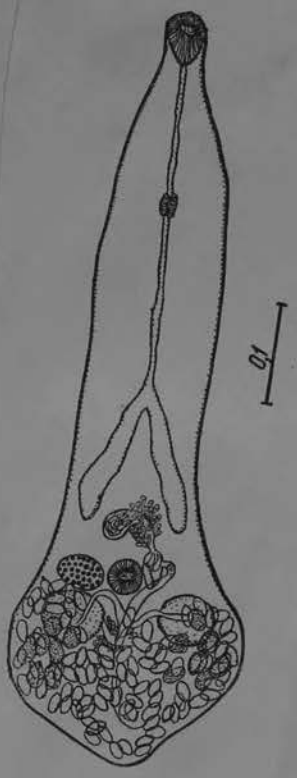
Spelotrema excellens Nicoll,1907



Spelotrema longicolle Yamaguti, 1939

(Рис. 173)

Хозяин: *Erolia alpina sakhalina*.
Локализация: тонкие кишки.
Место обнаружения: Япония.
Описание вида (по Ямагути, 1939). Тело вытянутое, сплющено дорзо-вентрально, 0,72—0,94 мм длины, 0,2—0,24 мм ширины,

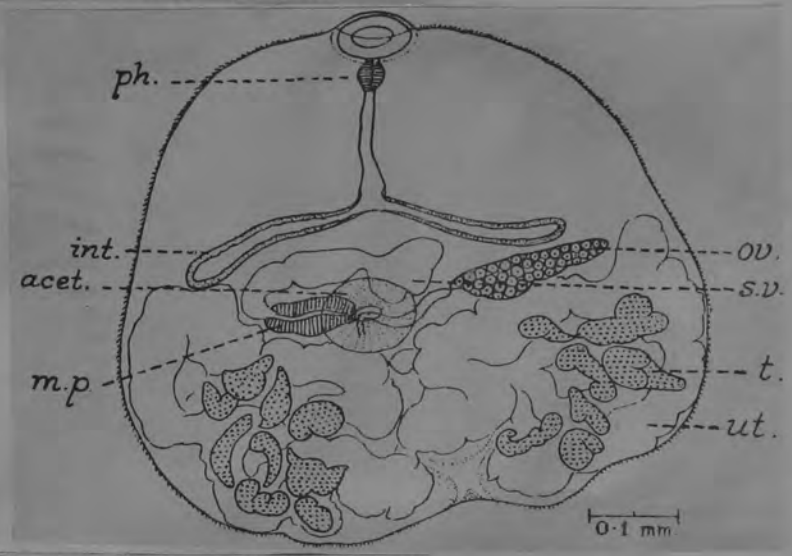


173

SPELOTREMA NARII, ~~N. SP.~~ (MICROPHALLIDAE) B. V. RAO, 1965

(Fig. 8)

Body short and cordiform or broadly traingular. Size 0.58 to 0.68 mm. long by 0.57 to 0.82 mm. wide. Body clothed with minute spines, the spination extending to the level of the posterior testes. Oral sucker somewhat smaller than ventral, its diameter varying from 0.074 to 0.11 mm. Ventral sucker or acetabulum situated in the middle third of the body, measuring 0.108 to 0.132 mm. Pre-pharynx is very short



and is almost inconspicuous. Pharynx bulbous measuring 0.02 to 0.024 mm. in diameter. Oesophagus fairly long, measuring 0.13 to 0.14 mm. and thicker just before its bifurcation into the intestine. Intestinal crura short, directed obliquely and almost horizontal, with thick walls and measuring 0.23 to 0.28 mm. in length. Testes lobulated and fragmented. Seminal vesicle large and median, situated in front of the ventral sucker, and consisting of a transverse and an oblique lobe. Ovary comparatively large in the shape of a knife-blade, tapering end outwards and quite lateral in position. It measures 0.20-0.25×0.04-0.09 mm. Vitellaria apparently consist of large coarse particles not clearly distinguishable from the lobulated masses of the testes and completely obscured by the testes on either side. Uterine coils occupy the region behind the acetabulum and filled with eggs. Eggs large and yellowish, measuring 0.22-0.03×0.012-0.016 mm.

Host : *Canis aureus naria* (The Indian Jackal).

Location : Small intestine.

Locality : West Godavary District, Andhra Pradesh, India.

DISCUSSION

The present form agrees with the structure of the genus *Spelotrema* (Jagerskiold 1901), as amended by Rankin (1940) in the following characters.

Body small, biscuit or club-shaped, anterior two-thirds covered with minute spines; suckers medium-sized and approximately equal. Pre-pharynx, pharynx and oesophagus always present; intestinal caeca always short never reaching below the posterior level of the acetabulum. Genital opening large and oblong at posterior level of acetabulum between it and the left testes. Genital sinus large, sinistral, filled with

– OVER –

large muscular male papilla attached to its dorsal median wall; seminal vesicle in front of the acetabulum, terminating in a ductus ejaculatorius that penetrates the length of the male papilla. Cirrus pouch absent; prostate present, vitellaria consist of two groups of follicles. one behind each testes. Ovary laterally placed.

There are at present eight known species of *Spelotrema*.

The species collected from the jackal and described here, differs from all of them in having (i) a cordiform shape, (ii) large, knife-blade shaped ovary, (iii) longer intestinal crura, and (iv) lobed seminal vesicle. It is accordingly considered to be a new species with the name *Spelotrema narii* n. sp.

The concept of the genus *Spelotrema* seems to be still vague and undecided. Rankin (1940) summarized the species of the genus with a note on *S. brevicaeca* which was then allotted by Tubangui and Africa (1938) to the Microphallidae from the family Heterophyidae. Baer (1943) synonymized the genus *Spelotrema* with *Microphallus*. But, Chen (1944) described *S. pseudogonotyla* from domestic ducks in Hongkong. Tubangui (1947) maintains the genus *Spelotrema* for *S. brevicaeca* in his checklist. Cable and Kuns (1951) created a new genus *Carneophallus* and tranferred *S. pseudogonotyla* to this genus on the character of the male papilla. Although the identity of *Spelotrema* with *Microphallus* was proposed by Baer (loc. cit.) and accepted by Stunkard (1951), workers like Tubangui (1947), Dawes (1947), Young (1949) and Hyman (1951) retain it as an independent genus.

The family Microphallidae cansists of representatives found chiefly in avian hosts. There are, however, a few records in mammalian hosts (Stunkard 1951), such as *Microphallus minus,* Ochi 1928, in rat, cat, dog and man in Japan; *M. gracilis,* Baer 1943, from *Neomys fodicus; M. opacus,* Rausch 1947, from the opossum and the racoon; *M. enhydrae* from the Arctic sea-otter; *M. limuli* from white mice and golden hamster (experimental hosts); and *S. brevicaeca* Africa and Garcia 1935, in man in Philippines. No microphallid trematode has therefore been known to occur in the jackal till now.

The following analysis shows the distribution of the members of the genus *Spelotrema* in various hosts :

	Species	*Host*	*Country*
1.	*S. pygmaeum.*	*Somataria mollissima, S. spectabilis, Oidemia nigra, O. fusca.*	Germany, Sweden, England and North America.
2.	*S. simile.*	*Larus argentatus, L. fuscus, L. ridibundus.*	Sweden.
3.	*S. claviforme.*	*Calidris alpina, Charadrius hiaticula, Anthus obuscurus.*	Germany, France, Sweden and England.
4.	*S. excellens.*	*Larus argentatus L., marinus, Calidris alpina, Tringa totanus, Charadridus hiaticula, Haematopus ostralugus, Vanellus vanellus.*	England and Sweden.
5.	*S. nicolli.*	*Herring gull (Larus spp)* (Experimental host).	Massachusetts U. S. A.
6.	*S. papillorobusta.*	*Arenaria interpresmorinella, Pisobia minutella, Crocethia alba.*	U. S. A.
7.	*S brevicaeca.*	Man and also *Sterna albifrons sinesis.*	Philippines.
8.	*S. pseudogonotyla.*	Domestic duck.	Hongkong.
9.	*S. narii* n. sp.	Jackal *(Canis aureus naria).*	India.

As truly representative of the family Microphallidae, *Spelotrema* finds birds as its most favourite host. *S. brevicaeca* and *S. narii* (present form) are however exceptional in inhabiting mammalian hosts as man and jackal respectively. The genus is distributed in Europe, U. S. A., Asia and the Philippines. The present one is the only record of *Spelotrema* in India.

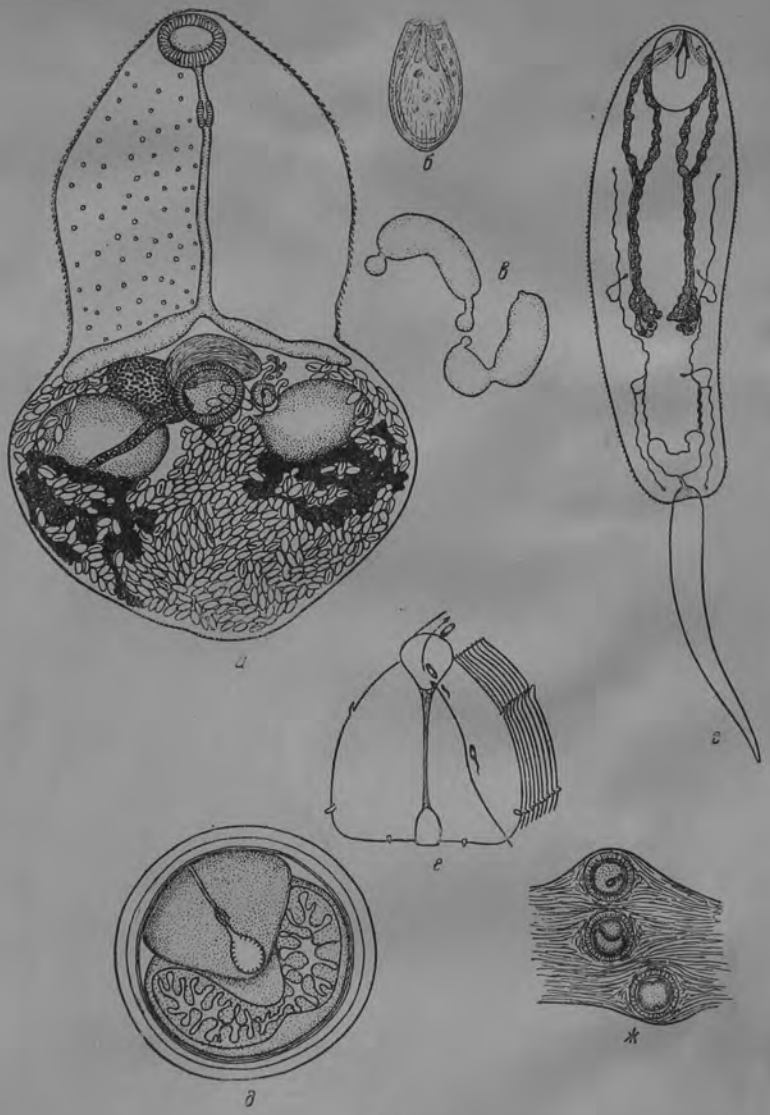
INDIAN J. HELMINTH. 17(2): 68-74

Spelotrema nicolli Cable et Hunninen, 1940

(Рис. 174)

Дефинитивный хозяин: *Larus argentatus* (экспериментально).
Промежуточный хозяин: *Bittium alternatum*.
Дополнительный хозяин: *Callinectes sapidus*.
Локализация: кишечник.
Место обнаружения: США.

Описание вида (по Кейблу и Хуннинену, 1940). Тело грушевидной формы, в передней части покрыто чешуевидными шипиками, простирающимися до уровня брюшной присоски. Длина тела 0,51—0,58 мм; наибольшая ширина в передней части тела 0,21—0,27 мм, в середине тела 0,21—0,25 мм, в заднем отделе тела 0,32—0,37 мм. Субтерминальная ротовая присоска 0,05—0,06 мм в поперечнике; брюшная присоска 0,050—

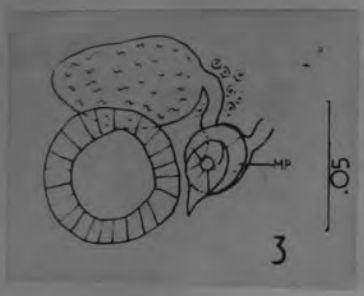


174

174. *Spelotrema nicolli* Cable et Hunninen, 1940 (по Кэйблу и Хуннинену, 1940)

а — марита; *б* — яйцо; *в* — спороцисты; *г* — церкарий; *д* — метацеркарий в цисте; *е* — проникновение церкариев в ткани краба; *ж* — метацеркарии, инцистированные в тканях краба

-over-

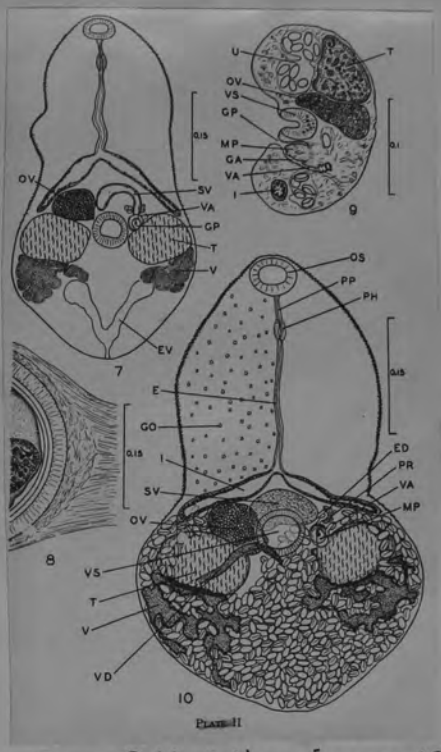


Microphallus nicolli (Cable and Hunninen, 1938) Baer, 1943 (Fig. 3)

Although Young (1938) described the life cycle of what he tentatively identified as *Levenseniella cruzi*, he later (1949) corrected the identity of the species to *Spelotrema nicolli* Cable and Hunninen, 1938. Intermediate hosts listed for *L. cruzi* in Yamaguti's (1958) treatise are consequently incorrect. Young preferred to consider his specimens as conspecific with *S. nicolli* although the hosts at each stage of the life cycle differed from those reported by Cable and Hunninen (1940) for this species on the east coast of North America; egg sizes, form of vitellaria, and proportions of the suckers were also mentioned as somewhat different. Subsequently, the genus *Spelotrema* has been synonymized with *Microphallus*, the species becoming *M. nicolli*.

The author obtained approximately 100 mole crabs, *Emerita analoga* from Santa Barbara, California and found that the metacercariae infecting the crabs was that of a single species, *M. nicolli*. Large numbers of metacercariae were fed to a mouse, and sexually mature worms were recovered after 33 hr. Metacercariae that were kept in sea water at 37 C also produced eggs readily after 48-hr incubation. Specimens of *Microphallus* from *Larus glaucescens* in the author's collection were similar to those from *Emerita analoga*, i.e., *M. nicolli*; no distinct differences could be found from the holotype of *M. nicolli* or the original description. Egg sizes overlapped those quoted in the original description and suckers were found to be almost equal in size. In young specimens the vitellaria consisted of five to six lobes fused in the center, but changed drastically in older specimens to become indistinct clusters. The male papilla opens symmetrically within the genital pore. The ejaculatory duct ends centrally within the male papilla which is one-third to one-half the diameter of the ventral sucker.

FROM CHIAG, 1965



From Cable & Hunninen, 1940

Spelotrema oedemia Belopolskaia, 1952

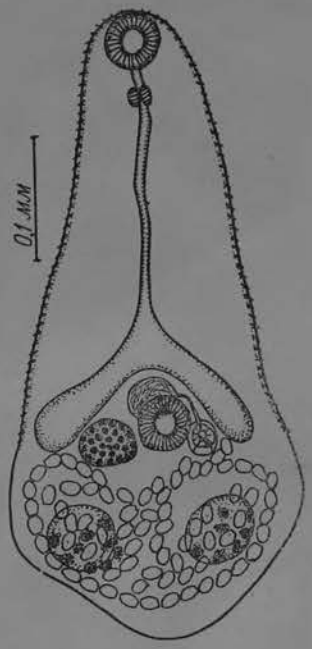
(Рис. 178)

Хозяин: *Oedemia fusca deglandi*.

Локализация: кишечник.

Место обнаружения: СССР.

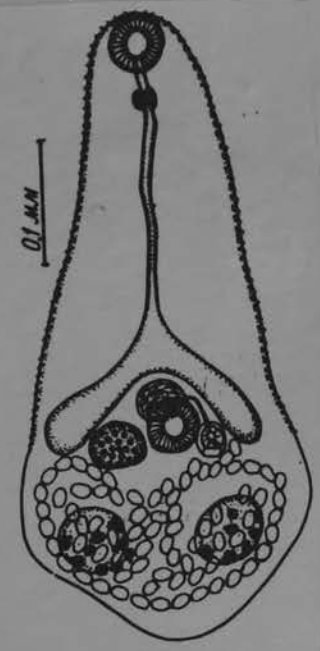
Описание вида (по Белопольской, 1952). Тело сильно вытянуто, сужено на переднем конце и расширено на заднем. Длина тела 0,472—0,495 мм, ширина тела на уровне семенников 0,167—0,234 мм. Ротовая присоска 0,041 × 0,038—0,041 мм; брюшная присоска 0,040 мм в диаметре. Префаринкс достигает 0,019—0,025 мм; фаринкс круглый,



178

Microphallidae
(Skrjabin, vol. 6)

Spelotrema oedemia Belopolskaia,1952



178

Spelotrema papillorobusta Rankin, 1940

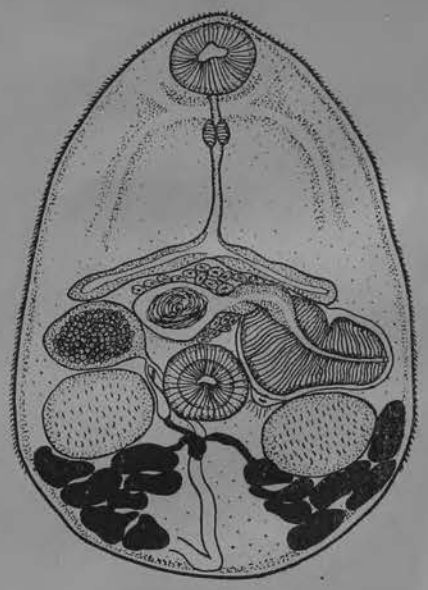
(Рис. 175)

Хозяева: *Arenaria interpres morinella, Pisobia minutilla, Crocethia alba.*

Локализация: слепые отростки кишечника и нижний отдел кишечника.

Место обнаружения: США.

Описание вида (по Ранкину, 1940). Тело короткое, передний конец вытянут, 0,31—0,46 мм длины и 0,22—0,23 мм ширины. Шипики идут до заднего уровня семенников. Ротовая присоска несколько меньше брюшной, 0,04 мм диаметром. Брюшная присоска на переднем уровне задней трети тела, 0,06 × 0,05 мм в диаметре. Префаринкс 0,01 мм длины; фаринкс бульбусовидный, 0,02 мм в диаметре; пищевод короткий и толстый, 0,05—0,08 мм длины. Ветви кишечника короткие, с толстыми



9. *Microphallus papillorobustos* (RANKIN, 1940)

Wirt/Herkunft. *Bucephala c. clangula* (L.), Schellente (Anseriformes, Anatidae) / Auf der Insel Hiddensee ermattet aufgegriffen und dem Tierpark zur Verfügung gestellt, Sektion am 15. 1. 1963 (1 ♀).

Lokalisation. Dünndarm.

Präparat-Nr. kT 14/24, 27 (2 Exemplare).

Beschreibung (vgl. Abb. 10).

Cuticula bestachelt; Körper ei- bis birnförmig, 0,330—0,396 mm lang und 0,286 mm breit; Oesophagus 0,038—0,097 mm lang; Praepharynx nicht erkennbar; Mundsaugnapf 0,048—0,055 mm lang und 0,048 bis 0,062 mm breit; Pharynx 0,024—0,028 mm lang und 0,024 mm breit; Bauchsaugnapf 0,038 bis 0,044 mm lang und 0,048 mm breit; Testes im Hinterkörper, seitlich, parallel zueinander gelegen, glattrandig, 0,035—0,079 mm lang, 0,041 bis 0,090 mm breit; Ovarium neben bzw. schräg vor dem Bauchsaugnapf, glattrandig, breitgestreckt, 0,031—0,038 mm lang, 0,076—0,079 mm breit; Dotterstöcke in Form zweier unregelmäßiger Sternfiguren im Hinterkörper; Genitalpapille stark muskulös, zweiteilig, 0,053—0,056 mm lang und 0,039 mm breit, Vesicula seminalis 0,090 bis 0,097 mm lang und 0,021—0,024 mm breit; Exkretionsblase V-förmig; Eigröße 0,018—0,021 × 0,009—0,012 mm.

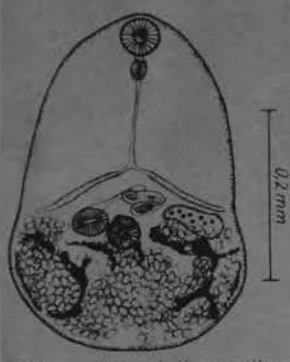


Abb. 10. *Microphallus papillorobustus* aus *Bucephala clangula* (Orig. ZIEGER).

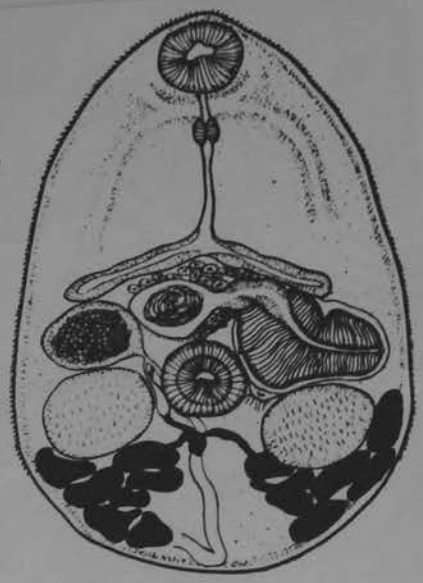
Bemerkungen.

Körper- und vor allem Organmaße der vorliegenden beiden Exemplare sind etwas kleiner als es für *M. papillorobustus* bei BELOPOL'SKAJA in SKRJABIN (1952, 1963) angegeben ist, auch erscheint die Struktur der Dotterstöcke etwas abweichend.

From Odening, 1964

Microphallidae
(Skrjabin, vol.6)

Spelotrema papillorobusta Rankin,1940



Spelotrema pirum (Afanassjew, 1941) Belopolskaia, 1952

Синоним: *Paraheterophyes pirum* Afanassjew, 1941

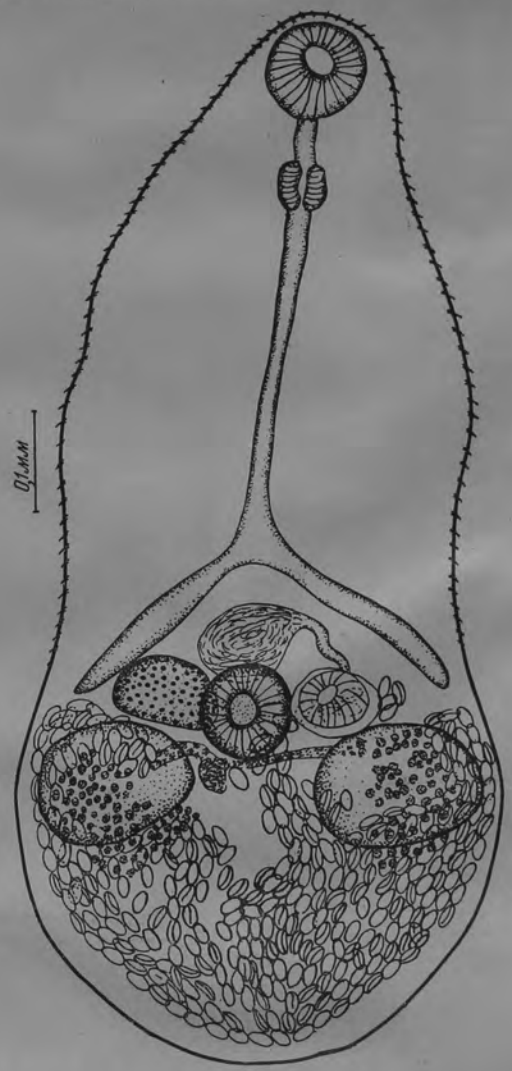
(Рис. 176)

Хозяева: *Alopex lagopus beringensis, Enhydra lutris.*

Локализация: кишечник.

Место обнаружения: СССР.

Описание вида (по Афанасьеву, 1941). Тело грушеобразной формы, 0,70—0,80 мм в длину, при наибольшей ширине 0,30—0,33 мм. Кутикула покрыта мелкими шипиками. Ротовая присоска достигает 0,060—0,080 мм; префаринкс 0,030—0,040 мм; фаринкс 0,032—0,045 мм. Длинный пищевод достигает 0,20—0,27 мм. Короткие ветви кишечника не доходят до переднего края семенников. Брюшная присоска



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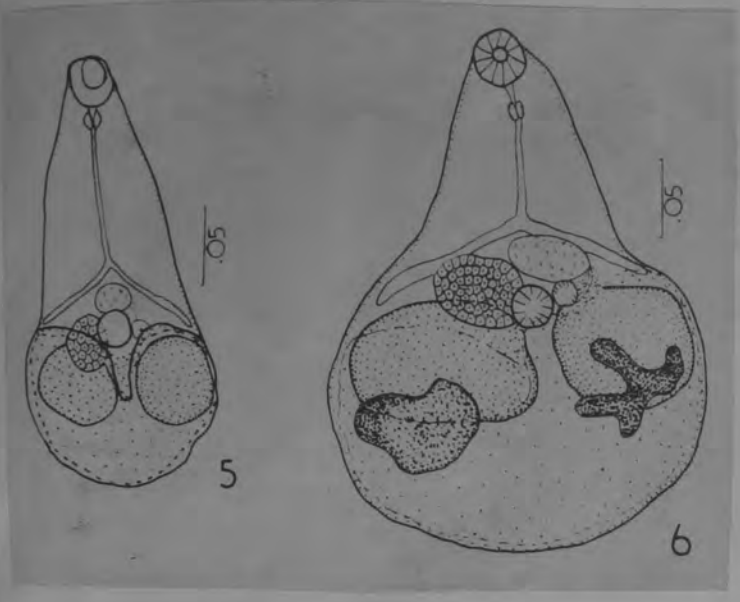
176. *Spelotrema pirum* (Afanassjew, 1941) (по Белопольской, 1952)



Microphallus pirum (Afanassjew, 1941) Belopolskaia, 1952 (Figs. 5, 6)

Schiller (1959), reviewed the taxonomic changes of the species. *Microphallus* (syn.: *Paraheterophyes p.* Afanassjew, *Spelotrema p.* (A.) Belopolskaia, 1952; *phallus enhydrae* Rausch and Locker, His report on its life cycle is incorrect, as the sporocyst and cercarial stages ar cerned. The "early stage" cercaria is a phallid type but the "completely devel cercaria is a renicolid type as pointed o Cable (1963). "Sporocysts" reared exper tally appear to be hemiuroid cercariae oped within their membranous cysts an like those that the writer has found in n infections of *Thais emarginata* (Des 1839), the experimental host used by Sc Microphallid metacercariae from *Paguru sutiusculus* (Dana, 1851) and *Telmessu* be that of *M. pirum*, but the average l 0.580, is much greater than the average l 0.350, of specimens found in *Enhydra* (L.), the natural host. Schiller fed me cariae from *P. hirsutiusculus* to experi hosts which included the hamster, re arctic fox, and glaucous winged gull. mens varied greatly in body size with host, but the proportions of the esophag suckers remained the same.

Measurements of *M. enhydrae* as giv Rausch and Locker (1951) generally o those of *M. pirum* as quoted by Belop (1952). However, most of the specimens *enhydrae* were shorter than 0.580 whi range in length for *M. pirum* was giv 0.70–0.80. The figure of *M. enhydrae*

a prominent pharynx which is nearly th of the oral sucker, but specimens of *M. enh* donated by R. Rausch show a pharynx les one-third the size of the oral sucker. The papilla in *M. enhydrae* is about one-ha size of the ventral sucker, while the papilla in the figure of *M. pirum* is slightl than the diameter of the ventral sucker. *M. enhydrae* and *M. pirum* were found i same hosts, it is highly likely that they are specific despite the differences menti above.

On the basis of Rausch and Locker's scription of *M. enhydrae*, Biguet, Deblock Capron (1958) suggested that it was a synonym of *Microphallus pygmaeum*. H ever, specimens of *M. pygmaeum* in the wr collection were compared with *M. pirum* Rausch's collection and found to be quite erent. *Microphallus pygmaeum* is roughly riangular in body shape, heavily spined, with w, large eggs restricted to the posterior fourth f the body. *Microphallus pirum* (= *M. enydrae*) has a pointed anterior end and broadly ounded posterior end, with very few, small pines, and abundant eggs located in the posrior one-third to one-half of the body.

Specimens of *M. pirum* in the minimum size ange (0.11–0.34 × 0.08–0.26) but with the ame body shape and egg size as specimens om *Enhydra lutris*, were found in the white inged scoter, *Melanitta deglandi* (Bonaparte, 850). In unflattened specimens, the edges of e hind body are curled ventrally (Fig. 5). lattened specimens reveal an exaggerated posrior end filled with numerous eggs; the relavely short, widely divergent ceca are located mid-body (Fig. 6).

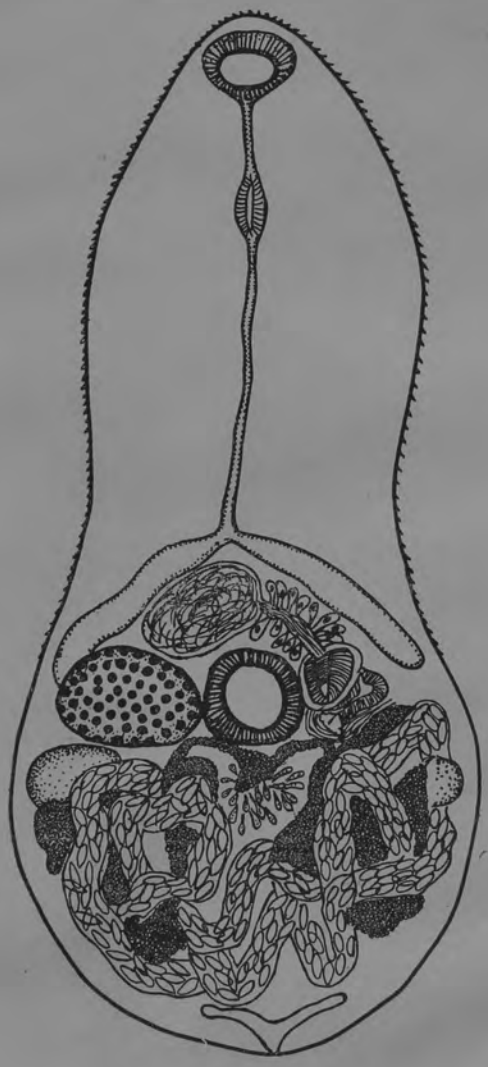
FROM CHING, 1965

Spelotrema prima (Jägerskiold, 1909) Belopolskaia, 1952

Syn: Spellophallus primus Jaegerskiöld, 1909

Hosts: Somateria mollissima
Haematopus ostralegus
Squatarola squatarola

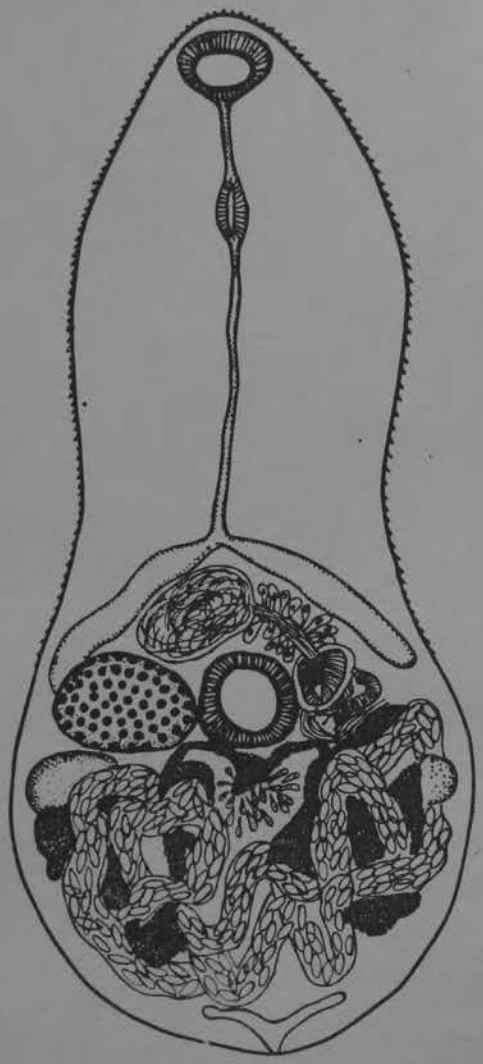
Int. Host: Macophthalmus dilatatus



170. *Spelotrema prima* (Jägerskiöld, 1909) (по Егершельду, 1909)

Microphallidae
(Skrjabin, vol.6)

Spelotrema prima (Jagerskiold,1909)

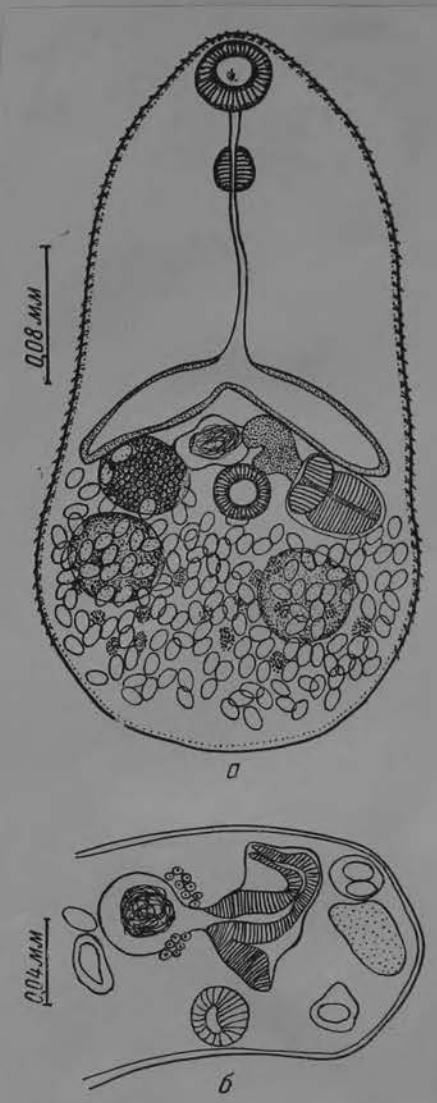


170

Spelotrema pseudogonotyla Chen, 1944

(Рис. 177)

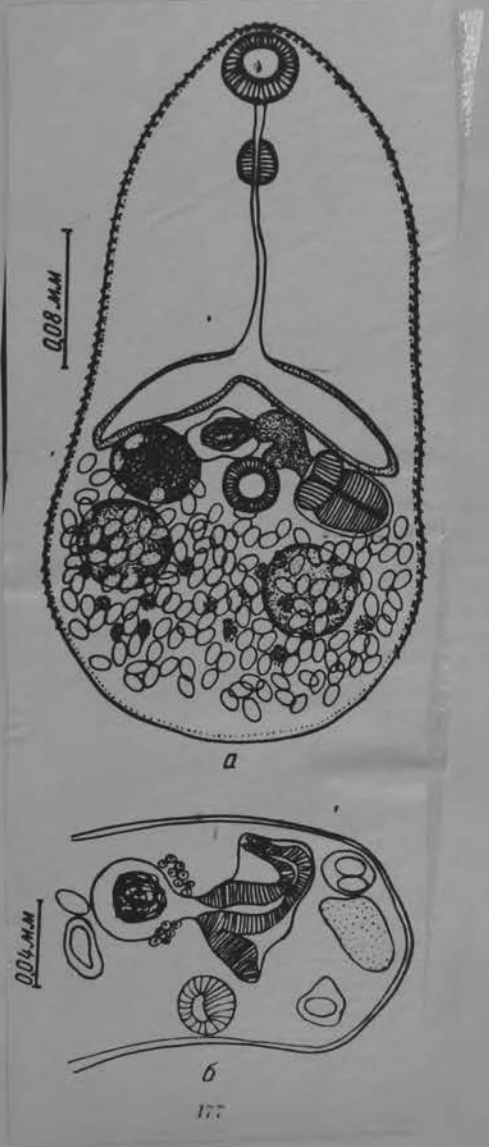
Хозяин: домашняя утка.
Локализация: кишечник.
Место обнаружения: Гонконг.



177

Microphallidae
(Skrjabin, vol.6)

Spelotrema pseudogonotyla Chen,1944



а

б

177

Spelotrema simile (Jägerskiöld, 1900) Looss, 1902

Синонимы: *Levinsenia pygmaeum* var. *similis* Jägerskiöld, 1900; *Levinsenia similis* (Jägerskiöld, 1900) Nicoll, 1906

(Рис. 168)

Хозяева: *Larus argentatus, L. fuscus, L. ridibundus.*

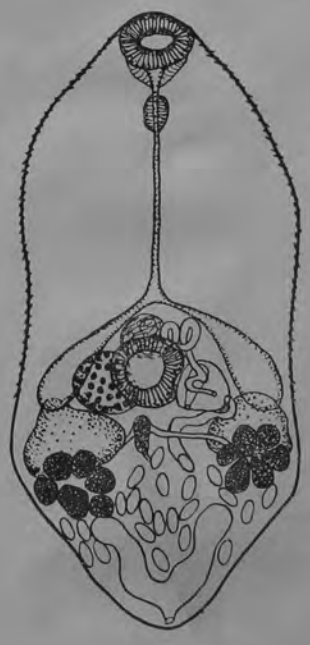
Локализация: кишечник и слепые отростки.

Место обнаружения: Швеция.

Описание вида (по Егершельду, 1900). Тело грушевидное или бисквитовидное; передний конец вытянут. Кутикула покрыта шипиками до уровня семенников; размер их 0,003 мм. Длина тела 0,42—0,60 мм, наибольшая ширина 0,20—022 мм. Ротовая присоска терминальная, 0,048—0,060 мм в диаметре. Брюшная присоска всегда немного больше, около 0,052—0,064 мм, лежит позади середины тела. Префаринкс очень короткий; фаринкс достигает 0,032—0,036 × 0,020—0,022 мм. Пищевод очень длинный, 0,16—0,20 мм длины, включая фаринкс.

Ветви кишечника 0,1—0,13 мм длины, тянутся до заднего края брюшной присоски. Семенники лежат симметрично позади брюшной присоски, неправильно-овальные. Половой бурсы нет. Семенной пузырек сферический, 0,036—0,04 мм в диаметре, частично прикрыт брюшной присоской и обычно меньше присоски. Семенной пузырек соединен с генитальной полостью узким S-образным каналом. Простатические железы слабо заметны. Семяизвергательный канал проходит через большую мускулистую папиллу. Генитальная полость открывается большим, неправильным отверстием. Яичник лежит между правым семенником, семенным пузырьком и брюшной присоской, иногда частично закрыт брюшной присоской. Форма яичника почковидная, размер 0,050 мм. Тельце Мелиса лежит позади брюшной присоски; лауреров канал имеется. Желточники собраны в две группы; фолликулы расположены в виде розетки. Большой желточный резервуар лежит позади брюшной присоски. Матка занимает заднюю часть тела и открывается в генитальную полость слева. Яйца 0,023 × 0,011 мм.

Литература: Jägerskiöld, 1900; Looss, 1902; Nicoll, 1906.



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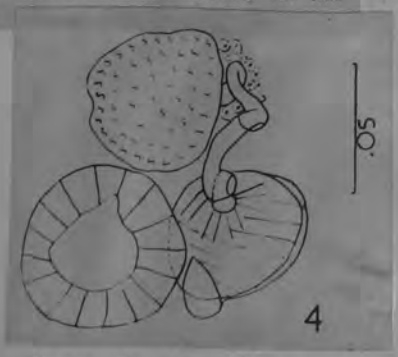
Microphallus similis (Jaegerskioeld, 1900) Baer, 1943 (Fig. 4)

Of the five species of *Microphallus* present in this locality, *Microphallus similis* is the largest in body size (0.4–0.6 × 0.2–0.35 in ten specimens measured) with the most complicated male papilla. The male papilla is slightly smaller than the ventral sucker; the ejaculatory duct curves in an S-shape before piercing the male papilla excentrically and usually in a sinuous direction. The genital opening contains part of the muscular male papilla but not the opening of the ejaculatory duct.

The presence of *M. similis* in large numbers in the intestine of *Larus glaucescens* indicates a new host record and new locality for this parasite.



FROM CHING, 1965

***Spelotrema* sp.** (Fig. 43)

Only 4 examples were obtained from the digestive tract of the marsupial mammals.

Host: *Didelphis marsupialis* Linnaeus-1 ex., *D. paraguayensis* Oken-1 ex.

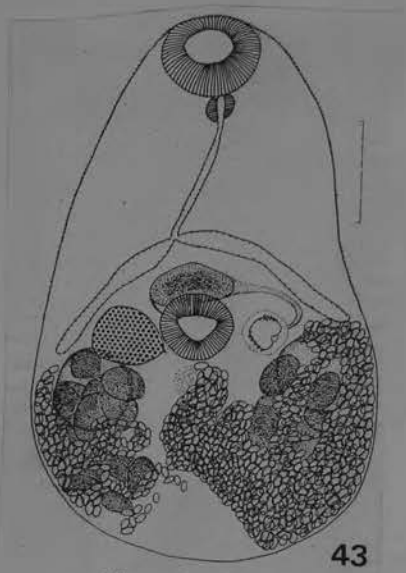
Habitat: Small intestine.

Locality: Condebamba Valley (Tabacal), Nanchoc (Bolivar), Dpto. Cajamarca. PERU

Date: September 27 and October 1, 1976.

This species is closely allied to *S. skrjabini* (Caballero, 1959) Yamaguti, 1971, but, at present, the identification is suspended because of unavailability of the original description.

From Miyazaki, Kifune, Habe and Ueyama, 1978



Microphallidae

Fig. 43. *Spelotrema* sp. from *Didelphis paraguayensis*.

Scale: 0.1 mm.

SPELOTREMA

Microphallidae

SPHAIROTREMA Deblock & Ky, 1966

Sphairiotrema nov. gen. Deblock & Ky, 1966

Microphallidé, Sphairiotrematinés n. sous-fam. Petits distomes piriformes, à cuticule épineuse. Ventouse orale subtermino-ventrale. Prépharynx présent, court. Œsophage modérément long, caecums courts. Ventouse ventrale unique située au niveau du second tiers du corps. Testicules symétriques postérieurs à l'ovaire. Poche vésiculo-prostatique présente, ne contenant pas l'organe copulateur mâle à l'état d'invagination ou de rétraction ; ce dernier, de structure complexe, est complètement enfermé dans une enveloppe propre, ou « phallosphère », distincte de l'atrium génital et de la poche vésiculo-prostatique. Ovaire sub-médian dextre. Utérus post-caecal. Œufs operculés

(12) A noms qui n'a passé par l'étroite ouverture supérieure du kyste, ce que nous n'avons pu préciser, mais nous semble improbable ; cette disposition engendrerait des difficultés lors de l'acte de ponte et de la libération des œufs.

petits. Vitellogènes en deux groupes de follicules massés séparément à droite et à gauche au niveau des testicules, comme chez *Microphallus* ou *Levinseniella*. Atrium génital réduit, juxta-acétabulaire gauche. Vésicule excrétrice en V. Parasite du tube digestif d'oiseaux.

Espèce type : *Sphairiotrema prudhoei* n. sp.

Hôte : *Charadrius hiaticula L.* (Grand Gravelot).

Localisation géographique : îles Orcades (Grande-Bretagne).

Spécimen déposé dans les collections du British Museum (Section d'Histoire Naturelle).

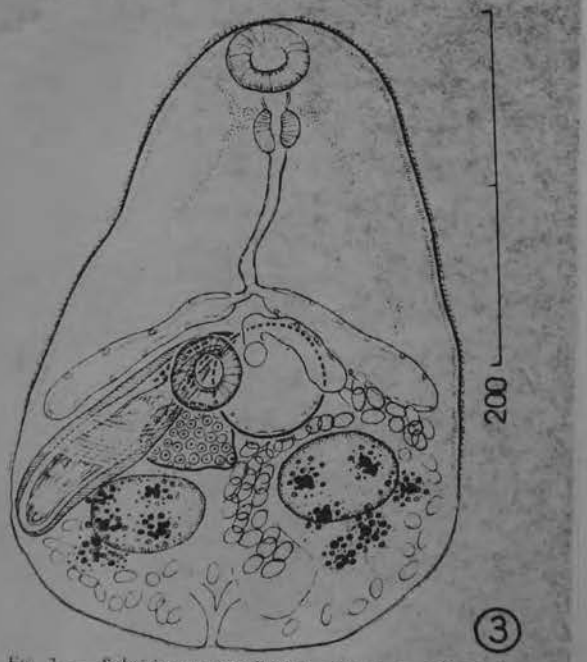


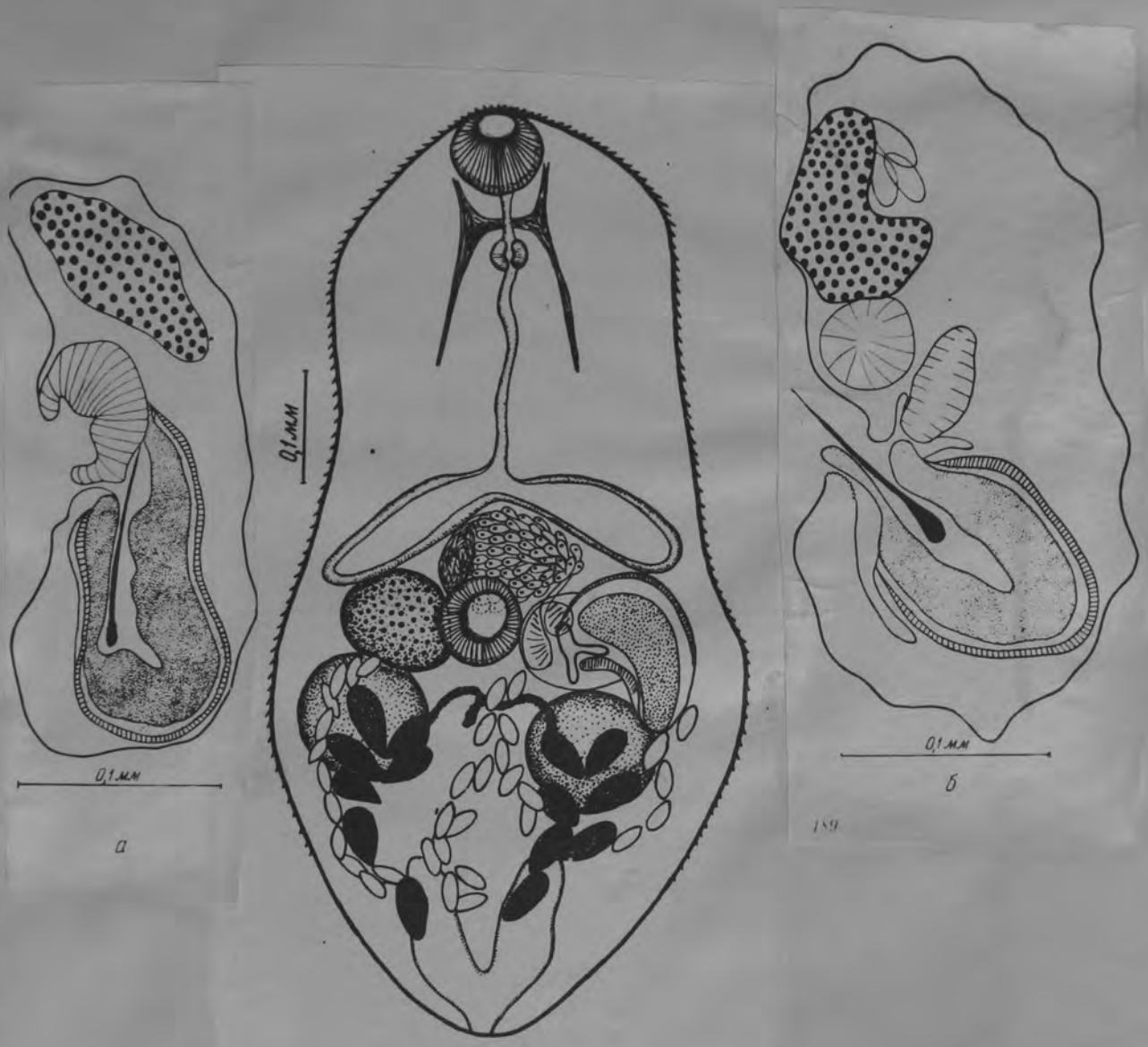
FIG. 3. — *Sphairiotrema prudhoei n. gen. n. sp. Charadrius hiaticula* L., Orcades. Distome mûr, vue ventrale.

SPHAIROTREMA

Spiculotrema Belopolskaia, 1949

Generic diagnosis. — Microphallidae, Microphallinae: Body small, elongated pyriform, spinose. Oral sucker ventroterminal, prepharynx and esophagus long; ceca short, wide, not extending into hindbody. Acetabulum small, just postequatorial. Testes round, symmetrical, just postacetabular. Seminal vesicle voluminous, between acetabulum and ceca. Prostate cells well developed, covering most of seminal vesicle. Cirrus projecting into genital atrium in form of a muscular papilla. Genital atrium situated on the left of acetabulum, with a large lateral outgrowth containing "irritable organ" consisting of a long spicule and a chitinous plate enclosed in a muscular sac. Ovary rounded, between right cecum and right testis on the right of acetabulum. Shell gland complex postacetabular. Uterus coiled in hindbody; eggs small. Vitelline follicles divided into symmetrical groups overlapping testes anteriorly. Excretory vesicle Y-shaped, with short stem. Parasitic in birds.

Genotype: *S. litorale* Belopolskaia, 1949 (Pl. 74, Fig. 901), in *Tringa incana, Arenaria interpres, Calidris alpina, C. ruficollis;* Russia.



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Spiculotrema litoralis Belopolskaia, 1949

Hosts: *Tringa incana*
Arenaria interpres
Calidris alpina
C. ruficollis

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