1990

Binder 091, Hemiuridae Aphanurinae A-Z [Trematoda Taxon Notebooks]

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Hemiuridae
Chauhan 1935 Aphanurinae

(ii) Genus **Ahemiurus, gen. nov.** = Derogenes

Generic diagnosis : *Ahemiurinae*, **sub-fam. nov.** ; **with Subfamily characters**

Rather small forms, with prominent **pre-oral dorsal lip** ; **ecsoma** extremely rudimentary or absent. Cuticle **with prominent transverse** annulations all over. Testes small, spherical **situated just behind first** half of body. Vesicula seminalis pear-shaped. **Pars prostatica long,** narrow, surrounded by a large number of prostate cells. **Ductus** hermaphroditicus spindle shaped, enclosed in **a** hermaphroditic **sac.** Genital pore situated at level of pharynx. Vitellaria composed of two elongated, oval, compct masses, situated symmetrically ; uterus post-acetabular, intercaecal. Excretory vessel Y-shaped. Eggs small.

Type species—*A. karachii* (Srivastava, 1941), **n. comb.**

3. **Ahemiurus karachii** (Srivastava, 1941), **n. comb.**

(Text-Fig. 3)

Manter, H. W. (1947). *Amer. Midl. Nat.* 38 (2) : 343.

Specific diagnosis : *Ahemiurus*, **gen. nov.** ; with Generic characters.

Body elongated, cylindrical, narrow, of nearly uniform **breadth** throughout ; with prominent transverse annulation all over, 1·4×0·2 (maximum). Ecsoma extremely rudimentary. Oral **sucker subterminal,** spherical, 0·08 (diameter). Oral lip prominent. Prepharynx **absent.** Pharynx small. Oesophagus present. Intestinal crura long, **narrow,** tubes extending upto posterior end, never extending into tail. Acetabulum spherical, situated at the end of first quarter of body, 0·15 (diameter). Testes small, spherical, equal, 0·06 (diameter), situated symmetrically just behind the first half of body. Vesicula seminalis pear-shaped, thin-walled sac, *slightly* bigger than testes, situated medially, a short distance, in front of testes. Pars prostatica long, narrow, surrounded by large number of prostate gland cells. Ductus hermaphroditicus spindle-shaped, enclosed in a hermaphroditic sac. Genital pore at level of anterior

situated in front of and slightly overlapping the vitellarium. **Vitellarium** single, large, ovoid, 0·24×0·18, situated at the base of third **quarter of** body. Receptaculum seminis present in some **specimens, small, bull-**shaped, situated at the angle between ovary and **vitellarium, near shell-**gland. Uterus post testicular, never entering **ecsoma. Excretory** bladder Y-shaped, main stem bifurcating just behind **acetabulum into** two lateral cornua, which unite dorsally to oral sucker. **(after description of Srivastava)**

Srivastava regarded the species unique in having **an extremey rudi**mentary tail and a single compact vitelline mass.

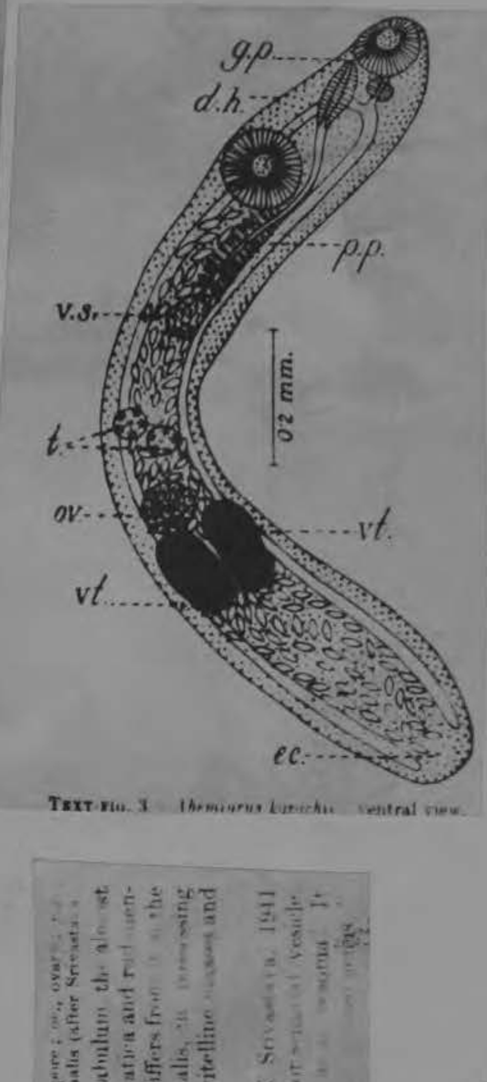
Host.—*Clupea ilisha.*

Habitat.—Stomach.

Locality.—Allahabad, Puri and Karachi (Pakistan).

Distribution.—Recorded to be **a very common parasite of the stomach** of the Indian migratory fish, *Clupea ilisha*, during **winter months, when** about ninety per cent hosts **were found to labour them. It represents** probably the most common trematode **infecting Indian fishes, though** the infestation was never found to be very heavy, the **maximum number** found at Allahabad being nineteen.

margin of pharynx. Ovary situated just in front of vitellaria, 0·06-0·08. **Vitellaria a** pair of elongated, oval, compact bodies, situated symmetrically at the junction of last two third of body. Uterus occupies **whole of** intercaecal space, between ventral sucker. Excretory bladder as in *Aphanurus monolecithus* (Srivastava), Y-shaped, main stem bifurcating behind acetabulum ; two crura uniting dorsally to oral sucker. Eggs numerous, operculate, 0·015—0·019×0·08.



TEXT-FIG. 3 *Ahemiurus karachii* ventral view.

d.h., Ductus hermaphroditicus ; e., Ecsoma ; g.p., Genital pore ; ov., ovary ; p.p., **Pars prostatica** ; **t., Testes** ; vt., Vitellarium ; v.s., Vesicula seminalis (after Srivastava).

Srivastava (1941) states that in the position of acetabulum the almost **symmetrical position** and size of testes, long pars prostatica and rudimen**tary tail the species resembles** *A. monolecithus*, but differs from it in the **relative positions** of genital pore and vesicula seminalis, in possessing **two compact, elongated** oval, symmetrically placed vitelline masses and **in marked differences** in measurements.

Manter (1947 ; p. 343) states that "*S. karachii* Srivastava, 1941 has unlobed vitellaria, a long pars prostatica, posterior seminal vesicle and a "tail" too rudimentary to be recognised as an ecsoma. It probably belongs in the genus *Derogenes* or some closely related genus."

See Chauhan 1953 p. 298
Host: Clupea longiceps
Stomach - Arabian Sea
Pakistan

Opisthadena karachii (Srivastava, 1941) Yam. 1958?
probably Derogenes

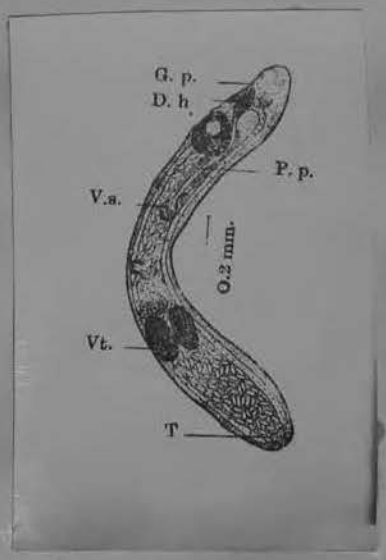
Syn. Sterrhurus karachii Srivastava, 1941
Athesmiurus sp. (S.) Chauhan, 1954.

Length 1.4 mm. width 0.2 mm.
Prominent transverse annulations "all over".
"An extremely rudimentary tail is present".
Oral sucker 0.08 mm. in diameter
Acetabulum 0.15 mm. in diameter, at en of first quarter
Pharynx 0.05 by 0.04 mm.
Testes symmetrical just behind first half of body.
Seminal vesicle pear-shaped, a short distance anterior to testes, continued into a long narrow pars prostatica surrounded by many gland cells.
Spindle-shaped ductus hermaphroditicus enclosed in a sinus sac.
Genital pore at anterior margin of pharynx
Ovary just in front of vitellaria. Vitellaria of two elongate oval compact bodies, symmetrical.
Uterus fills intercecal space behind the acetabulum.
Eggs 15 to 19 by 80 (:8 ??) μ

Host: Clupea longiceps; stomach
Locality: Karachi, Arabian Sea.

Compared with S."fundulus" in character of vitellaria.
very different in prostatic gland

From: Indian Journ. Vet. Sci., 11: 45-48. 1941



Not in genus Sterrhurus

p.p. very different
sem. ves. different
Much like Derogenes except acetabulum is far forward.

Hemiuridae

Anahemiurus trachuri ~~nov.-sp.~~
Kurashvili, 1958

AHEMIURUS

Aphanuroides Nagaty and Abdel Aal, 1962

Generic diagnosis:

Hemiuridae, Lecithasterinae:

Body small, elongate, without cesoma: cuticula serrate obliquely directed backwards all round body length with groups of transverse lines. Oral sucker small. Pharynx well developed, caeca terminating blindly near, but not quite reaching posterior extremity. Ventral sucker larger than oral sucker, near anterior extremity, in anterior fourth of body length. Testes tandem wide apart from acetabulum, in second quarter of body length. Seminal vesicle of two parts, bulbous part and elongated part. Pars prostatica slighty sinuous, overlapping acetabulum, uniting anteriorly with metraterm leading to hermaphroditic duct. Genital pore protruding from surface and open to outside ventral and posterior to oral sucker. Ovary median, postequatorial. Vitellaria composed of two compact lobes, uterine coils extending as far as near blind ends of caeca posteriorly. Eggs small excretory arms united posteriorly with a very short stem and opens through large excretory pore.

Type species	*A. lethrini*
Type host	*Lethrinus nebulosus*
Organ	Alimentary tract
Locality	Ghardaga, Red Sea.

FROM NAGATY AND ABDEL AAL, 1962

APHANUROIDES LETHRINI n. g. n. sp. NAGATY AND ABDEL AAL, 1962

(Fig. 1)

Description based on whole mounts of two specimens from *Lethrinus nebulosus* locally called "Sho-ora". Body small, elongate 0.53-1.25 long and 0.06-0.20 wide with tapering anterior end. Cuticle serrate, running obliquely, with groups of transverse lines. Ecsoma absent. Oral sucker small, nearly terminal 0.05-0.06. Pharynx well developed 0.03 in diameter. Intestinal caeca not reaching posterior extremity, terminating at 0.06 from posterior end. Ventral sucker larger 0.08-0.11 by 0.09-0.12, submedian near anterior extremity, at middle of first quarter of body length, 0.03-0.06 from oral sucker. Ratio of oral to ventral suckers 1 : 2.

FIG 2

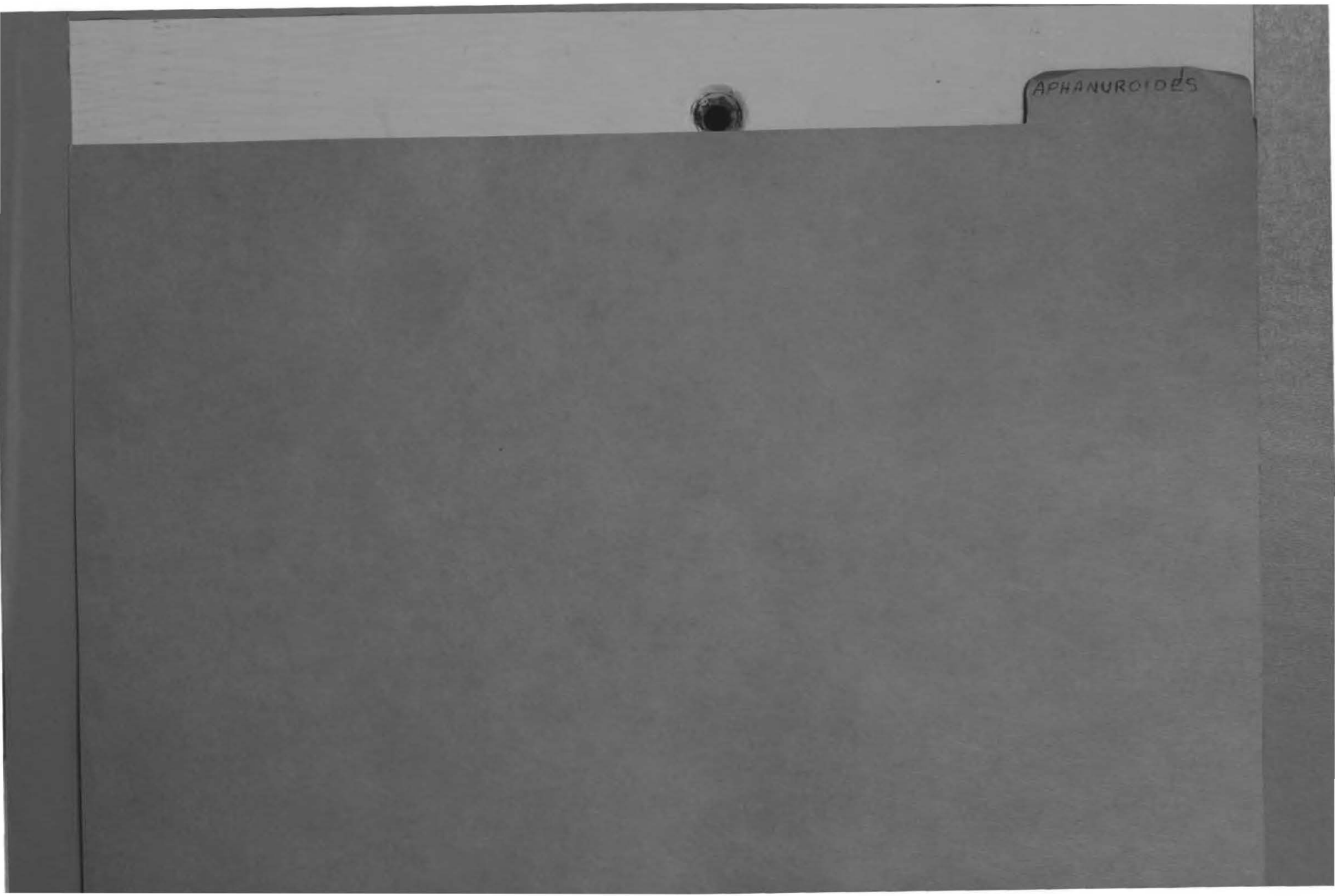
Testes tandem transversely elongate, anterior testis 0.03-0.09 by 0.08-0.12 and posterior testis 0.03-0.09 by 0.09-0.15; in second quarter of body length and wide apart from acetabulum and may be separated by uterus. Vesicula seminalis consists of two parts, a bulbous part proximally immediately anterior to anterior testis 0.11 by 0.09, and an elongated part distally 0.14 by 0.05; pars prostatica slightly sinuous 0.12 long, overlapping acetabulum uniting with metraterm anterior to acetabulum, ductus hermaphroditicus 0.05 long. Genital atrium slightly elongate and genital pore ventral and immediately posterior to oral sucker.

Ovary median transversely elongate, 0.06-0.08 by 0.05-0.15 in anterior part of third quarter of body length, immediately posterior to testes and slightly separated from it by uterus. Receptaculum seminis not distinct. Vitellaria composed of two compact lobes, transversely elongate, inner broders overlapping anterior lobe 0.03-0.05 by 0.06-0.11, posterior lobe 0.03-0.06 by 0.08-0.14; mainly in median plane, in third fourth of body length. Coiled uterus filling greater part of body reaching near blind end of caeca posteriorly, passing between testes and ovary, anteriorly reaching to acetabulum and metraterm joining with ductus hermaphroditicus preacetabular. Eggs small oval, averaging 0.015 by 0.008. Excretory system consists of two excretory ducts united posteriorly with a very short stem and open through large excretory pore.

FIG 1a

Comparisons:

This genus resembles *Aphanurus* Looss, 1907, but differs from it in having: (1) testes tandem instead of being diagonal; (2) vitellaria composed of two lobes, instead of one; (3) cuticula serrate obliquely directed backwards instead of fine annulations running obliquely from ventral to dorsal side and (4) hermaphroditic duct is not inclosed in an elongated pouch.


APHANUROIDES

Aphanurus Looss, 1907

Syn. *Chauhanurus* Skrjabin et Guschanskaja, 1954

Generic diagnosis. — Hemiuridae, Lecithasterinae: Body very small, without tail. Cuticle with fine annulations running obliquely from ventral to dorsal side. Oral sucker subterminal, followed by globular pharynx, esophagus short, ceca reaching to posterior extremity. Acetabulum larger than oral sucker, in anterior third of body. Testes diagonal, in middle third of body. Vesicula seminalis round to fusiform, immediately pretesticular, pars prostatica extending sinuously from seminal vesicle to dorsal side of acetabulum. Ductus ejaculatorius joining metraterm in front of acetabulum to form hermaphroditic duct which is enclosed in an elongate pouch. Genital atrium small, opening midventrally behind oral sucker. Ovary submedian, postequatorial. Vitellaria single, compact or slightly indented. Uterine coils extending as far as or nearly to posterior extremity; eggs small, without polar filaments. Excretory arms wide, containing granules or concretions, uniting dorsal to oral sucker or pharynx. Parasitic in esophagus or stomach of marine fishes.

Genotype: *A. stossichi* (Montic., 1891) Looss, 1907 (Pl. 21, Fig. 265), in *Clupea pilchardus*, *C. aurita;* Naples. Also in *Lichia amia*, *Box boops*, *Meana vulgaris* and *Caranx trachurus* from Mediterranean, in *Dorosoma thrissa* from Hamana-ko, Japan, and *Engraulis encrassicholus*, *Clupea sprattus*, *C. pilchardus;* Spain.

Other species:

A. caesionis Yamaguti, 1452 in *Caesio kuning;* Macassar.

A. harengulae Yamaguti, 1938, in *Harengula zunasi;* Hamana-ko, Japan.

A. microrchis Chauhan, 1945, in *Mugil parsia*, Bombay.

A. monolecithus (Srivastava, 1941) Manter, 1947, syn. *Sterrhurus m.* S., in *Clupea ilisha;* India.
Skrjabin and Guschanskaja (1954) proposed a new genus *Chauhanurus* for this species.

A. virgula Looss, 1907, in *Cepola rubescens*, *Engraulis encrassicholus;* Triest, Black Sea.

APHANURUS Looss,1907

Very small forms without tail. Body rings sharply distinct to the posterior end, the folds do not run directly across the body but slant foward from the ventral to the dorsal surface. Seminal vesicle not bipartite but simple. Vitellaria of the two sides fused to form a single organ the edge of which occasionally shows sharp, deep indentations but no regular lobes.

Type species: A. stossichi (Mont.)

Synonym: Apoblema stossichi Monticelli

Aphanurus stossichi (Mont.)

Length 0.7 to 0.9 . width and thickness 0.2 to 0.3. Ventral sucker at least twice as large as oral sucker, in full grown individuals somewhat greater. Average sizes: 0.06 to 0.07 and 0.13 to 0.16. Cirrus sac never longer than diameter of ventral sucker, in extended forms ending far anterior to edge of sucker, in contracted forms with its end overlapping the sucker. Ovary and vitellaria close together, extended transversely, usually with irregular contour. Indentations of vitellarium rare and when present scarcely ever more than one. Eggs 23 to 25 by 11 to 12 µ. In stomach and esophagus of Clupea pichardus and Clupea aurita at Naples ; Lichia amia, Box boops, Maena vulgaris, Caranx trachurus at Triest.

Recorded from Dorosoma thrissa from Lake Hamana, Japan by Yamaguti,1938

Hemiuridae

v

Aphanurus stossichi (Monticelli 1891)

Petits Distomes à téguments striés, dont la longueur, en parfaite extension, atteint 1,1mm, la largeur 0,4mm. Ventouse orale 50 μ ; ventrale, rapprochée de la précédente, 140 μ. Pore génital à proximité de la ventouse orale.

Le pharynx est long de 40 μ, large de 30 μ. Les cæcums, qui prennent naissance immédiatement après le pharynx, se développent jusque dans la région terminale où ils se renflent faiblement en ampoules (diamètre 100 μ).

Fig. 13. — *Aphanurus stossichi* (Monticelli). Exemplaire de *Box boops* (L.).

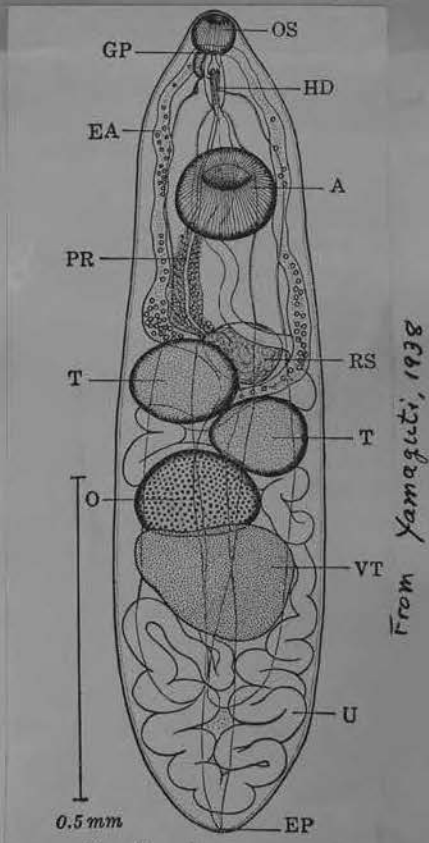
Les deux testicules sont situés sensiblement au milieu du parasite ; leur grand axe transversal mesure 100 à 120 μ. Le testicule antérieur est précédé d'une volumineuse vésicule séminale (150 μ) ; la *pars prostatica* est bien visible ; la poche du cirre est robuste, cylindrique.

L'ovaire, placé en arrière du testicule postérieur, mesure 175 μ × 100 μ. Les glandes vitellogènes constituent une masse unique, accolée à l'ovaire et mesurant 175 μ × 100 μ.

Les œufs sont longs de 24 μ et larges de 12 μ.

Habitat. — Parasite commun dans l'estomac des Bogues (*Box boops* (L.)) ; douze poissons examinés renfermaient tous ce Trématode en abondance. La même espèce est citée par Monticelli (1891) dans l'estomac et l'œsophage de *Clupea pilchardus* (Cuv. et Val.) et *C. aurita* (L.), à Naples ; par Loos, dans l'œsophage et l'estomac de *Lichia amia* (L.), *Box boops* (L.), *Maena vulgaris* Cuv. et *Caranx trachurus* (L.), à Trieste.

From Timon-David 1937



From Yamaguti, 1938

Fig. 63. *Aphanurus stossichii* (Monticelli, 1891) ; ventral view.

—OVER—

Aphanurus stossichi (Monticelli, 1891) Looss, 1907

SYNONYMS: *Distomum serratus* Monticelli, 1887, Stossich, 1888, 1898, nec Rudolphi, 1819, nec Olsson, 1867; *Apoblema stossichi* Monticelli, 1891; *Hemiurus stossichi* (Monticelli, 1891) Löhe, 1901; *Aphanurus cirgula* Looss, 1907; *Aphanurus harengulae* Yamaguti, 1938.

HOST: *Harengula dispilonotus* (Clupeidae).

HABITAT: Small intestine.

LOCALITY: Puerto Princesa, Palawan Island, Philippines.

DATE: 19 May 1962.

SPECIMEN DEPOSITED: USNM Helm. Coll. No. 60402.

DESCRIPTION (based on single specimen): Body 589 by 111, entirely annulated, no cesoma; preoral lobe 5, forebody 109, hindbody 311, postovarian space 191, postuterine space 65, posteecal space 35. Oral sucker diameter 40; acetabulum 69 by 83, at level of anterior body fourth; sucker length ratio 1:1.73; pharynx 26 by 24; esophagus 17 long; anterior (right) testis 46 by 44, posterior testis 38 by 45; acetabulum to anterior testis 54, to posterior 73; sinus sac median, 72 by 14; hermaphroditic duct 72 by 6; sac and duct overlapping anterior fifth of acetabulum and opening anteriorly into median genital pore just 5 posterior to oral sucker and ventral to midlevel of pharynx; pars prostatica long, surrounded by large prostate gland cells overlapping ceca, posterior portion of acetabulum and both testes; seminal vesicle 43 by 33, acetabulum to latter 31; ovary 35 by 66, overlapping both testes ventrally, acetabulum to ovary 85; vitellarium 65 by 85, overlapping ovary and posterior testis ventrally, acetabulum to vitellarium 103; 10 eggs measuring 19 to 25 by 9 to 13.

DISCUSSION: Siusarski (1957) reviewed the various forms designated as *Aphanurus stossichi* sensu latu, noting that some were supposed to have a rudimentary cesoma, some not. He concluded that the entire group needed restudy since the various authors ascribing an cesoma to their forms did not document their conclusions. Our specimen resembles Yamaguti's (1938) description of *A. stossichi* from *Dorosoma thrissa* and *A. harengulae* (syn. of *A. stossichi*) from *Harengula zunasi* from Japan; it also fits Yamaguti's (1953) description of *A. harengulae* from *Clupea clupeoides* from Celebes.

FROM FISCHTHAL AND KUNTZ, 1964

Aphanurus stossichi (Monticelli, 1891)

Хозяева, экстенсивность и интенсивность инвазии: *[illegible]ippus orbis*, 45,4% от 2 до нескольких сотен экз.; *Drepane punctata*, 7.[illegible] 2—4 экз.

Локализация: кишечник и желудок.

FROM Mamaev 1970

APHANURUS BAILLONI ~~n. sp.~~ NAGATY AND ABDEL AAL, 1962

(Fig. 2)

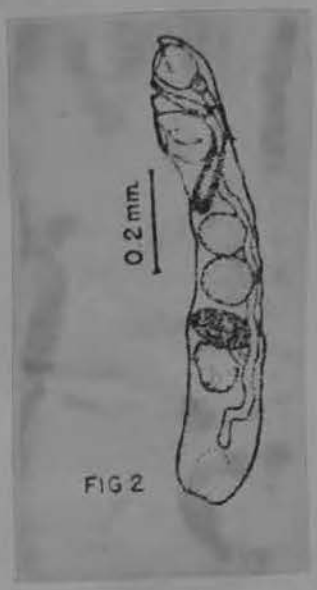


FIG 2

Description base on whole mount of two specimens from *Trachynotus bailloni* locally called "Ferdewa hayad". Body elongate, cylendrical 0.68-0.92 long and 0.12 wide, without escoma. Posterior end broad ; cuticula smooth. Oral sucker large 0.06-0.08 in diameter, subterminal with preoral lobe anteriorly and there is cuticular ridge behind genital opening. Pharynx large 0.03 in diameter. Esophagus short 0.05 Intestinal caeca slightly broad posteriorly, reaching near posterior extremity, terminating at 0.11 from posterior end of body. Ventral sucker slightly larger 0.11 by 0.09, close to oral sucker, at anterior third of body length ; 0.05 from oral sucker. Ratio oral to ventral suckers 0.7 : 1.

Testes nearly rounded, anterior testis 0.08-0.09 in diameter and posterior testis 8.68 0.11 by 0.09 0.11 postacetabular, in middle third of body length. Vesicula seminalis extending behind acetabulum to immediately anterior to anterior testis, and surrounded by cells, widest at posterior portion and narrow anteriorly ; pars prostatica elongate ; ductus hermaphroditicus narrow, slender, opening ventral, immediately posterior to oral sucker.

Ovary transversely elongate, oval 0.03-0.8 by 9.08-0.11, postiesticular, in third quarter of body length. Vitellaria composed of a single, large 0.06-0.11 by 0.8 0.9 compact, slightly indented lobe and immediately postovarian. Uterus not represented in specimens obtained, although other organs seem to be fully developed ; there is only one small egg present between ovary and vitellaria close to left caecum measuring 0.015 by 0.008. Excretory vesicle large at posterior extremity immediately posterior the blind end of caeca to posterior end of body ; no other charaeters can be seen.

Comparisons :

This species differs from all the others belonging to the genus *Aphanurus* Looss, 1907, mainly in having ; testes tandem instead of being diagonal and cuticle smooth instead of being annulated.

21. *Aphanurus caesionis* n. sp. Yamaguti, 1952
Pl. II, Fig. 10.

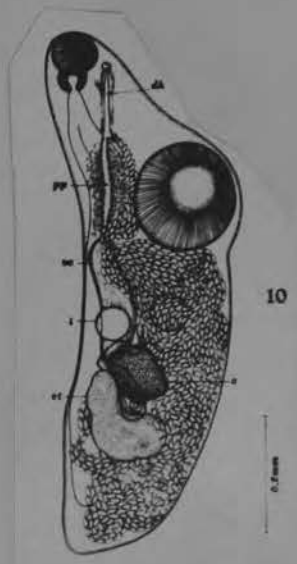
Habitat. Stomach of *Caesio kuning* (Cuv. et Valenc.).

Material and locality. One mature specimen fixed in acetic sublimate under a cover glass, stained and mounted in toto; Macassar.

Body plump, with blunt conical extremities, 1.06×0.26 mm; forebody tapering more abruptly than hindbody. Cuticle without folds or denticulations. Oral sucker subterminal, 70×80 μ; pharynx globular, 50 μ in diameter. Esophagus about 45 μ long, widened out posteriorly. Ceca wide, terminating 80 μ from posterior end of body. Acetabulum 0.19 mm in diameter, with its center at anterior end of middle third of body.

Testes spherical, 50–60 μ in diameter, situated a little obliquely behind middle of body. Vesicula seminalis subcylindrical, strongly muscular, 0.24 mm long by 60 μ wide, extending longitudinally from right end of ovary to level of posterior end of acetabulum between right testis and right cecum, partly covered ventrally by uterus. Pars prostatica straight, well differentiated, dorsal to acetabulum, 0.16 mm long, surrounded throughout by prostate cells, united with uterus ventral to intestinal bifurcation. Ductus hermaphroditicus tubular, with very thin delicate wall, 0.13 mm long, 5–10 μ wide, enclosed in a cylindrical sheath which is 20–25 μ wide and consists of longitudinal muscle fibers. Genital pore ventral to posterior end of oral sucker.

Ovary transversely elongated, 60×90 μ, situated ventrally on right of median line at posterior end of middle third of body, with posterior end of vesicula seminalis dextrodorsally. Vitelline gland compact, 105×175 μ, with a pronounced indentation on its anterior border, lying ventrally immediately behind ovary. Receptaculum seminis uterinum conspicuous. Uterus extending to posterior extremity, coiled dorsal and dorsolateral to ovary and then ventral to left testis, finally running straight forward on the left of pars prostatica. Eggs elliptical, 21–24×10–12 μ. Excretory pore terminal; excretory arms uniting dorsal to pharynx.



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This species differs from the most closely related *Aphanurus harengulae* Yamaguti, 1938, and *A. microrchis* Chauhan, 1945, chiefly in the vesicula seminalis being subcylindrical and strongly muscular, in the prostatic cells surrounding the whole length of the well differentiated pars prostatica, and in the complete absence of cuticular denticulations.

15. *Aphanurus dorosomatis* n. sp. Yamaguti, 1959.
Pl. II, Fig. 6.

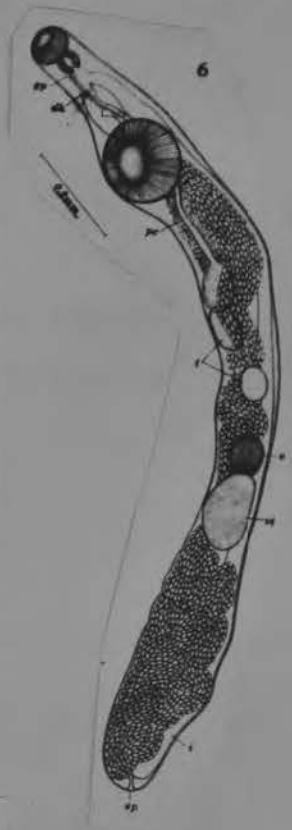
Habitat. Stomach of *Dorosoma chacunda* (Hamilt. et Buchan.).

Material and locality. Two gravid specimens; Macassar.

Body cylindrical, slender, with blunt-pointed extremities, 1.45–1.6 mm long by 0.16–0.17 mm broad. Cuticle smooth, without denticulations. Oral sucker terminal, inclined ventrally, 60×78 μ; pharynx globular, 36×42 μ. Esophagus 30 μ long by 30 μ wide. Ceca wide, terminating at posterior extremity. Acetabulum 0.12–0.16 mm in diameter, situated behind middle of anterior third of body.

Testes ovoid, 60–90 μ in diameter, placed one obliquely behind the other in middle third of body; in the type the anterior testis lies dorsodextral to the uterus, while the posterior testis lies ventral to it just at the midbody. Vesicula seminalis oval, 65–90×45–80 μ, situated at anterior part of middle third of body, with its posterior end overlapping anterior testis ventrally, provided with a thick wall of longitudinal muscle fibers which is thickest at the equator, attaining a maximum of 2.5–4.8 μ. Pars prostatica 0.37–0.4 mm long, 12–20 μ wide, surrounded throughout by prostate cells, united with uterus a little (40 μ in the type) in front of acetabulum. Ductus hermaphroditicus thin-walled, eversible, enclosed in tubular sheath-like hermaphroditic pouch which is 66–100 μ long by 12–15 μ wide and consists of comparatively weak longitudinal muscle fibers. In the type as well as in the paratype the ductus hermaphroditicus is evaginated in form of a smooth cirrus 12–15 μ in diameter. Genital pore midventral, at level of posterior end of pharynx.

Ovary subglobular, 80–90×60–75 μ, situated ventrally a little behind middle of body. Vitelline gland irregularly oval, 0.12–0.16 mm long by 70–95 μ broad, placed longitudinally just behind ovary ventral to uterus at junction of middle with posterior third of body, with its dorsal side, except at the posterior part, fluted longitudinally. Receptaculum seminis uterinum posterior to vitelline gland. Uterus reaching to or near posterior extremity, winding forward



dorsal to vitelline gland, ovary, and posterior testis, ventrolateral to anterior testis and vesicula seminalis, and then alongside pars prostatica; eggs elongate oval, 17–18×10–12 μ. Excretory pore terminal; excretory arms uniting dorsal to pharynx.

This species is distinguished from any of the known members of the genus by its slender body shape. *A. monolecithus* (Srivastava, 1941) Manter, 1947, has not been compared, since the original paper by Srivastava was inaccessible to me.

Hemiuridae

Aphanurus harengulae Yamaguti, 1938

Length: 0.7-0.88 mm.
Width : 0.14-0.18 mm.
Oral sucker: 42-51 X 51-56 μ.
Acetabulum (size): 0.11-0.126 mm. in diameter.
(location) : At posterior end of anterior third of body.

Esophagus: Present. About 45 μ in length in the type 0.7 mm. long. Provided with fine circular and longitudinal muscles.
Pharynx: Globular, 33-36 X 35 36 μ.

Genital pore: On midventral surface at level of pharynx.

Testes (shape): Rounded.
(location) : Diagonal, in middle third of body; the anterior dorsal, the posterior ventral.
Cirrus sac:
Ovary (shape): Ovoid.
(location): Usually at junction of middle with posterior third of body.
Vitellaria: Vitelline gland entire or only slightly indented, pressed against ovary.
Eggs: Oval, 18-22 X 11-12 μ in life.
Other features:

Host: Harengula zunasi Bleeker, 1858

Locality: Lake Hamana, Japan.
Comparisons: Aphanurus stossichi (Montic., 1891) Looss
A. virgula Looss, 1907

Reference: Yamaguti, S. Studies on the helminth fauna of Japan, Part 21. Trematodes of fishes, IV. Kyoto, Japan, 1938

Life cycle:

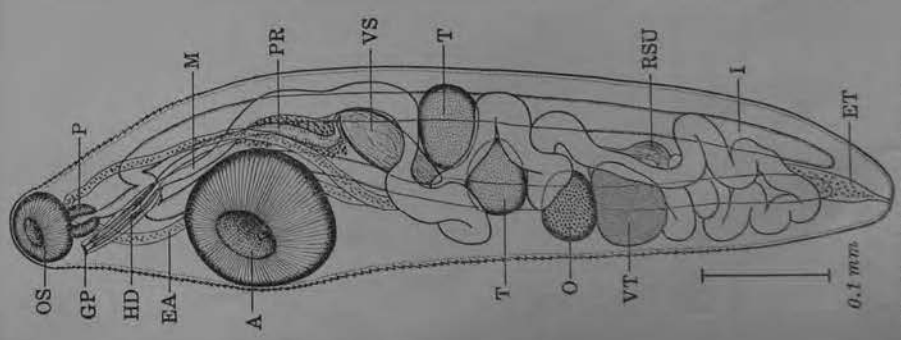


Fig. 61. *Aphanurus harengulae*; ventral view.

14. *Aphanurus harengulae* Yamaguti, 1938

Habitat. Stomach of *Clupea clupeoides*.

Material and locality. 5 mature specimens; Macassar.

Body 0.9–1.2×0.2–0.3 mm, blunt-pointed in front, rounded behind. Oral sucker ventroterminal, 45–60×56–78 μ, pharynx 24–36×33–42 μ. Ceca wide, terminating near posterior extremity. Acetabulum 0.13–0.17 mm in diameter, at posterior half of anterior third of body. Testes ovoid, obliquely tandem, 50–80×65–135 μ; anterior testis at about middle of body. Vesicula seminalis oval, 60–120×50–100 μ, overlying anterior testis; pars prostatica provided with longitudinal muscle fibers. Ductus hermaphroditicus enclosed in cylindrical muscular pouch, 80–100 μ long. Genital pore ventral to posterior end of oral sucker. Ovary and vitelline gland transversely elongated (probably owing to pressure applied on cover glass), 60–90×100–170 μ and 70–150×130–180 μ respectively; uterus reaching to near posterior extremity, and then running forward dorsolateral to vitelline gland and ovary, may or may not pass between ovary and posterior testis as well as between two testes. Eggs elliptical, thin-shelled, embryonated, 21–22×9–12 μ in mounted condition. Excretory trunk divided at level of anteriot testis, arms uniting dorsal to oral sucker or pharynx.

Though not quite agreeing in measurements the present worm

may be assigned to *Aphanurus harengulae* Yamaguti, 1938, but not to *A. stossichi* (Montic.) Looss, 1907 on account of difference in egg size.

Aphanurus microrchis Chauhan, 1945

Minute forms, 0.58 mm. long by 0.144 mm in greatest width; skin with minute cuticular spines. Oral sucker 0.025 by 0.039 mm. Pharynx elongate, 0.013 by 0.019 mm. Acetabulum large and oval 0.063 by 0.050 mm., close to oral sucker.

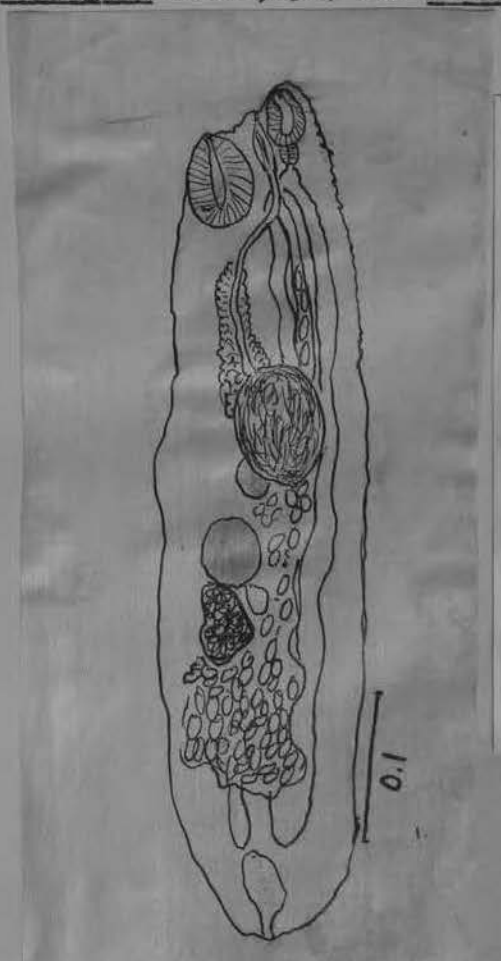
Testes spherical, one behind the other immediately anterior to middle of body, diameter 0.025 mm. Seminal vesicle very large, spherical, 0.081 by 0.062 mm, in region of testes. Pars prostatica not highly developed, duct sinuous, prostate glands well developed. Ductus hermaphroditicus a short, thick, conical sac, 0.013 by 0.041 mm, between the suckers; genital pre near oral sucker.

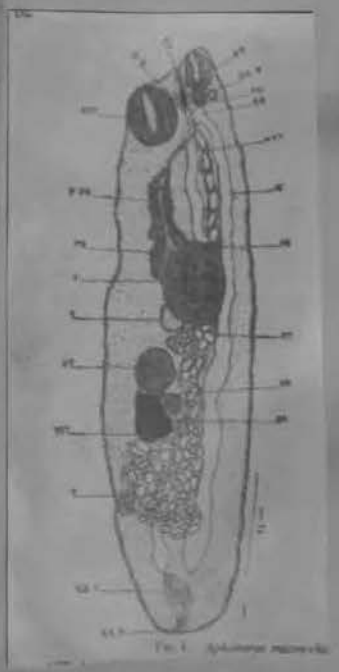
Ovary posttesticular, spherical. Seminal receptacle and shell gland present. Vitellaria, characteristic of the genus, a single compact mass being made up of right and left vitellarium fused, immediately behind the ovary. Uterus partly inter-cecal and mostly postovarian. Eggs 18 by 9 µ.

Host: Mugil parsia

Locality: West coast of India, Bombay.

Compared with A.virgula Looss, 1907 and A.harengulae Yamaguti, 1938





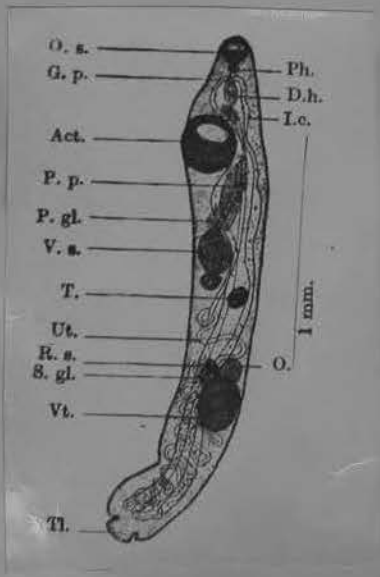
Aphanurus monolecithus (Srivastava, 1941) Manter 1947
Yamaguti, 1938

Sterrhurus monolecithus Srivastava, 1941

Body nearly cylindrical, with "very rudimentary tail, which is visible only in fully extended specimens.". Deep transverse cuticular annulations are present all over the body.
Type specimen 2.4 mm. including at tail 0.1 by 0.16 mm
Oral sucker 0.09 by 0.12
Acetabulum 0.26 mm., just in front of second quarter.
Pharynx 0.05 mm. spherical.
Testes diagonal at about midbody.
Seminal vesicle pear-shaped just in front of anterior testis.
Pars prostatica long, tubular, more or less straight.
Small ductus hermaphroditicus inclosed in a spindle-shaped sinus sac 0.1 by 0.04 mm.
Genital pore at intestinal bifurcation.
Ovary small, ovoid at base of third quarter.
Seminal receptacle present; single vitelline mass.
Eggs 19 to 23 by 8 to 10 μ
Host: Clupea illisha ; India

This is without doubt a species of Aphanurus. (HWM)

Ref. Indian Jour. Vet. Sci., 11:45-48. 1941



APHANURUS

Duosphincter Manter & Pritchard, 1960

GENERIC DIAGNOSIS OF *Duosphincter*: Hemiuridae, Aphanurinae: Body small, without ecsoma; horizontal cuticular plications encircle body along its entire length; oral sucker subterminal, mouth surrounded by well-developed sphincter; ceca extending to near posterior end of body; acetabulum preequatorial, protuberant, aperture with well-developed sphincter; genital pore ventral to bifurcation; testes diagonal, close together, postacetabular in middle 1/3 of body; seminal vesicle tubular, winding in forebody, rarely reaching posterior to mid-acetabulum; pars prostatica short, surrounded by prostatic cells; sinus sac short, tubular, enclosing hermaphroditic duct; ovary ovoid, posttesticular, vitellaria in two ovoid masses, postovarian, diagonal to tandem; uterus fills postacetabular spaces posterior, dorsal, and anterior to gonads; metraterm short, not especially muscular but separated from uterus by small sphincter; excretory pore subterminal, ventral; excretory vesicle Y-shaped, crura joining anteriorly.

The name *Duosphincter* is from *duo* (= two) and *sphincter* (= a closing muscle) referring to the well-developed sphincter muscles present in both the oral sucker and the acetabulum.

DISCUSSION: The tubular, winding shape and the preacetabular position of the seminal vesicle are peculiar to *Duosphincter*. In *Aphanurus* and *Ahemiurus* the seminal vesicle is saccular and entirely postacetabular; in *Myosaccium* it is saccular and most of it is immediately postacetabular, although it extends dorsal to the acetabulum. The sphincter muscles of the oral sucker and acetabulum are absent in the other genera. *Duosphincter* differs from *Aphanurus* in possessing two vitelline glands, a short preacetabular pars prostatica, a shorter and less muscular hermaphroditic duct, a more posterior genital pore, and plications that extend horizontally around the body rather than at an angle. It differs from *Ahemiurus* in having a short preacetabular pars prostatica, a shorter and less muscular hermaphroditic duct, and diagonal vitellaria. It differs from *Myosaccium* in the complete absence of a prostatic vesicle, the shorter sinus sac, the lack of an ejaculatory duct, larger gonads, cuticular plications over all the body, and the non-filamented eggs.

Aphanurus virgula Looss,1907

Very similar to A.stossichi. Length 0.5, width and thickness 0.13 to 0.14. Ventral sucker exactly twice as large as oral sucker (0.04 to 0.08) or not quite as large in young. Cirrus sac always longer than diameter of ventral sucker with its end reaching middle or sucker or beyond. Vitellaria usually not wider than ovary but longer longitudinally; indentations in its wall frequent and more numerous. Eggs 20 to 22 by 11 μ.

Hosts: Engraulis encrasicholus ...common
Cepola rubescens....rare

Duosphincter zancli, ~~n. gen., n. sp.~~ (Figs. 1-2) Manter & Pritchard, 1960

HOST: *Zanclus canescens* (L.), kihikihi or moorish idol (Zanclidae); 27 specimens from 8 of 23 hosts.

LOCATION: Stomach

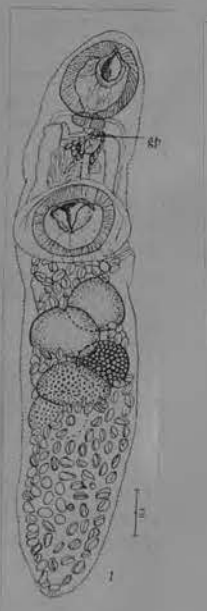
HOLOTYPE: U. S. Nat. Mus. Helminth. Coll., No. 39167.

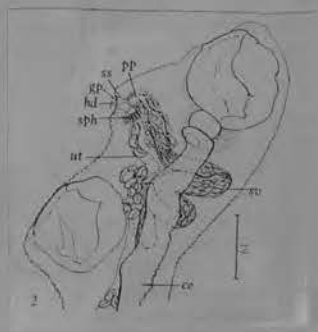
DESCRIPTION (based on 27 specimens): Body, without ecsoma, 0.871 to 1.354 long by 0.201 to 0.281 wide (width about same along entire length), anterior end rounded, posterior end slightly more pointed; both forebody and hindbody bent dorsally from acetabulum. Cuticula thin, horizontal plications encircle body along its entire length. Preoral lobe small. Oral sucker rounded, 0.141 to 0.181 wide by 0.101 to 0.168 long; mouth ventral, pyriform with pointed anterior end, surrounded by well-developed sphincter. Acetabulum ⅓ body length from anterior end, somewhat protuberant, 0.160 to 0.181 wide by 0.121 to 0.176 long; aperture triangular with one point directed posteriorly, also surrounded by well-developed sphincter. Sucker ratio 1:1 to 1.2. Pharynx 0.032 to 0.050 long by 0.058 to 0.069 wide; esophagus short, 0.019 to 0.024 in diameter; ceca slender at origin, then widening and extending to near posterior end of body.

Testes diagonal with either right or left testis anterior, rounded, 0.070 to 0.120 long by 0.096 to 0.120 wide, contiguous or close together. Seminal vesicle tubular but not slender, winding (4 or 5 turns) dorsally between mid-acetabulum and level of genital pore. Pars prostatica narrow and straight extending ventrally or posteroventrally into sinus sac; prostatic cells surround pars prostatica and terminal part of seminal vesicle while smaller gland cells surround both pars prostatica and metraterm as they enter sinus sac (Fig. 2); pars prostatica joins metraterm at base of sinus sac to form short hermaphroditic duct. Sinus sac small, tubular, enclosing hermaphroditic duct, partially protrusible. Genital pore median or slightly submedian, at level of bifurcation or immediately posterior to bifurcation.

Ovary to left, rounded, 0.048 to 0.120 long by 0.096 to 0.160 wide, overlapped by posterior testis and anterior vitellarium. Vitellaria compact, diagonal, overlapping, 0.072 to 0.128 long by 0.086 to 0.138 wide, anterior vitellarium usually to left and usually wider. Uterus fills postacetabular spaces posterior, dorsal, and anterior to gonads. A small sphincter just outside sinus sac marks beginning of very short metraterm; metraterm not especially muscular, enters sinus sacs and joins pars prostatica. Eggs yellowish, 21 to 26 by 13 to 17.

Excretory pore subterminal, ventral; a small, papilla-like structure protrudes in 7 specimens. Excretory vesicle not fully traced, but division occurs in region of gonads and crura extend forward and unite dorsal to pharynx.





DUO SPHINCTER

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 _____

Myosaccium ecaude n. gen., n. sp. Montgomery, 1957
(Figs. 27–29)

Syn. Neogenolinea Siddiqi & Cable, 1960 (acc. Overstreet)

Description (based on 10 specimens, measurements on eight): Body cylindrical or nearly so, without ecsoma, 1.38–1.53 mm. long, 0.36–0.4 mm. wide; cuticular plications present on anterior half of body, except on dorsal midline posterior to acetabuluar level and between acetabulum and oral sucker; oral sucker subterminal, 0.09–0.10 mm. long, 0.11–0.12 mm. wide; acetabulum about ⅓ body length from anterior end, 0.17–0.2 mm. in diameter; sucker ratio 1: 1.57–1.75; pharynx globular, 0.06–0.07 mm. long, 0.06–0.07 mm. wide; esophagus slightly shorter than pharynx; ceca reaching nearly to posterior end of body.

Genital pore ventral to pharynx or sometimes oral sucker; testes two, diagonally symmetrical, post-acetabular, in middle ⅓ of body; seminal vesicle saccate, undivided, extending posterior to anterior testis; prostatic vesicle surrounded by thick wall composed of longitudinal muscle fibers, surrounded by a few gland cells, 0.1–0.13 mm. long, 0.11 mm. wide (Fig. 28); sinus sac elongated, tubular, 0.13–0.17 mm. long, 0.03–0.04 mm. wide enclosing protrusible ejaculatory duct.

Ovary ovoid, in middle ⅓ of body, just posterior to posterior testis; vitellaria two compact masses, immediately post-ovarian, partly overlapping ovary, diagonal to one another, contiguous; uterine coils largely posterior to vitellaria. Seminal receptacle present, posterior to ovary; eggs with filament usually slightly longer than egg; collapsed eggs 27 μ–33 μ long by 12 μ wide; normal eggs 15 μ–18 μ long × 9 μ wide (Fig. 29); excretory vesicle Y-shaped, arms uniting dorsal to pharynx.

Host: *Sardinops caerulea* (Girard). Pacific sardine, (Clupeidae).

Location: Stomach.

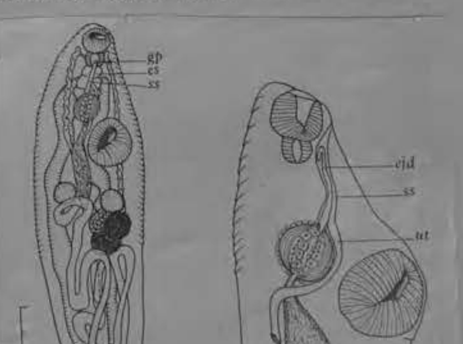
Holotype: U. S. National Museum Helminthological Collection No. 38185.

→ Generic diagnosis of *Myosaccium:* Hemiuridae: body small to medium sized, cylindrical or nearly so, without ecsoma; cuticular plications present on anterior half of body; oral sucker subterminal, smaller than acetabulum; ceca reaching to near posterior end of body; acetabulum pre-equatorial; genital pore ventral to pharynx or oral sucker; testes diagonally symmetrical, post-acetabular, in middle ⅓ of body; seminal vesicle saccate, extending posterior to acetabulum; prostatic vesicle with thick muscular wall of longitudinal muscle fibers, spherical to ellipsoidal; sinus sac tubular, enclosing ejaculatory duct; ovary ovoid, posttesticular; seminal receptacle present; vitellaria in two compact masses, postovarian; uterus largely posterior to vitellaria; eggs with filament; excretory vesicle Y-shaped with arms uniting dorsal to pharynx.

Discussion: *Myosaccium* is most closely related to *Aphanurus* Looss, 1907 in having a plicated cuticula, and an ejaculatory duct enclosed in a tubular sinus sac; in the location of the genital pore, the seminal receptacle, and in possessing a similar excretory vesicle. It differs from *Aphanurus* in possessing two compact vitelline masses rather than one, no *pars prostatica*, a prostatic vesicle with a thick muscular wall, a seminal vesicle extending posteriorly beyond the acetabulum, and eggs with a filament.

The name *Myosaccium* is from the Greek *myo* (muscle); *saccus*, sac. The specific name *ecaude* (neuter) is from the Latin *ecaudis*, without a tail.


29



27 28

Ao necropsiarmos exemplares de *Sardinella aurita* Cuv. & Val. (sardinha) do Atlântico (costa do Brasil) encontramos vários trematódeos que identificamos à espécie *Myosaccium ecaude* Montgomery, 1957, descrito de *Sardinops caerulea* (Girard) (sardinha) do oceano Pacífico. No presente trabalho nos ocupamos da redescrição de *M. ecaude* a partir dos exemplares por nós coletados.

Myosaccium ecaude Montgomery 1957

Sin. — *Myosaccium ecaude* Montgomery, 1957: 31-32, figs. 27-29.

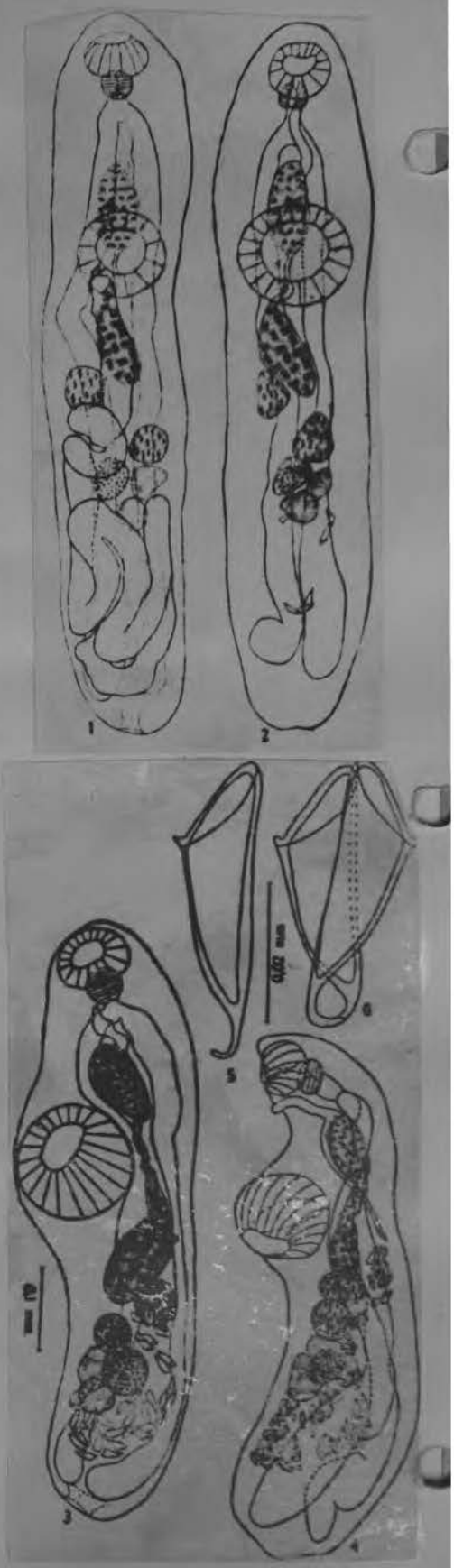
Trematódeos de corpo alongado, com extremidades arredondadas e com a porção posterior parecendo ter uma pequena invaginação; medem 0,65 a 1,04 mm de comprimento por 0,12 a 0,20 mm de maior largura. Cutícula estriada transversalmente. Ventosa oral subterminal, com 0,04 a 0,08 mm de comprimento por 0,05 a 0,09 mm de largura. Faringe com 0,03 a 0,05 mm de [illegible] 0,04 a 0,06 [illegible] de largura. Esôfago curto. Cecos intestinais [illegible] curta distância da extremidade do corpo. Acetábulo maior que [illegible] oral, situado na parte anterior do têrço médio do corpo; mede [illegible] 0,17 mm de comprimento por 0,07 a 0,17 mm de largura. Relação entre ventosa oral e o acetábulo variando de 1:1,45 (espécime de vent. or. 0,073 por 0,037 mm e acet. 0,133 por 0,10 mm) a 1:2,32 (espécime de vent. or. 0,040 por 0,060 mm e acet. 0,113 por 0,120 mm). Póro genital pré-acetabular, na zona da faringe. Bôlsa do cirro bem desenvolvida, estendendo-se do poro genital até a zona do testículo anterior, medindo 0,26 a 0,62 mm de comprimento; encerra vesícula seminal grande, ovóide, indivisa, em parte pós-acetabular, tendo aproximadamente 0,08 a 0,18 mm de comprimento por 0,03 a 0,06 mm de maior largura, região prostática bem desenvolvida, medindo aproximadamente 0,07 a 0,030 mm de comprimento por 0,04 a 0,07 mm de maior largura, e cirro; recebe em sua porção terminal, a vagina, formando um ducto hermafrodita de cêrca de 0,06 mm de comprimento. Testículos arredondados, pós-acetabulares, pré-ovarianos, com zonas parcialmente coincidentes e com campos em parte coincidentes ou um pouco afastados; o testículo anterior mede 0,03 a 0,08 mm de comprimento por 0,02 a 0,07 mm de largura e o posterior mede 0,03 a 0,09 mm por 0,03 a 0,07 mm. Ovário arredondado, pós-testicular, submediano, na zona dos folículos vitelínicos; mede 0,03 a 0,05 mm de comprimento por 0,02 a 0,05 mm de largura. Glândula de Mehlis não evidenciada. Canal de Laurer não observado. O útero se dirige da região do ovário para a porção posterior do corpo formando alças longitudinais, e daí ascende para o poro genital formando uma sinuosidade entre os testículos e o ovário; continua-se por uma vagina delgada e longa que penetra na bôlsa do cirro, formando o ducto hermafrodita. Ovos operculados, com curto filamento no pólo posterior e um pequeno espinho lateral na porção basal do opérculo; medem 0,030 a 0,041 mm de comprimento por 0,009 a 0,013 mm de largura. Vitelinos constituídos por duas massas compactas, arredondadas, pós-testiculares, deslocadas lateralmente, com campos e zonas parcialmente superpostas; o folículo vitelínico anterior mede 0,03 a 0,06 mm de comprimento por 0,02 a 0,08 mm de largura e o posterior 0,03 a 0,07 mm por 0,03 a 0,05 mm. Póro excretor não observado. Vesícula excretora não estudada com detalhe. Canais excretores unindo-se na zona da faringe.

Habitat — Estômago de *Sardinella aurita* Cuv. & Val., 1847.

Procedência — Oceano Atlântico (costa do Brasil, dos estados da Guanabara até São Paulo).

Material estudado depositado na Coleção Helmintológica do Instituto Oswaldo Cruz sob os ns. 29 885 a-u, 29 886 a-b e 29 887 a-d.

FROM KOHN AND BÜHRNHEIM (1964)



MYOSACCIUM Montgomery, 1957

The next trematode resembles species of *Genolinea*, but differs from them and other hemiurids in having a large pars prostatica with thick spiral musculature, a saclike seminal vesicle, a narrow, tubular sinus sac, and distinct cuticular striations. To receive that species, the following genus is proposed.

syn. *Neogenolinea* n. g. Siddiqi & Cable, 1960

Diagnosis: Hemiuridae. Small distomes without ecsoma. Cuticle with prominent striations. Oral sucker subterminal, pharynx spherical, esophagus short, ceca swollen, ending blindly in posterior region of body. Genital pore ventral, at base of oral sucker. Sinus sac tubular, pars prostatica large, oval, with thick covering of spiral muscle fibers; prostate cells sparse; seminal vesicle large, saclike, posterior to and slightly overlapping ventral sucker, connected with pars prostatica by a narrow duct. Testes 2, diagonal to symmetrical, posterior to ventral sucker. Ovary posttesticular. Seminal receptacle present. Vitellaria of 2 compact indented masses near ovary. Uterus extensive; metraterm simple. Excretory vesicle with arms uniting dorsal to oral sucker. Parasites of marine fishes. Type and only species:

Neogenolinea opisthonemae Siddiqi & Cable, 1960

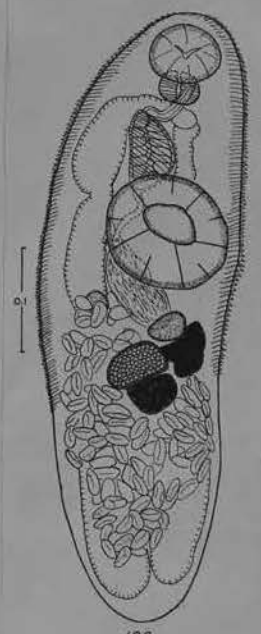
Myosaccium opisthonemae (Siddiqi & Cable, 1960) Overstreet, 1969

syn. *Neogenolinea opisthonemae* n. g., n. sp. (FIGURE 123) Siddiqi & Cable, 1960

Description based on 40 specimens with characters of the genus. Body 0.534 to 0.827 long, 0.153 to 0.193 wide. Oral sucker 0.052 to 0.069 by 0.068 to 0.079. Ventral sucker 0.094 to 0.120 in diameter. Sucker ratio 1:1.6. Pharynx 0.031 to 0.037, testes 0.029 to 0.069, ovary 0.039 to 0.069 in diameter. Gonads entire, ovary median. Seminal receptacle posteromedian to ovary. Eggs 0.029 to 0.032 by 0.012 to 0.015. Excretory pore dorsally subterminal.

Host: *Opisthonema oglinum*.
Site: stomach.
Locality: Playa Mani, P.R.
Type specimen: Holotype No. 39393.

Neogenolinea opisthonemae Siddiqi & Cable, 1960
Hosts: Opisthonema oglinum (J); **Sardinella anchovia* (J); **S. macrophthalmus* (J).
Site: stomach.
JAMAICA; FROM NAHHAS & CABLE, 1964



123

Myosaccium opisthonemae (Siddiqi & Cable, 1960) Overstreet, 1969

Myosaccium opisthonemae (Siddiqi and Cable, 1960) comb. n.

Neogenolinea opisthonemae Siddiqi and Cable, 1960.

Host: *Sardinella anchovia* (3 of 3).
Site: Stomach.

Discussion: Twelve specimens ranging from 0.44 to 0.90 long with sucker ratios of 1:1.6 to 1.8 and eggs 21 to 26 by 9 to 11 microns compare well in all respects with what Siddiqi and Cable (1960:313) called *Neogenolinea opisthonemae* except that eggs are smaller than 29 to 32 by 12 to 15 microns. Partially-collapsed eggs measure 21 to 26 by 9 to 11 microns. The cuticular plications extend to the posterior end of the body on small specimens and to about the level of the vitellaria on larger ones. I do not think at this time that enough difference exists to erect a new species.

The genus *Neogenolina* is a synonym of *Myosaccium* Montgomery, 1957. I have examined a paratype of *M. ecaude*, lent by Dr. H. W. Manter, and there is some confusion in the description of *Myosaccium*. The region that Montgomery labels (1957, Figure 28) as the ejaculatory duct is the sinus organ. This is the same organ as in *Erilepturus* Woolcock, 1935, *Dinurus* Looss, 1907, and *Ectenurus* Looss, 1907, and is discussed by Manter (in press). The muscle fibers surrounding the prostatic vesicle are spirally arranged, rather than distinctly longitudinally, and the internal vesicular cells do not reveal nuclei. The specimens from *Sardinella anchovia* do not have filaments or spines on the eggs, although a look at collapsed specimens on a fixed plane strongly suggests their presence. Specimens from *Opisthonema oglinum* lent by Dr. R. M. Cable also do not have filamented eggs. The paratype of *M. ecaude* has collapsed eggs crowded together, and I could not positively distinguish any filaments. Filaments are probably not present on the eggs of this species. These corrections in Montgomery's description remove supposed differences of *Myosaccium* from *Neogenolina*. Kohn and Bührnheim (1964), however, also report *M. ecaude* with filamented and spined eggs. Their specimens were collected from *Sardinella aurita* in Brazil and are 0.65 to 1.04 long with eggs 30 to 41 by 9 to 13 microns. *M. opisthonemae* could well be small or progenetic forms of *M. ecaude*. Study of additional specimens probably can settle this problem.

MYOSACCIUM