1990

Binder 084, Glyiauchenidae A-Z [Trematoda Taxon Notebooks]

Harold W. Manter Laboratory of Parasitology

GYLIAUCHENIDAE

GYLIAUCHENIDAE Ozaki, 1933

Syn. Dissotrematidae Goto et Ozaki, 1918

Family diagnosis. — Amphistomatous digenea. Body pear-, club- or spindle-shaped, unarmed, may be tapered posterodorsally to a conical papilla. Acetabulum almost at posterior extremity. Oral sucker terminal, without diverticula. Esophagus long, more or less winding. Esophageal bulb present or absent. Ceca short and wide. Testes diagonal, anterior, dorsal or posterior to acetabulum. Vesicula seminalis free in parenchyma. Pars prostatica mostly or entirely outside cirrus pouch, with well developed prostate cells. Cirrus pouch inter-, post- or prececal, enclosing eversible ductus ejaculatorius. Genital pore median, in middle third of body. Ovary pre- or intertesticular. Receptaculum seminis and Laurer's

canal present. Vitellaria follicular, forming grape-like bunches or not, extending chiefly along ceca or distributed rather irregularly. Uterus winding between shell gland and genital pore. Excretory vesicle elongate, saccular, opening at tip of caudal papilla when the latter is present. Lymph system present. Parasites of marine fishes.

Type genus; *Gyliauchen* Nicoll, 1915

Key to subfamilies of Gyliauchenidae

Esophageal bulb (pharynx) present ..... Gyliaucheninae
Esophageal bulb absent ..... Apharyngogyliaucheninae

Gyliaucheninae n. ~~subfam.~~ YAMAGUTI, 1958

Subfamily diagnosis. — Gyliauchenidae: Body pyriform to elongate, with or without a conical posterodorsal projection, at the top of which opens the excretory pore. Esophageal bulb (pharynx) present immediately in front of intestinal bifurcation. In front of this bulb there may or may not be a fusiform swelling of the esophagus. Acetabulum ventroterminal or ventral. Testes symmetrical or diagonal, anterior, dorsal or posterior to acetabulum. Vesicula seminalis bipartite. Prostatic complex well developed. Cirrus pouch large or small. Genital pore at varying levels. Ovary anterior or posterior to testes, or intertesticular, pre- or postacetabular. Vitellaria diffuse or forming bunches. Excretory vesicle elongate, saccular; pore terminal or at tip of posterodorsal projection.

Key to genera of Gyliaucheninae

1. Acetabulum definitely ventral; esophagus with fusiform swelling in front of "pharynx"; vitellaria forming bunches; testes symmetrical, postacetabular ... *Paragyliauchen*
   Acetabulum ventroterminal; esophagus without fusiform swelling in front of "pharynx"; vitellaria diffuse; testes dorsal or anterior to acetabulum 2
2. Ovary pretesticular ..... *Gyliauchen*
   Ovary intertesticular ..... *Flagellotrema*
   Ovary posttesticular ..... *Ichthyotrema*

Gyliauchen Nicoll, 1915

Syn. *Dissotrema* Goto et Matsudaira, 1918

Telotrema Ozaki, 1933

Generic diagnosis. — Gyliauchenidae, Gyliaucheninae: Body small, fusiform, with a conical projection or papilla dorsoterminally. Esophagus (or prepharynx in case the bulb is regarded as pharynx) unusually long, ming a double loop, with muscular bulb at its posterior end. Ceca ngate saccular, reaching beyond equator. Testes close together or a tle separated diagonally, anterior, dorsal or posterodorsal to ace- bulum. Vesicula seminalis twisted. Pars prostatica partly inside cirrus uch. Cirrus pouch muscular, ovoid, entirely or partly intercecal. nital pore postbifurcal. Ovary pretesticular, median or a little to left median line. Vitellaria for the most part covering ceca, may extend rther anteriorly. Uterus containing rather few eggs. Excretory vesicle ngate, opening on top of dorsoterminal papilla. Intestinal parasites of arine fishes.

Genotype: *G. tarachodes* Nicoll, 1915, in *Tachysurus* sp.; N. Queensland.

Other species:

G. caudatus (Ozaki, 1933) (syn. *Telotrema c.* O.), (Pl. 29, Fig. 381), in *Xesurus scalprum;* Japan.

G. nahaensis Ozaki, 1937, in *Siganus punctatus* and *Lo unimaculatus;* Naha. Also in *Teuthis* sp.; Macassar.

G. ozakii Srivastava, 1938, in *Harpodon nehereus;* India.

G. papillatus (Goto et Matsudaira, 1918) (syn. *Dissotrema p.* G. et M. (Pl. 29, Fig. 383), in *Siganus fuscescens;* Misaki, Inland Sea, Pacific coast of Mie and Wakayama Prefecture, Japan. Also in *Siganus* sp.; Macassar.

Genus *Gyliauchen* Nicoll, 1915.

Generic diagnosis : Body small, fusiform, with a conical papilla-dorsoterminal. Long oesphagus more or less winding, with oesophageal bulb. Testes close together or a little seperated, diagonally, anterior, dorsal or posterodorsal to acetabulum. Genital pore postbifurcal. Ovary pretesticular, median or a little to left of median line.

Type species : *G. tarachodes* Nicoll, 1915.

Mukherjee and Chauhan, 1965

Genus *Gyliauchen* NICOLL, 1915.

syn. *Dissotrema* GOTO et MATSUDAIRA, 1918.

GENERIC DIAGNOSIS.—Body sausage-shaped, or cylindrical. Excretory papilla small or not differentiated. Integument smooth. Acetabulum round in shape, ventral, usually at posterior end. Oral sucker more or less elongate, without oral pouch. Prepharynx very long, convoluted. Pharynx globular, muscles solely concentric. Intestinal caeca short and wide, not over-extending middle third of body length.

Testes two, one behind obliquely, anterior or dorsal side of acetabulum. Cirrus pouch large, spherical, enclosing pars prostatica, cirrus and abundant cirrus gland cells. Prostate gland cells and vesicula seminis lie behid and outside of cirrus pouch. Genital pore, ventral, median, central level of body i.e. behind the intestinal bifurcation. Genital atrium and sphincter absent.

Ovary globular median, anterior to testes. Receptaculum seminis and Laurer's canal present. Vitellarine follicles, ventral and dorsal to intestinal caeca, in caecal region and may extend into neck.

Excretory vesicle I-shaped, with two recurrent lateral canals.

Lymph canals many, in pairs, extending whole length of body.

Type species.- *Gyliauchen tarachodes* NICOLL.

Key to species of Gyliauchen.

A_1	Vitellaria extend into neck region	*G. papillatus*
A_2	Vitellaria almost always restricted to caecal region.	
B_1	Testes in front of acetabulum	*G. tarachodes*
B_2	Testes dorsal or post-dorsal of acetabulum	*G. nahaensis*

GYLIAUCHEN Nicoll 1915

Medium sized distomes, elongate, rathe plump, narrowed at both ends, unspined. Ventral sucker almost at posterior end. Long pre-pharynx extends backward on right side of body crosses to left side, bends foward halfway to anterior end when it again bends backward and runs down the median line to join the large pharynx. No esophagus. Ceca short and wide. Genital pore median just behind the intestinal bifurcation. Cirrus sac stout, ovoid. Seminal vesicle external. Testes globular, oblique or symmetrical close in front of ventral sucker. Ovary small, globular, near median line, separated from testes by large seminal receptacle. Yolk glands of small scattered follicles, lateral, in region of ceca which they overlap. Yolk duct runs down on each side posterior to the testes uniting in mid-line. Uterus short. Eggs few, light yellow, 78-84 by 45-49 µ/

Relationships not clear.

Compared with Cladorchiinae and "probably most closely related to Pseudocladorchis Daday from S.A. fishes.

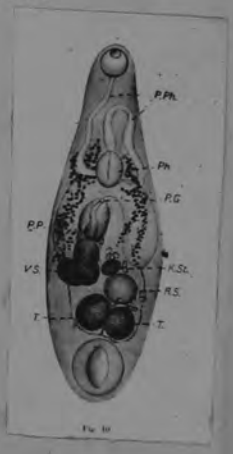
Type species: Gyliauchen tarachodes Nicoll 1915
from Tachysurus n.sp., pilot fish--Australia

Gyliauchen tarachodes Nicoll 1915

2.6 - 3.5 mm. Oral sucker 0.24-0.26. Ventral sucker 0.5 by 0.47. Pharynx 0.28-0.35 by 0.23-0.27. Seminal vesicle larger than cirrus sac, L-shaped. Yolk glands extend from a little in front of pharynx to the posterior end of ceca(about 2/5 from posterior end) Yolk ducts run backward to near posterior end where they unite. Eggs 78-84 by 45-49 µ.

Host: Tachysurus sp.

a Siluroid fish
(family Ariidae)



add Ichthyotrema
Caballero & Bravo

also Green Island A 281

GYLIAUCHEN

Syn. Genus *Telotrema* OZAKI, 1933.

GENERIC DIAGNOSIS.—Body small, rather conical, **venter concave, dorsum convex,** with large excretory papilla near posterior end. **Integument smooth. Acetabulum** elliptical, at posterior end, aperture relatively small. **Oral sucker elongate, without** oral pouch. Prepharynx slightly wavy. Pharynx globular, **muscles circular with inner** and outer longitudinal muscles. Intestinal caeca broad and short, extending about the middle third of body.

One of the two testes elongate, in the basal part of excretory papilla. Genital aperture median, close behind the bifurcation, provided with genital atrium. A muscular sphincter is developed surrounding the mouth of genital atrium. Cirrus pouch small, cirrus glands few.

Ovary globular, median, anterior to testes. Receptaculum seminis and Laurer's canal present. Uterus slightly developed, intercaecal, almost entirely preovarial. Vitelline follicles, from near the oral sucker to ovarian level.

Excretory vesicle short, I-shaped, in the excretory papilla.

Lymph system, simple long canals, extending whole length of body.

Type species.—*Telotrema caudatum* OZAKI.

g.

Telotrema caudatum (OZAKI, 1933) Yamaguti, 1954

(Figs. 1, 9, 12, 13, 14, 25, 26, 30, 31, 38, 44, 45, 54 and 55)

SPECIFIC DIAGNOSIS.—Body 3.6 mm to 5.4 mm long, 1 mm to 1.6 mm broad; yellow to orange in colour; rather conical, but bent strongly ventrad; cephalic end roundly pointed, caudal end rather rounded; broadest at the level of genital aperture; excretory papilla large and conical, on the dorsal surface near the posterior end of body. Integument smooth. **Oral sucker subterminal**, elongate, 0.4–0.47 × 0.28–0.35 mm. Acetabulum large and elongated, 0.8–1.1 mm in length, 0.36–0.5 mm in transverse diameter, subterminal, opening on the ventral surface by a longitudinal short slit-like aperture. Prepharynx slightly wavy, usually S-shaped in side view. Pharynx globular, 0.28–0.35 mm in diameter; muscles mainly circular with inner and outer longitudinal muscle layers. Oesophagus very short but present. Intestinal caeca broad and short, extending through the middle third of body.

Testes on the dorsal side of Acetabulum; one of them oblong, 0.6–1 mm by 0.25–0.4 mm, almost in excretory papilla; the other one globular 0.32–0.55 mm in diameter, between the former and acetabulum. Genital aperture, ventral, about the center of body i.e. directly behind the bifurcation. Anterior to the opening of the common genital pore a fairly deep atrium is developed, of which the mouth part is provided with a muscular sphincter, having the appearance of a genital sucker. Cirrus pouch small, elongated in shape, enclosing a globular pars prostatica, a short and straight ductus ejaculatorius or cirrus with few penis gland cells. Vesicula seminis voluminous, convoluted, behind cirrus pouch. Prostate gland cells well developed surrounding the proximal part of cirrus pouch, their ducts opening into the pars prostatica.

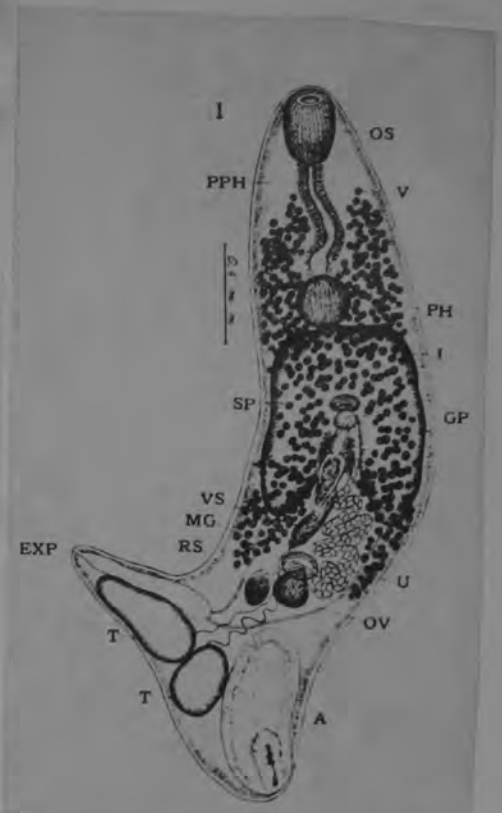
Ovary round or ovoid, 0.2–0.35 × 0.16–0.25 mm, median, anterior to testes. Receptaculum seminis fairly large, postero-dorsal side of ovary; Laurer's canal present, pore opening on the dorsal surface a little anteriorly to excretory papilla. Uterus in the median field, with few convolution, almost entirely preovarial. Vitelline follicles spherical, on dorsal and ventral sides of caeca, extending in front to near oral sucker, behind to the ovarian level. Eggs yellow, oval, 0.06–0.07 mm by 0.035–0.039 mm.

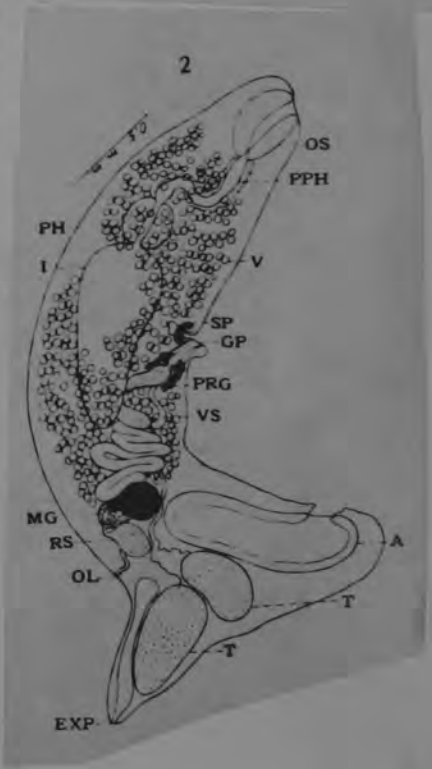
Excretory vesicle undivided simple elongated sac, extending in the excretory papilla, paired excretory canals proceeding from anterolateral corners of the vesicle.

Lymph system, nine pairs of independent longitudinal canals, four pairs in the anterior part of body, five extending whole length of body.

Habitat.—Rectum of *Xesurus scalprum* (CUVIER et VALENCIENNES).

Locality.—Kagoshima and Hiroshima, Japan.





Gyliauchen nahaensis ~~n. sp.~~ Ozaki, 1937

(Figs. 4, 44, 52 and 53)

SPECIFIC DIAGNOSIS.—Body 2.6–3.3 mm in length, 0.9–1.1 mm in maximum breadth, conical shaped, ventral almost flat, dorsal strongly convexed, gradually attenuated at the anterior end, rapidly pointed posteriorly. Strong yellow to orange in colour. Oral sucker ellipsoidal, length 0.21–0.25 mm, width 0.16–0.2 mm. Acetabulum comparatively small, globular, 0.38–0.5 mm in diameter, at a short distance from the posterior end. Prepharynx extraordinally long, convoluted usually in a double U. Pharynx subglobular, 0.3 × 0.23 mm, muscle solely circular; intestinal caeca immediately following the pharynx, very short, oval when viewed laterally, with the attenuated end directed backwards, extending in the fourth sixth of body length.

Genital aperture median, ventral, at about the middle level of body, directly behind intestinal bifurcation. Testes globular, obliquely tandem, postero-dorsal side of acetabulum. Cirrus pouch muscular, large, oval in shape, 0.45–0.7 × 0.35–0.42 mm, enclosing elongated pars prostatica, ductus ejaculatorius, penis and penis gland cells. Prostate gland cells outside of pouch and around the pars prostatica, opening with long ducts into the latter. Vesicula seminis convoluted behind the cirrus pouch.

Ovary globular, smaller than testes, 0.15–0.2 mm in diameter, submedian, pretesticular. Receptacular seminis behind the ovary; Laurer's canal present, opening on the dorsal surface. Uterus slightly convoluted, intercaecal, between ovary and genital pore. Eggs, 0.075–0.08 × 0.045–0.048 mm. Vitelline follicles lateral on the ventral side of the intestinal caeca, in an X-shape on the dorsal side, not extending beyond the pharynx anteriorly, and reaching to the ovarian level posteriorly.

Excretory vesicle a short simple sac, opening at the posterior end of the body;

excretory papilla undifferentiated; two lateral canals run anteriad from the anterolateral corners of the vesicle.

Lymph canals many in number, extending whole length of body.

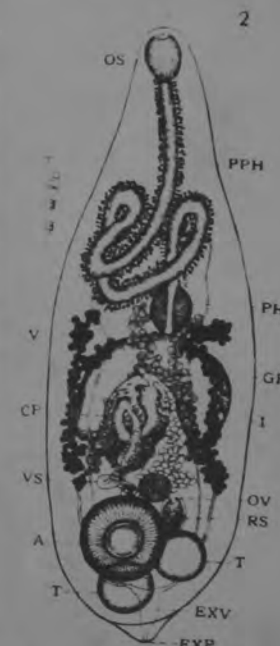
Habitat.—Intestine of *Siganus punctatus* (BLOCH & SCHNEIDER).

Locality.—Naha, Loochoo Islands.

The conical shape of the body, with pointed extremities and absence of the excretory papilla are remarkable differences in external form to separate this species from *Gyliauchen papillatus*, and internelly these two are different in the distribution of the vitellaria. Those of *G. nahaensis* are restricted behind the pharyngeal level as in *G. tarachodes*, while in *G. papillatus* they are extended to near the oral sucker. The prepharynx of this species is the longest in the three known species of this genus, and the convolution is most complicated. The position of the acetabulum and the testes is different from those of *G. papillatus* and *O. tarachodes*. In this species the acetabulum is situated a little anterior to the caudal end of the body, the two testes lying on the postero-dorsal side of the acetabulum.

Fig. 52. Photo. of *Gyliauchen nahaensis*. Fixed with hot SAUDINN's solution. ×9.

Fig. 53. *Gyliauchen nahaensis*.



1. Lateral view, 2. Ventral view.

Heron Island
Queensland 1998 B

GYLIAUCHENIDAE Ozaki, 1933

11. *Gyliauchen nahaensis* Ozaki, 1937

Habitat. Small intestine of *Teuthis* sp.

Material and locality. Numerous gravid specimens fixed in acetic sublimate under cover glass pressure, stained and mounted; Macassar.

Body 1.65 – 2.4 mm long, 0.58 – 0.75 mm thick. Oral sucker 0.13 – 0.19×0.1 – 0.15 mm, pharynx 0.15 – 0.25×0.13 – 0.3 mm. Ceca 0.4 – 0.55×0.14 – 0.21 mm. Acetabulum 0.25 – 0.36 mm in diameter. Testes globular to oval, sometimes indented, 0.11 – 0.23×0.1 – 0.2 mm. Ovary subglobular, 60 – 110×60 – 100 μ. Receptaculum seminis 0.16 – 0.2×0.11 – 0.15 mm. Eggs 75 – 81×42 – 48 μ in life.

12. *Gyliauchen papillatus* (Goto et Matsudaira, 1918) Goto, 1919

This species has been found not uncommonly in the intestine of *Siganus* sp. at Macassar. Since it has been dealt with in details no further comment is necessary. The asymmetrically oval eggs measured in life 72 – 84×42 – 54 μ.

Yamaguti, 1953.

GU CHANG-DONG AND SHEN JI-WEI, 1979

(1) *Gyliauchen oligoglandulosus*, ~~sp. nov.~~ (fig. 1)

Four and eighteen specimens were secured respectively from the intestine of two out of three *Siganus guttatus* (Bloch) in Sanya, Hainan Island, Guangdong Province, on May 3, 1964.

This species is characterized by the absence of caudal process, the oesophgus with two loops and with few glands at its anterior end, and the testes far apart from the ovary.

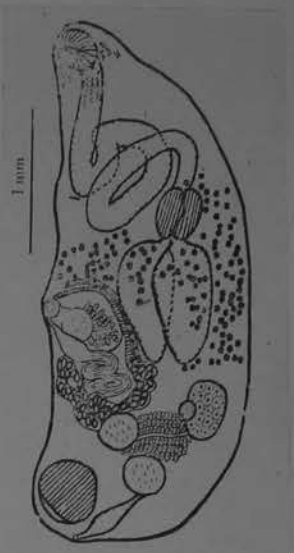


图1 寡腺中盘吸虫 *Gyliauchen oligoglandulosus*, 新种的整体腹面

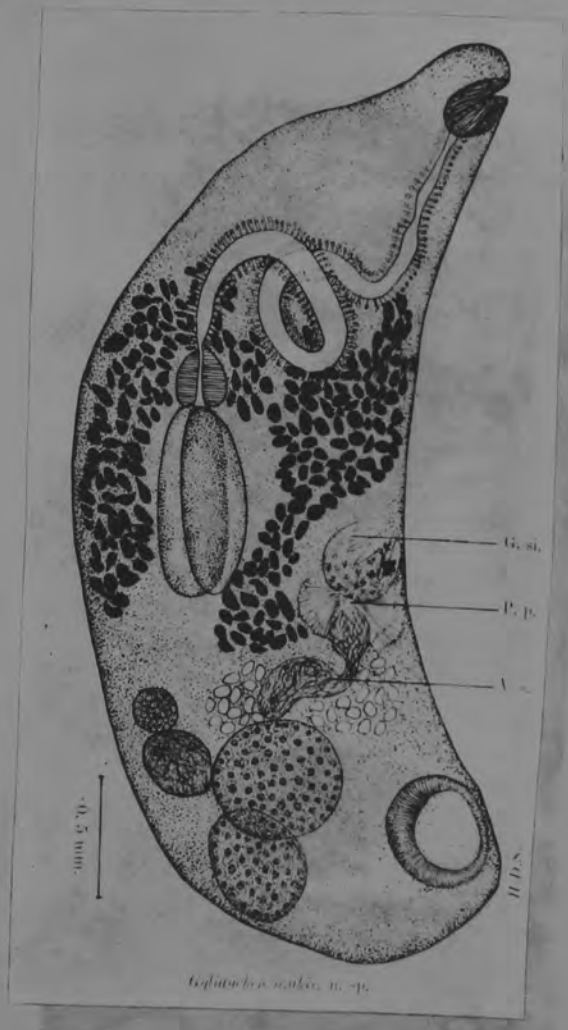
Paramphistomidae
Opistholebetinae

Gyliauchen ozakii Srivastava,1938

Body plump, concave ventrally, 2.5 to 4.76 by 0.9 to 1.44
Oral sucker 0.3 to 0.34 by 0.18 to 0.22
Esophagus coiled, 1.8 to 3 by 0.1 to 0.14
Esophageal bulb well developed
Acetabulum ventral near posterior end, 0.36 to 0.5
Testes oblique near acetabulum
Seminal vesicle a wide tube, bipartite
Genital sinus a peculiar, spherical, eversible structure 0.42 to 0.6 by 0.3 to 0.5, its mouth guarded by several fairly broad, triangular, chitinous processes.
Genital pore at level of middle of ceca.
Ovary small, spherical near anterior testis
Uterus between testes and ceca
Eggs 76 to 87 by 41 to 49 μ

Host: Harpodon nehereus Ham. a marine fish Harpodontidae
Locality: Arabian Sea
Reference: Indian Jour.Vet.Sci. 8: 399-401, 1 pl.

order: Iniomi which includes lizard fishes



Gyliauchen ozakii Srivastava, 1938.

Specific diagnosis : Body plump, elongate, with convex dorsal, concave ventral surface. Well developed cutaneous gland cells, specially along sides. Body measures 2.5-4.76 x 0.9-1.44 mm. Pharynx 0.3-0.34 x 0.18-0.22 mm. in size. Oesophagus long, tubular, coiled, measuring 1.8-3.0 x 1.10-0.14 mm., surrounded by prominent gland cells all along its length. Oesophageal bulb well developed Caeca oval, elongated, 0.66-0.94 x 0.4-0.44 mm. in size. Acetabulum 0.36-0.5 mm. in diameter.

Text-fig. 1. *Gyliauchen ozakii* Srivastava, 1938. (After Srivastava, 1938).

Testes oblique, at times found overlapping each other. Posterior testis 0.42-0.48 x 0.39 mm., lies usually at level of acetabulum. Anterior testis 0.38-0.54 x 0.42-0.58 mm., lies obliquely in front of posterior testis. Genital pore lies in level with middle of intestinal caeca. Ovary small, spherical measuring 0.12-0.2 mm. in diameter, situated near anterior testis. Vitellaria consists of large number of oval follicles arranged in form of inverted 'U', extending from half distance between anterior end and posterior extremity of intestinal caeca to a little distance beyond latter. Follicles never overlap intestinal caeca. Eggs measure 0.076-0.087 x 0.041-0.049 mm. in size.

JOURNAL ZOOLOGICAL SOCIETY OF INDIA, 17 (1 & 2), 1965

Host : *Harpodon nehereus.*

Location : Intestine.

Distribution : Karachi (West Pakistan).

FROM: MUKHERJEE & CHAUHAN, 1965

Gyliauchen papillatus (GOTO and MATSUDAIRA, 1918) GOTO, 1919.

syn. *Dissotrema papillatum* GOTO and MATSUDAIRA, 1918.

(Figs. 1, 35, 49, 50 and 51)

SPECIFIC DIAGNOSIS.—Body 3.4 mm to 4.6 mm long, 1.0 to 1.4 mm broad, sausage-shaped, longitudinally concave on the ventral side, convex on the dorsal, only slightly attenuated at the cephalic end, caudal end well rounded with a small excretory papilla on the dorsal side, light yellowish brown in colour. Integument smooth. Oral sucker subterminal, elongate, 0.25–0.3 × 0.25–0.28 mm. Acetabulum small, round or more or less ellipsoid with I-shaped aperture, close to the hind end of body. Prepharynx long, convoluted in two U shape; pharynx well developed, muscles solely circular; intestinal caeca wide and short in the middle third of body.

Genital aperture median, ventral, in the middle third of body behind bifurcation. Testes two, globular, in oblique pair, in front of acetabulum. Cirrus pouch muscular, oval in shape, 0.4–0.8 × 0.3–0.6 mm, enclosing large pars prostatica, ejaculatory duct, penis and well developed penis gland cells. Prostate gland cells lie behind and outside of cirrus pouch. Vesicula seminis, usually constricted into two parts, lying between cirrus pouch and testes.

Ovary globular, smaller than testes, submedian. Receptaculum seminis and Laurer's canal present. Uterus short, with a few windings, intercaecal, between ovary and genital pore. Eggs, 0.047–0.078 × 0.037–0.041 mm. Vitelline follicles small, laterally scattered on the dorsal and ventral side of intestinal caeca, not extending behind the caeca posteriorly, but extending near oral sucker anteriorly.

Excretory vesicle elongated bottle-shaped, opening on the top of excretory papilla; paired excretory canals proceeding from anterolateral corners of the vesicle.

Lymph canals many in number, extending whole length of body.

Habitat.—Intestine of *Siganus fuscescens* (HOUTTUYN).

Locality.—Pacific coast and Inland Sea of Japan.

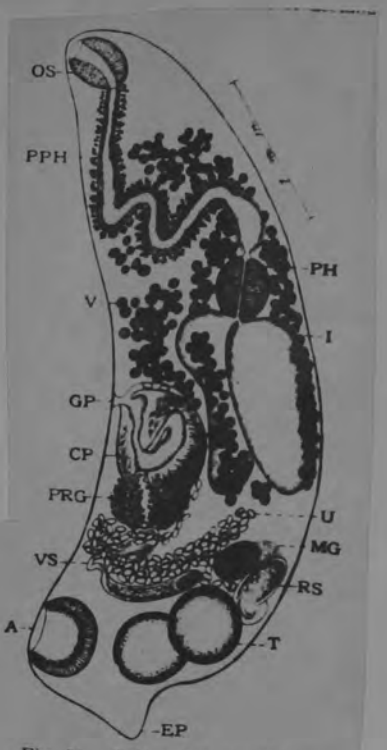
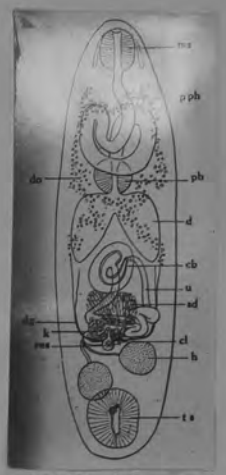


Fig. 51. *Gyliauchen papillatus*. Lateral view.



AFTER GOTO & MATSUDAIRA, 1918

— OVER —

Gyliauchen papillatus (Goto and Matsudaira, 1918) Goto, 1919

Synonym: *Dissotrema papillatus* Goto and Matsudaira, 1918.

Host: *Anodontostoma* (= *Dorosoma*) *chacunda* (Dorosomidae).

Habitat: Small intestine.

Locality: Puerto Princesa, Palawan Island, Philippines.

Date: 21 May 1962.

Specimens deposited: USNM Helm. Coll. No. 37889 (two slides with one worm each).

Measurements (based on two specimens mounted in lateral view; hence measurements indicate lengths and depths): Body 2,550 to 2,645 by 805 to 855; dorsal papilla beyond body surface 42 to 55; preoral lobe 45 to 70; oral sucker 200 to 205 by 160 to 170; acetabulum 300 to 345 by 275 to 340; sucker length ratio 1 : 1.47 to 1.73; pharynx 215 by 160 to 165; oral sucker to pharynx 500 to 575; ceca 530 to 595 by 305 to 340; anterior testis 280 to 305 by 345 to 365; posterior testis 280 to 290 by 270 to 285; pharynx to anterior testis 690 to 695, to posterior testis 925 to 955; cirrus sac 325 to 350 by 190 to 205, extending partly anterior to genital pore 195; external seminal vesicle constricted into two parts, overall length (in one) 450, depth of thin walled proximal part 97 to 150, depth of thick walled distal part 245 to 280; pars prostatica 143 to 145 by 109, prostate gland 260 to 265 by 295 to 300; oral sucker to genital pore 835 to 850; ovary 130 to 143 by 143 to 155; seminal receptacle 196 to 225 by 165 to 230; pharynx to ovary 590 to 650, to seminal receptacle 615 to 775; oral sucker to vitellaria 215 to 270; ten oldest intrauterine eggs 68 to 77 by 51 to 59.

Discussion: This trematode has been recorded several times from *Siganus fuscescens* from Japan, and once from *Siganus* sp. from Celebes.

FROM FISCHTHAL AND KUNTZ, 1964

New Caledonia

Gyliauchenidae Ozaki, 1933
Gyliauchen papillatus (Goto and Matsudaira, 1918) Goto, 1919

Hosts and localities:
Siganus sp.; Siganidae; New Caledonia.
Siganus lineatus (Cuv. and Val.); Green Island, Queensland, Australia.
Location: Intestine.
Number: 1 in 2 hosts examined in New Caledonia; 1 in 2 hosts at Green Island.

Discussion

This species is characterized by the excretory pore opening on a pointed dorsal projection near the posterior end of the body, vitelline follicles extending well anterior to the pharynx, and by the prostatic vesicle partly within and partly outside the cirrus sac. It has been reported from Japan and at Macassar, Celebes. Although found in *Siganus lineatus* at Green Island, it was not found in four other species from other parts of Queensland.

From: Durio & Manter, 1969

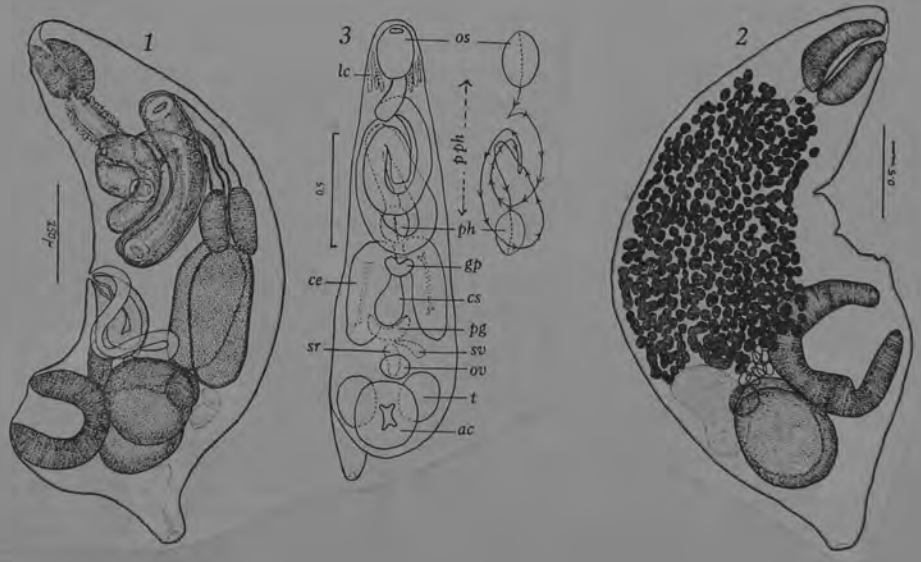
FAMILY GYLIAUCHENIDAE

Gyliauchen volubilis ~~n. sp.~~ Nagaty, 1956
(Figs. 1–3).

Thirteen specimens were obtained from *Pseudoscarus harid*, locally called "Harit," and from *Amphacanthus sigan*, locally called "Sigan," from Ghardaga. Only 1 specimen (in the first host) was fully mature; others had few eggs or were immature.

Description: Conical, fleshy trematodes tapering anteriorly, convex dorsally, concave ventrally, with small tail-like protuberance postero-dorsal to acetabulum. Fully mature specimen 3.12 long by 1.18 in greatest width. Specimens with few eggs, 1.36 to 1.74 long by 0.44 to 0.49 wide. Cuticle smooth. Acetabulum at posterior end, more or less spherical; 0.63 in diameter in largest specimen, 0.19 to 0.26 in others; aperture I-shaped. Oral sucker embedded in parenchyma, pyriform, 0.4 long by 0.29 wide in fully mature specimen; mouth narrow, subventral. Prepharynx very long and convoluted, occupying greater part of anterior half of body; about 5× direct distance between oral sucker and pharynx; direction of coils constant as shown in Fig. 3 with course indicated by arrows; coils in two levels, the ventralmost resembling a reversed letter C, followed by a more dorsal counter-clockwise C-shaped loop which is followed by an inverted U coil. Pharynx 0.14 to 0.17 by 0.14, overlapped ventrally by dorsalmost coil of prepharynx, close to intestinal bifurcation. Posterior border of pharynx at about mid-body level. Intestinal ceca short, broad, and ending just anterior to gonads at about junction of 3rd and 4th quarters of body length. Testes 2, spheroid, smooth, 0.19 to 0.55 in diameter, situated in posterior fourth of body length, dorsal to acetabulum, left testis slightly in advance of right. *Vesicula seminalis externa* well developed; cirrus sac pyriform; prostate gland a large cluster of cells outside and posterior to cirrus sac. Genital pore median, a short distance posterior to mid-body level. Ovary median, between testes, spheroid, 0.1 to 0.14 in diameter. Seminal receptacle and Mehlis' gland near ovary. Vitelline glands well developed, extending from near oral sucker to anterior border of gonads. Uterus short, with few coils between ovary and genital pore; eggs few, large, ovoid, 0.09 by 0.05. Excretory vesicle small, pyriform, extending anteriorly to posterior border of testes, opening at tip of excretory protuberance. The lymphatic system was not observed, except perhaps the anterior ends of the canals in some specimens.

Discussion: Although the ovary of *Gyliauchen volubilis* is between the testes, it is slightly more anterior than in the genus *Flagellotrema* Ozaki, 1936. In that genus, the ovary is posterior to the anterior testis which is at some distance from the other, with both testes anterior to the acetabulum. In the genus *Gyliauchen*, the ovary is described as anterior to the oblique testes. In *G. volubilis*, the testes are dorsal to the acetabulum and the position of the ovary is intermediate to that described for *Flagellotrema* and *Gyliauchen*. The topography of the gonads is on the whole more like that of *Gyliauchen* and for that reason the present species is assigned to that genus. *G. volubilis* resembles most *G. papillatus* (Goto and Matsudaira, 1918) Goto, 1919, but differs from that species: (a) in the more posterior position of the ovary; (b) in the greater development and extent of the vitellaria; (c) in the constant disposition of the pre-pharyngeal convolutions which are also longer and more voluminous; (d) in the better developed excretory protuberance.



GYLIAUCHEN

Apharyngogyliaucheninae ~~n. subfam.~~ Yamaguti, 1958

Subfamily diagnosis. — Gyliauchenidae: Body pyriform, without conical posterodorsal projection. Esophageal bulb (pharynx) absent. Acetabulum ventroterminal. Testes symmetrical, anterolateral to acetabulum. Seminal vesicle bipartite. Prostatic complex strongly developed. Cirrus pouch comparatively small. Genital pore postbifurcal. Ovary submedian, pretesticular. Vitellaria diffuse. Excretory vesicle elongate saccular; pore dorsal.

Apharyngogyliauchen Yamaguti, 1942

Generic diagnosis. — Gyliauchenidae, Apharyngogyliaucheninae: Body pyriform, somewhat flattened dorsoventrally, without tail projection. Oral sucker nearly terminal, spherical, with comparatively small aperture. Esophagus long, with a thick coat of accompanying cells. No esophageal bulb or pharynx. Ceca wide, terminating in front of testes. Acetabulum moderately large, ventroterminal. Testes situated symmetrically anterolateral to acetabulum. Vesicula seminalis constricted into two portions. Pars prostatica partly or entirely outside cirrus pouch. Prostate cells forming a large compact mass around anterior portion of seminal vesicle and pars prostatica. Cirrus pouch comparatively small. Genital atrium opening in median line or a little out of it in postbifurcal equatorial zone. Ovary anteromedial to right testis at level of cecal ends. Uterus winding in intercecal field between acetabulum and genital pore. Vitellaria surrounding esophagus and ceca, confluent in middorsal field. Excretory vesicle elongate saccular, with dorsal opening; no excretory papilla. Parasitic in intestine of marine fishes.

Genotype: *A. callyodontis* Yamaguti, 1942 (Pl. 29, Fig. 378), in *Callyodon* sp.; Naha, Ryukyu Island.

APHARYNGOGYLIAUCHEN Yamaguti,1942

Body flattened pyriform, with smooth cuticula. No pharynx. Esophagus moderately long; ceca wide, ending in front of testes. Acetabulum ventroterminal,large. Testes symmetrical, anterolateral to acetabulum. Seminal vesicle constricted into two portions. Pars prostatic well developed, partly or entirely outside cirrus sac. Prostate cells a large compact mass. Cirrus sac relatively small. Genital atrium present. Genital pore preequatorial. Ovary anteromedial to right testis at level of cecal ends. Sem. receptacle and L.canal present. Uterus winding in preacetabular intercecal area. Eggs numerous. Vitellaria follicular, surrounding esophagus and ceca, confluent in middorsal field. Excretory vesicle elongate saccular, with dorsal opening. Parasitic in marine fishes.

Type species: A.callyodontis Yamaguti,1942

Apharyngoglyiaucheh callyodontis Yamaguti,1942

Size 4.6 to 5.14 by 2.1 to 2.4
Oral sucker 0.42 to 0.58 wide with small aperture
Acetabulum 0.87 to 0.98, with very wide aperture
Sucker ratio:
Testes oval, anterolateral to acetabulum, filling most of caudal third.
Seminal vesicle constricted into two unequal portions; proximal portion subcylindrical, more or less abruptly flexed behind its middle, ventral to shell gland and uterus; anterior portion acorn-shaped inclosing posterior part of pars prostatica at its truncate anterior end, provided with a thick layer of circular muscles, surrounded by compact mass of prostate cells.
Pars prostatic ovoid or elliptical.
Cirrus sac truncate elliptical.
Genital pore equatorial, median or submedian.
Ovary subglobular. Eggs bean-shaped, 72 to 84 by 39 to 45 u.
Excretory vesicle reaching to middle of acetabulum.
Host: Callyodon sp. , intestine; Japan; Naha

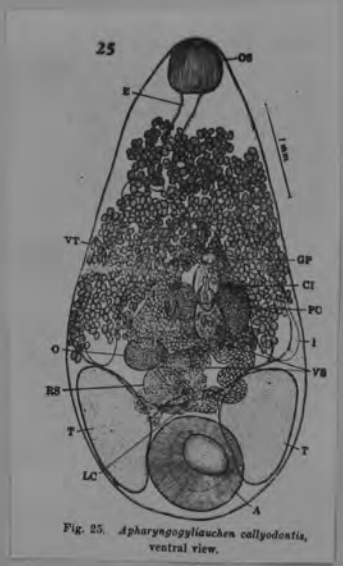


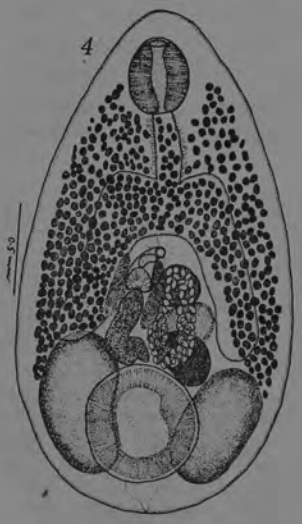
Fig. 25. *Apharyngoglyiaucheh callyodontis*, ventral view.

Apharyngogyliauchen callyodontis Yamaguti, 1942
(Figs. 4 & 5)

Sixty-eight specimens identified as *Apharyngogyliauchen callyodontis* were recovered from the intestine of *Pseudoscarus harid*, locally called "Harit" or "Wariga," from Ghardaga. Although the material differs from Yamaguti's (1942) description in the size of the body and suckers, and in the size, shape and location of the ovary, these differences are considered to be of minor importance. The following description applies to the species as it occurs in the Red Sea and supplements the account based on specimens from Japan.

Description: Body 2.15 to 3.89 long and 1.08 to 2.17 in maximum width; pyriform, tapering anteriorly; posterior end rounded in flattened specimens seen from ventral aspect. Cuticle smooth. Acetabulum 0.57 to 0.93 in diameter, subterminal at posterior end. Oral sucker embedded in parenchyma, subterminal, ovoid, 0.26 to 0.44 in diameter; post-oral ring and pharynx absent; esophagus fairly long, without convolutions, surrounded by numerous glands which may be clustered more densely anteriorly. Esophagus joins two, simple, broad, intestinal ceca at about junction of anterior and middle thirds of body. Ceca short, extending through approximately middle third of body and just reaching or slightly overlapping anterior border of testes. Testes 2, ovoid, smooth, opposite or sometimes one slightly anterior to other, at posterior end, dorsal to acetabulum. Testes in mature specimens 0.38 to 1.03 by 0.31 to 0.65 in diameter with the long axis directly obliquely antero-posteriorly; in immature forms they may be irregular in shape and slightly indented (Fig. 5). *Vesicular seminalis* entirely outside cirrus sac, elongated, sometimes divided into 2 parts by a constriction. It may be straight in young specimens or V-shaped in mature ones. Cirrus sac pyriform, containing a fan-shaped pars prostatica and well developed cirrus. Prostatic cells surround distal third of *vesicula seminalis* and proximal half of cirrus sac. Ovary subtriangular, 0.18 to 0.32 in diameter, situated anterior to testes slightly to one side of mid-line and from just anterior to acetabulum to level of cirrus sac. Well developed Mehlis' gland and large seminal receptacle near ovary. Vitellaria of irregularly shaped follicles of medium size, lateral, between levels of oral sucker and testes and confluent medianly in anterior third of body. Uterus short, with a few intercecal convolutions anterior to acetabulum, opening medially near male pore at about mid-body level. Eggs 0.07 to 0.09 by 0.04 to 0.06, ovoid, colorless.

from Nagaty, 1956



Guliauchenidae (Fukui, 1929) Ozaki, 1933

Apharyngogyliauchen opisthovarius ~~sp. nov.~~. (fig. 25) Gu and Shen, 1983

Fourty six specimens were obtained from the intestine of *Cirrhilabrus sp.*

This species is distinctly distinguished from both A. callyodontis Yamaguti, 1942 and *A. scarutis* sp. nov. in the smaller size of the body, in the ovary laying in the level of testes and in the vitelline follicles beinnig nearly at the level of the intestinal bifurcation.

Xisha Islands, Guangdong Province, CHINA

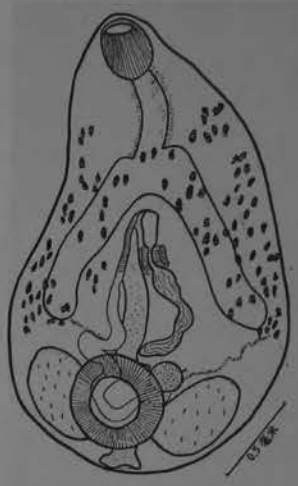


图 25 后巢无咽(中盘)吸虫(新种) *Apharyngogyliauchen opisthovarius sp. nov.* 的腹面图

Apharyngogyliauchen scarustis ~~sp. nov.~~ (fig. 26) Gu and Shen, 1983

Three specimens were obtained from the intestine of a *Scarus sordidus* Forskal.

This species can be distinguished from the related species *A. calltodontis* Yamaguti, 1942 in both the testes and ovary being smaller, in the testes tandem and contiguous and in the shorter and wider caeca.

Xisha Islands, Guangdong Province, CHINA

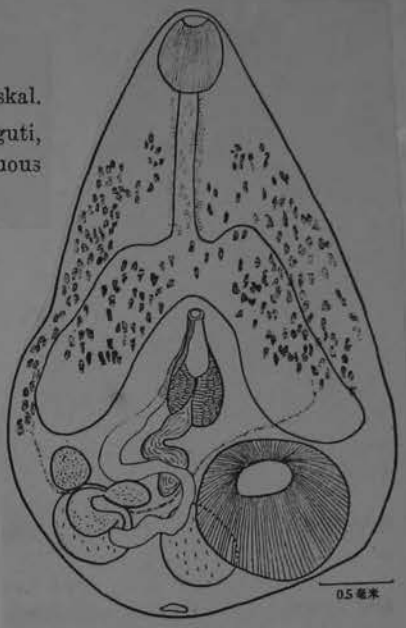


图 26 鹦咀鱼无咽(中盘)吸虫(新种) *Apharyngogyliauchen scarustis* sp. nov. 的腹面图

APHARYNGOGYLIAUCHEN

Flagellotrema Ozaki, 1936

Generic diagnosis. — Gyliauchenidae, Gyliaucheninae: Body elongate, with prominent conical projection dorsoterminally. Oral sucker subterminal, longer than broad. Esophagus long, winding, with strongly developed bulb at its posterior end. Ceca wide, short, in middle third of body. Acetabulum ventroterminal, comparatively small. Testes diagonal, preacetabular. Vesicula seminalis constricted into two portions. Pars prostatica partly inside and partly outside large rounded cirrus pouch. Genital pore on a level with cecal ends. Ovary on the right of median line between testes. Uterus with relatively few coils. Vitellaria extending on each side of esophagus and its bulb, between and behind two ceca. Excretory vesicle produced into caudal cone and opening at its tip. Lymph system present. Parasitic in rectum of marine fishes.

Genotype: *F. convolutum* Ozaki, 1936 (Pl. 29, Fig. 377), in *Xesurus scalprum;* Japan.

FLAGELLOTREMA Ozaki,1936

Gyliauchenidae Ozaki,1933. Body elongate,cylindrical, attenuated anteriorly, rounded posteriorly, with a small protuberance near the posterior extremity. Cuticle smooth. Oral sucker subterminal, ellipsoidal. Acetabulum round, at the posterior end of body. Prepharynx long,convoluted, with glandular coating. Pharynx globular,mainly composed of circular muscular bundles , in the beginning part of the middle third of body. Genital pore median, behind the ending level of caeca. Cirrus pouch muscular. Main part of pars prostatica, prostate gland and seminal vesicle lies behind the cirrus pouch. Testes globular, anterior to acetabulum. Ovary smaller than testes, between the two testes. Seminal receptacle between ovary and posterior testis. Laurer's canal present. Vitellaria composed of small follicles, extending from near the oral sucker to the anterior testis. Uterus spirally coiled in median line. Uterine ova oval, few in number. Lymph system present. Excretory vesicle simple, opening on top of excretory protuberance. Type speces: F.convolutum

Host: Xesurus scalprum (Cuv. & Val.), rectum

(same host as for Telotrema caudatum)

Reference: Zool. Mag., 48:951-953.

Key to species of *Flagellotrema* from Hawaiian fishes
Yamaguti, 1970

Esophageal bulb much larger than oral sucker; esophagus sigmoid or looped, not lined with long cilia; testes small as compared with ovary . . . . . *F. centropygis*

Esophageal bulb not much larger than oral sucker; esophagus sigmoid, lined with very long cilia anteriorly and constricted off from ensuing portion; testes definitely larger than ovary . . . . . *F. potteri*

Esophageal bulb definitely larger than oral sucker; esophagus sigmoid or looped, lined with cuticular villi; testes larger than ovary . . . . . *F. chaetodontis*

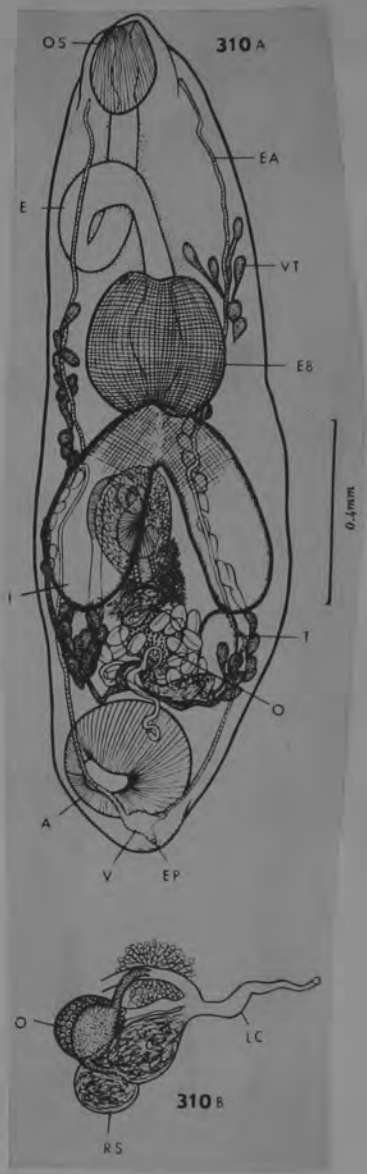
310. *Flagellotrema centropygis* n. sp.

(Fig. 310) Yamaguti, 1970

HABITAT: Intestine of *Centropyge potteri*; Hawaii.
HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63869.
DESCRIPTION: (based on 13 whole mounts): Body reddish in life, elongate, with prominent conical projection dorsoterminally, 1.1-2.5 mm long, 0.3-0.6 mm wide in postequatorial region. Oral sucker oval, 0.12-0.2 × 0.09-0.16 mm, surmounted by preoral lobe up to 70 μ thick. Esophagus sigmoid or looped, 0.5-0.8 mm long, provided with fine longitudinal and circular muscle fibers, surrounded by accompanying cells; esophageal bulb large and very strongly muscular, 0.2-0.35 × 0.2-0.32 mm. Ceca elongate saccular, 0.3-0.65 × 0.13-0.38 mm, extending from equatorial zone into caudal third of body. Acetabulum ventrosubterminal, 0.2-0.37 mm in diameter.

Testes round, oval, 0.07-0.2 × 0.04-0.14 mm, situated nearly symmetrically just behind cecal ends or overlapping them. Seminal vesicle tubular, 30-80 μ wide, curved, with its proximal end at level of ovary or testes; pars prostatica usually straight, 0.13-0.2 mm long, with very thick coat of prostate cells which encloses the posterior end of the cirrus pouch. Cirrus pouch longitudinally elongated oval, thin-walled, 0.14-0.25 × 0.07-0.17 mm, between two ceca. Cirrus wide, crooked, well cuticularized, forming a smooth massive bulb when everted out of the genital atrium. Genital atrium with strong longitudinal muscle bundles in its ventral wall posterior to genital pore, opening midventrally at level of ceca, about 0.2 mm posterior to esophageal bulb in the type.

Ovary subglobular, 70-104 × 56-104 μ, situated nearly in median line at about level of testes anterior to acetabulum. Germiduct arising from dorsal side of ovary, joining seminal receptacle. Laurer's canal arising from anterior end of seminal receptacle, opening dorsal to acetabulum. Uterus coiled in region of ovary. Eggs elongate oval, 62-70 × 34-42 μ in life. Vitelline follicles bunch-like, extending from level of esophagus down to testicular or ovarian zone; vitelline reservoir rounded or triangular, between ovary and acetabulum. Excretory vesicle inflated at base of conical caudal projection; collecting vessels forming a zigzag flexure behind esophageal bulb, reaching to oral sucker.
DISCUSSION: This species differs from the type species of the genus, *Flagellotrema convolutum* Ozaki, 1936, in the genital pore lying nearer to the esophageal bulb than to cecal ends, in the esophageal bulb being much larger, and in the vitellaria being much more weakly developed. It also differs from *Flagellotrema potteri* n. sp. in the latter two respects.



311. *Flagellotrema chaetodontis* (Manter et Pritchard, 1926) n. comb.
Syn. *Ichthyotrema chaetodontis*
Manter et Pritchard, 1962

(Fig. 311) Yamaguti, 1970

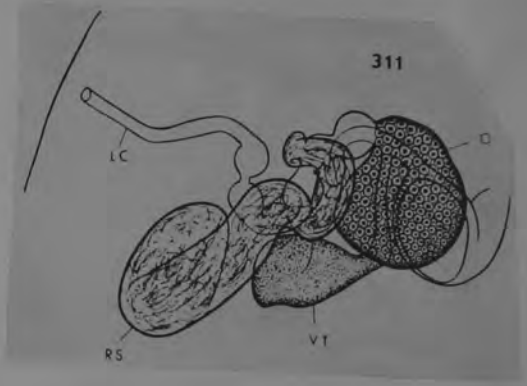
HABITAT: Intestine of *Chaetodon miliaris* and *C. fremblii*; Hawaii.

DESCRIPTION (based on 20 whole mounts): Body orange-red in life, elongate, 1.8-4.5 × 0.55-1.5 mm, tapered anteriorly, with its postacetabular region produced dorsoposteriad in form of a cone 0.15-0.4 mm long. Cuticle smooth. Oral sucker subterminal, pyriform, 0.18-0.4 × 0.18-0.32 mm, may be surmounted by body fold when retracted; esophagus muscular, long, sigmoid or looped, surrounded by accompanying cells, lined with cuticular villi. Pharynx strongly muscular, 0.28-0.42 × 0.28-0.4 mm, with conspicuous circular muscles; ceca cylindrical to saccular, up to 0.4 mm wide, usually terminating at level of seminal vesicle. Acetabulum ventrosubterminal, 0.3-0.75 mm in diameter.

Testes symmetrical or subsymmetrical, one on each side behind cecal end, ovoid, 0.11-0.35 × 0.08-0.3 mm; seminal vesicle twisted into two portions up to 50-140 μ wide, in zone of pars prostatica to testes. Pars prostatica cylindrical, with its greater posterior portion surrounded by dense mass of prostatic cells which extend over the posterior end of the cirrus pouch, and its shorter anterior portion enclosed in cirrus pouch. Cirrus with heavily sclerotized cuticle which is folded when not everted, surrounded by markedly granular cells which occupy all the available space inside the cirrus pouch. Cirrus pouch with thick wall of longitudinal muscle fibers, approximately oval, 0.17-0.45 × 0.13-0.4 mm, situated obliquely in ventral median field. Genital atrium well developed, with its marginal wall elevated, opening midventrally at a postbifurcal level.

Ovary ovoid, 0.06-0.22 × 0.05-0.2 mm, posterodorsal to testes and anterodorsal to acetabulum. The germiduct arising from the anterior end of the ovary unites with the seminal receptacle and the Laurer's canal at the same point, where it turns back on itself to join the ascending duct from the vitelline reservoir near the origin of the germiduct on its left side. Seminal receptacle curved, usually bent back on itself posteriorly, up to 40-160 μ wide, postovarian. Laurer's canal more or less curved, opening middorsally at a pre-acetabular or acetabular level. Uterus loosely coiled in pre-acetabular median field; metraterm extending along posterior margin of cirrus pouch and opening into genital pore immediately behind male pore. Eggs not numerous, slightly asymmetrically oval, 59-75 × 35-49 μ in life. Vitelline follicles massed in bunches on each side, extending from level behind oral sucker to level of anterior end of acetabulum. Excretory vesicle inverted claviform or retort-shaped, confined to conical tail projection, on the top of which it opens outside; main collecting vessels originating symmetrically a little posterior to oral sucker, winding backward in lateral fields, sometimes forming one loop or two, emptying into excretory vesicle at its anterolateral corners. Lymph system reticular, not forming a definite pattern of vessels.

DISCUSSION: Manter and Pritchard assigned this species to *Ichthyotrema* Caballero et Bravo-Hollis, 1952 in spite of the entirely different distribution of the vitellaria and the different shape of the esophagus (prepharynx after Manter and Pritchard). In general anatomy it agrees well with *Flagellotrema* species, so that it should be transferred to this genus as *Flagellotrema chaetodontis*.



312. *Flagellotrema potteri* n. sp.

(Fig. 312) Yamaguti, 1970

HABITAT: Intestine of *Centropyge potteri* (type host) and *Acanthurus sandvicensis*; Hawaii.

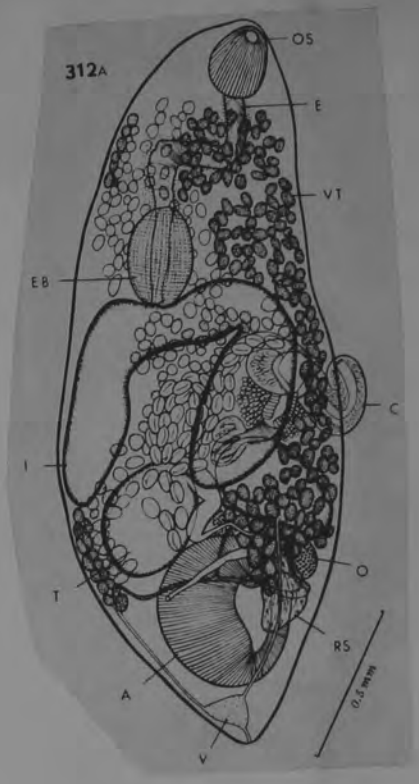
HOLOTYPE: U. S. Nat. Mus. Helm. Coll., No. 63870.

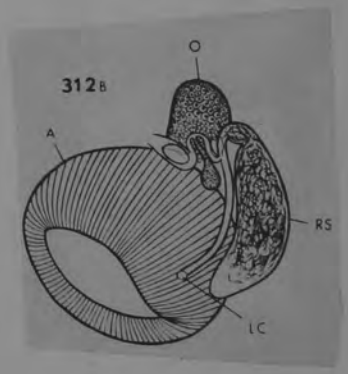
DESCRIPTION (based on three whole mounts): Body reddish in life, rather plump, 1.6-2.3 × 0.06-0.09 mm, more or less pointed at both extremities, with prominent concail projection posterodorsally. Oral sucker ellipsoidal, subterminal, surmounted by more or less conspicuous pre-oral lobe. Esophagus sigmoid, 0.4-0.6 mm long, surrounded by well developed accompanying cells; its anterior portion (0.2 mm long in the type) lined with very long cilia directed obliquely forward and constricted off from the remaining portion. Esophageal bulb 0.19-0.3 × 0.18-0.21 mm; ceca cylindrical, 0.4-0.8 mm long, terminating immediately in front of testes. Acetabulum 0.3-0.4 mm in diameter, ventrosubterminal, occupying greater portion of caudal third of body.

Testes ovoid, 0.18-0.3 × 0.14-0.27 mm, situated almost symmetrically, one on each side of body, in front of acetabulum. Seminal vesicle tubular, 70-80 μ wide, curved back on itself, with its cylindrical distal portion provided with circular muscle fibers. Pars prostatica cylindrical, enclosed in compact mass of prostate cells. Cirrus pouch ovoid, 0.16-0.29 × 0.15-0.27 mm; cirrus, when everted, smooth and crooked back on itself at genital pore, thickly set with glandular cells, 0.13 mm wide in the type. Genital atrium opening at equatorial or postequatorial level, a little behind intestinal bifurcation.

Ovary oval, 0.07-0.15 × 0.1-0.2 mm, anterodorsodextral to acetabulum. Seminal receptacle retort-shaped, 0.1 mm in diameter, overlapping ovary and acetabulum dorsally, giving off Laurer's canal at its anterior end. Laurer's canal opening dorsal to acetabulum. Uterus ascending in median field, intertesticular, intercecal, finally running along anterior border of cirrus pouch and opening into gential atrium from in front. Eggs slightly asymmetrically oval, 37-77 × 37-49 μ in balsam mounts, 60-68 × 32-35 μ in life. Vitelline follicles bunch-like, extending in lateral fields between esophageal level and ovarian zone, confluent at bifurcal level; vitelline reservoir inconspicuous, dorsal to acetabulum. Excretory vesicle triangular, postacetabular, with terminal pore at tip of conical projection.

DISCUSSION: This species is easily distinguishable from *Flagellotrema centropygis* n. sp. from the same host species by the peculiar structure of the anterior portion of the esophagus, the smaller esophageal bulb, and the more strongly developed vitellaria. The specific name refers to that of the host fish.





FLAGELLOTREMA

Ichthyotrema Caballero et Bravo, 1952[3]

Generic diagnosis. — Gyliauchenidae, Gyliaucheninae: Body cylindrical, with thick cuticle, unarmed. Oral sucker subterminal, spherical. Esophagus long, with strongly muscular bulb at posterior end. Ceca short, widened anteriorly, reaching to level of cirrus pouch. Acetabulum muscular, terminal, with ventral aperture, but may be subterminal when retracted. Testes diagonal, in posterior half of body. Seminal vesicle bipartite. Cirrus pouch present. Prostate complex and cirrus strongly developed. Genital pore in equatorial zone near median line. Ovary median, about halfway between posterior testis and acetabulum. Laurer's canal and large seminal receptacle present. Uterus winding posterior and anterior to testes, passing between these two; eggs large, not very numerous. Vitellaria extending profusely from behind oral sucker to testicular zone. Excretory vesicle extending dorsal to acetabulum up to near ovary; pore terminal when the acetabulum is retracted, but dorsal when this sucker is protruded. Lymph system? Intestinal parasites of marine fishes.

Genotype: *I. vogelsangi* Caballero et Bravo, 1952[3] (Pl. 34, Fig. 438), in *Xesurus punctatus;* Pacific coast of Mexico.

Gyliauchenidae

Ichthyotrema ~~n. g.~~ CABALLERO AND BRAVO, 1953

Ichthyotreminae: Tremátodos cilíndricos de cutícula gruesa y sin espinas; ventosa oral grande, esférica y subterminal; ausencia de acetábulo; órgano de fijación cilíndrico, musculoso y alojado en una cavidad del extremo posterior del cuerpo con abertura ventral por donde puede evaginarse dicho órgano. Prefaringe larga y ancha; faringe pequeña, esférica y musculosa; esófago corto; ciegos intestinales anchos anteriormente y extendiéndose hasta el nivel de la bolsa del cirro. Poro reproductor amplio, fuertemente musculoso y situado por delante del ecuador del cuerpo, sobre la línea media; testículos oblongos, lisos, grandes, situados uno detrás del otro u oblicuamente en la parte posterior del cuerpo; bolsa del cirro grande, cilíndrica, formada por dos porciones bien definidas: pars prostática grande, constituida por una porción central y otra periférica fuertemente celular; cirro grueso y cilíndrico con una porción central musculosa y periférica celular; vesícula seminal formada por dos porciones, una anterior y parcialmente dentro de la bolsa del cirro, y otra posterior fuera de ella y situada entre la misma y el testículo anterior. Ovario esférico, de contornos lisos, mediano o ligeramente desviado hacia un lado, postesticular; glándula de Mehlis amplia y vecina al ovario; ootipo lateral al ovario; conducto de Laurer corto y grueso; receptáculo seminal grande vecino al ovario; útero pequeño, preovárico, cuyas asas cruzan entre los testículos y entre el testículo anterior y la vesícula seminal; huevos grandes no muy numerosos, blanquecinos y operculados.

Glándulas vitelógenas ocupando toda la porción anterior dorsal, ventral y lateral del cuerpo, desde por detrás de la ventosa oral hasta el nivel del borde anterior del testículo posterior, siendo más abundantes desde por detrás de la ventosa oral hasta el nivel del poro reproductor; conductos vitelógenos gruesos y dirigidos de delante hacia atrás. Poro excretor terminal, situado dorsalmente a la abertura por donde se evagina el órgano de fijación; vesícula excretora extendiéndose dorsalmente hasta por detrás del ovario y constituida por dos partes, una posterior que es el tallo cilíndrico y otra anterior que se ensancha y es piriforme.

Especie tipo: **Ichthyotrema vogelsangi** ~~n. sp.~~ CABALLERO AND BRAVO, 1953

Localización: Láminas mesentéricas perintestinales de peces marinos del Océano Pacífico.

Gyliauchenidae

Ichthyotrema vogelsangi Caballero et Bravo, 1953

(Fig. 1)

Huésped: *Prionurus punctatus* (Gill), Pisc., Acanthuridae). Intestino posterior; 45 ejemplares en uno de los tres huéspedes.

Localidad: Cabo San Lucas, Baja California Sur, México.

Ejemplares depositados: Colección Helmintológica del Instituto de Biologia de la Universidad Nacional de México, N° 216-21; y en las colecciones de la Allan Hancock Foundation, University of Southern California, Los Angeles, California, U.S.A.

Redescripción (basada en las medidas de 20 ejemplares grávidos, con promedios en paréntesis): Cuerpo fusiforme y generalmente recurvado posteriormente, redondeado en ambos extremos, en vivo de color naranja opaco, longitud 5.130 a 7.463 (6.068) mm, y anchura de 0.675 a 1.014 (0.868) mm, con una papila excretora cónica localizada en el quinto posterior de la longitud total del cuerpo. Cutícula sin espinas. Ventosa oral subterminal cuya longitud es de 0.245 a 0.360 (0.298) mm y su anchura de 0.208 a 0.204 (0.264) mm, abertura aplanada dorsoventralmente, sin divertículos orales. Acetábulo alargado, localizado en el parte caudal del cuerpo, y que mide 0.480 a 0.585 (0.540) mm de largo por 0.300 a 0.428 (0.349) mm de ancho, con abertura longitudinal. Prefaringe rodeada por células glandulares, poco o considerablemente más larga que la distancia en linea recta entre la ventosa oral y la faringe, la cual varía de 0.713 a 1.298 (0.954) mm, su parte posterior esta diferenciada en bulbo prefaringeo directamente anterior a la faringe; prefaringe de 0.052 a 0.095 (0.073) mm de ancho. Faringe pequeña, con bandas prominentes de músculos circulares, de 0.165 a 0.208 (0.181) mm de largo por 0.104 a 0.173 (0.138) mm de ancho. Esófago muy corto de 0.020 a 0.035 mm de largo en preparaciones seccionadas. Ciegos intestinales de 0.900 a 1.613 (1.258) mm de largo por 0.121 a 0.300 (0.194) mm de ancho, generalmente extendiéndose hasta cerca del nivel anterior de la bolsa del cirro (Fig. 1).

Dos testículos, subglobulares y lisos, situados un poco oblicuamente y uno delante del otro en la mitad posterior del cuerpo a considerable distancia anterior al ovario, separados por un espacio intertesticular de 0.017 a 0.150 (0.078) mm. El testículo anterior es ligeramente menor que el posterior y mide de 0.233 a 0.338 (0.284) mm de largo por 0.278 a 0.300 (0.344) mm de ancho; el posterior mide 0.255 a 0.383 (0.315) mm de largo por 0.300 a 0.443 (0.384) mm de ancho. La vesícula seminal es de forma alargada-sacular, con dos porciones recurvadas separadas por un delgado istmo; la porción distal que recibe el vaso deferente, es de 0.173 a 0.329 (0.223) mm de largo por 0.045 a 0.080 (0.060) mm de ancho; la proximal está rodeado por células prostáticas, se continúa con la pars prostática y tiene una longitud de 0.147 a 0.260 (0.209) mm y un diámetro de 0.061 a 0.092 (0.077) mm. La pars prostática es alargada, tubular y mide 0.311 a 0.735 (0.482) mm de largo por 0.064 a 0.109 (0.097) mm de ancho, rodeado por células de la glándula prostática formando una masa ancha y compacta en toda su longitud. La bolsa del cirro es grande y globular, de 0.260 a 0.467 (0.375) mm de largo por 0.208 a 0.332 (0.289) mm de ancho, con un cirro y una masa compacta de células glandulares asociadas, y que recibe la pars prostática en su base cerca de la parte final de los ciegos intestinales. El seno genital es pequeño y aparece como una ligera depresión sobre la superficie ventral; recibe las aberturas genitales masculina y femenina. El poro genital está localizado a una distancia de 1.763 a 3.303 (2.611) mm de la extremidad anterior.

El ovario es subglobular, liso, de 0.128 a 0.234 (0.188) mm de largo por 0.135 a 0.278 (0.213) mm de ancho, situado sobre la linea media y separado del testículo posterior por una distancia que varia entre 0.138 a 0.608 (0.344) mm. El receptáculo seminal es lateral o posterior al ovario, y mide 0.113 a 0.311 (0.222) mm de largo por 0.087 a 0.147 (0.119) mm de ancho. Los vitelarios consisten de folículos dispuestos dorsal y ventralmente, distribuidos difusamente desde el nivel anterior de la faringe al de la papila excretora, y están concentrados más densamente delante de los testículos. Los conductos vitelinos longitudinales se extienden lateralmente paralelos a los lados del cuerpo, y despues medialmente al nivel del ovario para formar un reservorio triangular con un conducto de yema común que se extiende hasta el conducto ovo-vitelino cerca del ootipo, rodeado por una difusa glándula de Mehlis. El canal de Laurer es corto y grueso. Las asas uterinas llenan el área que hay entre el ovario y el testículo posterior, se extienden lateralmente a los testículos o dentro del espacio intertesticular y lateral al complejo prostático, y penetran anteriormente al seno genital. Huevecillos numerosos, de forma ovoide alargada, y de 0.068 a 0.072 (0.070) mm de largo por 0.034 a 0.043 (0.038) mm de ancho.

FIG. FROM CABALLERO y C. AND BRAVO-HOLLIS, 1953

-OVER-

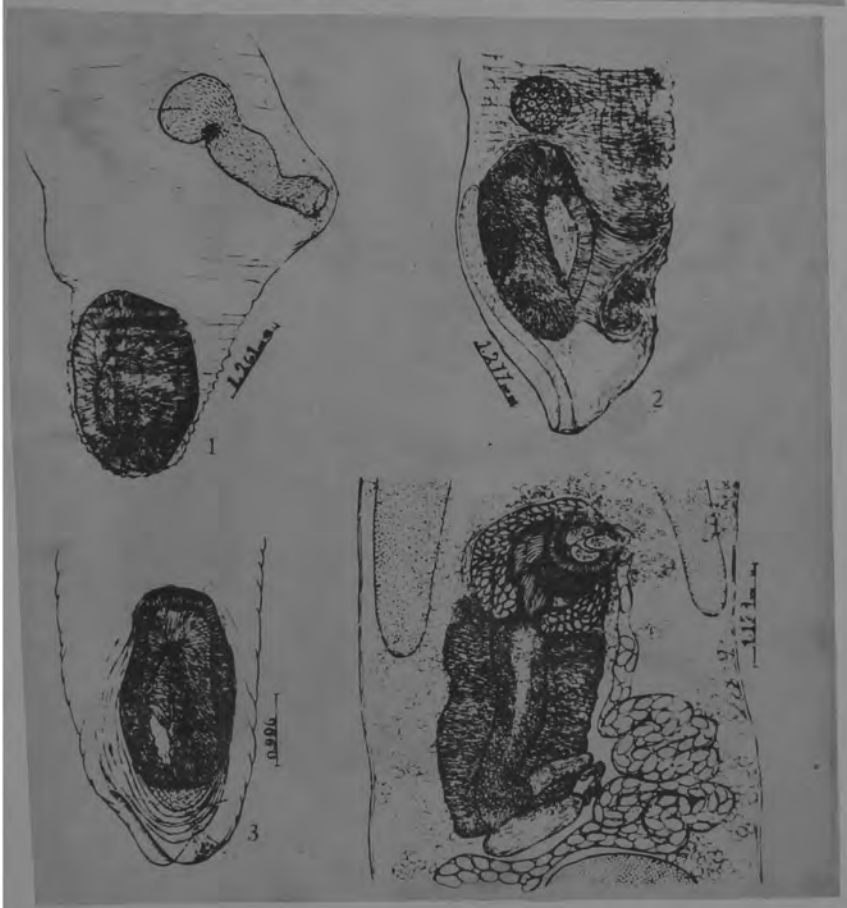
Vesícula excretora alargada, con poro excretor situado en la extremidad de la papila excretora, y 0.713 a 1.275 (0.967) mm del margen posterior del cuerpo.

Sistema linfático formado por simples canales longitudinales que se extienden a través de la longitud del cuerpo.

Discusión: *Ichthyotrema vogelsangi* Caballero et Bravo, 1953 es un típico giliauquénido en muchos aspectos y de acuerdo con la diagnosis de la familia dada por Ozaki (1933) y Yamaguti (1958). La posición posterior del ovario con referencia a los testículos, puede considerarse de significación genérica y subfamiliar en una familia consistente de cinco previamente llamados géneros en los cuales los testículos nunca son pre-ováricos, y solamente en uno, *Flagellotrema* Ozaki, 1933, el ovario está situado entre los dos testículos. En todos los géneros y especies de Giyliauchenidae, los testículos están situados al final de la parte posterior del cuerpo y quizá próximos al ovario y al acetábulo. *Ichthyotrema vogelsangi* difiere de esta condición por tener una distancia relativamente grande, por lo menos de un quinto de la longitud total del cuerpo, interpuesta entre el márgen posterior del ovario y el anterior del acetábulo. *Ichthyotrema* además difiere de todos los géneros giliauquénidos por la gran extensión de los vitelógenos que van desde el nivel anterior de la faringe al de la papila excretora, o sea, hasta cerca de la extremidad posterior.

Nuestra colección del sur de la Bâja California está en perfecto acuerdo con la descripción original de *Ichthyotrema vogelsangi* del mismo pez huésped de Puerto Vallarta, Bahía de Banderas, Jalisco y con el holotipo depositado con el número 24-14 en la Colección Helmintológica del Instituto de Biología de la Universidad Nacional de México.

FROM WINTER, 1960



LAMINA II. Ichthyotrema vogelsangi n. g. n. sp. Figs. 1 a 3. Detalle del órgano de fijación y de la vesícula excretora. Fig. 4. Bolsa del cirro.

FIGS. FROM CABALLERO y C. AND BRAVO-HOLLIS, 1953

FAMILY GYLIAUCHENIDAE

Ichthyotrema chaetodontis Sp. Nov. Manter & Pritchard, 1962
(Figs. 7–9)

Hosts (all Chaetodontidae, butterfly fishes):

Chaetodon fremblii Bennett, type host; 23 specimens from five of 17 hosts.
C. corallicola Snyder; 38 specimens from five of eight fishes.
C. miliaris Quoy P Gaimard; 78 specimens from seven of 43 fishes.
C. multicinctus Garrett; three specimens from two of five fishes.

Location: Intestine.

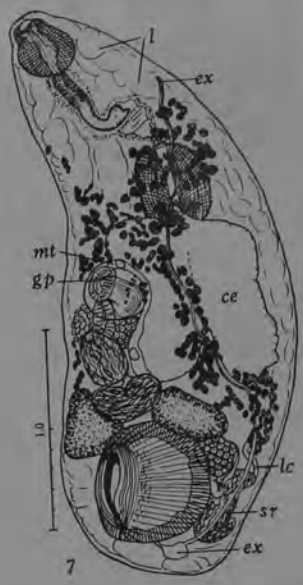
Holotype: U. S. Nat. Mus. Helminth. Coll., No. 39460.

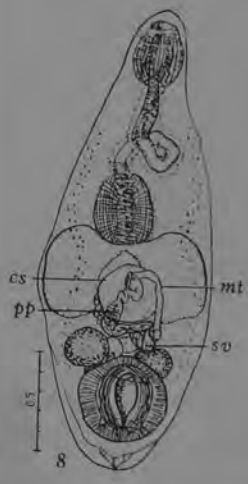
DESCRIPTION (based on 102 specimens containing eggs): Orange-red when alive. Body conical, anterior end curved ventrally, posterior end rounded with dorsoterminal papilla; 1.407 to 3.862 long by 0.690 to 1.260 wide, widest near midbody; oral sucker subterminal, more or less spherical but narrowed anteriorly, 0.174 to 0.281 wide by 0.208 to 0.369 long; acetabulum ventro-terminal, 0.335 to 0.556 wide by 0.302 to 0.643 long; aperture elongate, rounded anteriorly, pointed posteriorly, surrounded by well-developed sphincter muscles (Fig. 8); lumen subquadrate; sucker ratio 1:1.5 to 1.8; prepharynx 0.851 to 1.187 long, surrounded by numerous small gland cells, sigmoid in lateral view but forming a sinistral loop in ventral view, structurally divided into four regions: anterior region 0.188 to 0.469 long, extending directly posteriad from ventroterminal part of oral sucker, largely filled with slender fibers which Ozaki (1937) interpreted to be frayed cuticula; next region varying considerably in length, forming lateral and dorsal parts of loop and sometimes all of loop, with short fibers and larger lumen; third region usually extending posteriorly, larger in diameter, without fibers, thin-walled and often wrinkled by contraction; last region short, narrow, surrounded by very inconspicuous circular muscles; pharynx large, spherical to ovate, 0.228 to 0.422 long by 0.168 to 0.335 wide, with conspicuous circular muscle bundles; gland cells of prepharynx extend also around pharynx in thin layer; caecal bifurcation at midbody or anterior to it; caeca 0.302 to 1.025 long, inflated or not, extending posterodorsally and reaching acetabular level or not.

Testes symmetrical (side by side) or subsymmetrical, contiguous with acetabulum or immediately anterior to it, rounded or oval, 0.080 to 0.355 long by 0.114 to 0.409 wide; seminal vesicle bipartite, anterior to testes, proximal part 0.149 to to 0.369 long by 0.080 to 0.101 wide and often bent in middle, distal part 0.154 to 0.268 long by 0.047 to 0.154 wide with thicker wall, two parts joined by slender, looped duct; *pars prostatica* 0.080 to 0.221 long by 0.080 to 0.114 wide, as much as half its length projecting into cirrus sac; prostatic cells massed around *pars prostatica*, crowded against cirrus sac, and surrounding union of seminal vesicle and *pars prostatica*; cirrus sac posteroventral to bifurcation of caeca, spherical, 0.147 to 0.302 long by 0.152 to 0.402 wide, with thick wall; cirrus large, protrusible, consisting of muscular and glandular tissue; genital pore large, median, at or slightly posterior to midbody.

Ovary rounded, dorsal to acetabulum, partially or entirely post-testicular, slightly submedian (right), 0.060 to 0.201 in diameter; seminal receptacle elongate, dorsal to acetabulum, posterodorsal to ovary, 0.168 to 0.536 long, sometimes bent in middle; Laurer's canal well-developed, sinuous, with swellings at irregular intervals, 0.240 long in one individual; opening submedianly on dorsal surface at level of ovary or slightly more anteriorly; vitelline follicles largely lateral, very small to well-developed, extending from level of testes or acetabulum anteriorly to level of pharynx or prepharyngeal loop, beginning dorsal to gonads they become ventral to the caeca; then diverge laterodorsally (Fig. 7); specimens in which vitellaria are well-developed may also have a few follicles dorsal to caeca. Uterus preovarian, more or less median, coiling only slightly; metraterm extending dorsosinistral to cirrus sac and entering genital pore anteriorly; eggs not numerous (usually ten or less), 59 to 72 by 42 to 56, operculated, ovate in one view but from the side they show a different curvature on one surface (Fig. 9).

Excretory pore dorsoterminal at tip of more or less prominent papilla; excretory vesicle rounded to elongate, extending anteroventrally toward acetabulum, 0.067 to 0.302 long by 0.101 to 0.168 wide, joined to pore by very short duct; excretory vessels narrow, beginning at anterior edge of excretory vesicle and following the vitelline fields forward to level of prepharyngeal loop or oral sucker, and then turning backward and pursuing a similar course posteriorly; containing a slightly granular substance; longitudinal lymphatic vessels present, sometimes filling much of the body.





DISCUSSION: Although a specimen 1.407 long contained four eggs, specimens as large as 2.580 may be without eggs.

This species is included in *Ichthyotrema* Caballero and Bravo, 1954 because the ovary is posterior to the testes. It differs from *I. vogelsangi*, type and only other species, in many respects including the following: the shorter and relatively wider body is conical or spindle shaped rather than filiform; the prepharynx forms a sinistral loop rather than being straight; the pharynx is larger than the oral sucker rather than smaller; the caecal bifurcation is at midbody and the caeca extend to the middle of the posterior half of the body, while in *I. vogelsangi* the bifurcation is about $^1/_4$ body length from the anterior end and the caeca extend only to midbody; the testes are side by side immediately anterior to the acetabulum rather than tandem to diagonal midway between cirrus sac and acetabulum; the distribution of the vitellaria is restricted and follows a definite pattern rather than filling a large portion of the body anterior to the genital pore.

ICHTHYOTREMA

Glyiauchenidae

LEPTOBULBUS Manter & Pritchard, 1962

GENERIC DIAGNOSIS OF *Leptobulbus*. Glyiauchenidae: Body pyriform, without posterior projection; oral sucker subterminal, rounded or somewhat elongate; prepharynx about as long as oral sucker and almost straight; pharynx inconspicuous, smaller than oral sucker, consisting only of circular muscles; prepharynx and pharynx with thick layer of glandular cells; caeca extend to mid-acetabulum; acetabulum moderately large, ventral, near middle of posterior half of body; testes symmetrical or subsymmetrical, posterolateral to acetabulum; seminal vesicle with two bends, distal one may involve a constriction of vesicle; *pars prostatica* projecting into cirrus sac; prostatic cells forming a large, compact mass around *pars prostatica*, somewhat overlapping seminal vesicle; cirrus sac small to comparatively large; genital pore median, posterior to caecal bifurcation but in anterior half of body; ovary postacetabular or at posterior edge of acetabulum, intertesticular or posttesticular, median or submedian; uterus winding submedianly between ovary and genital pore; vitellaria extend from near oral sucker to ends of caeca, follicles most numerous laterally but some confluent ventral to caecal bifurcation and dorsally along middle of body; excretory vesicle saccular; excretory pore terminal; lymphatic system present. Intestinal parasites of marine fishes.

DISCUSSION: This genus resembles both *Paragyliauchen* Yamaguti, 1934 and *Apharyngogyliauchen* Yamaguti, 1952. The relative positions of the testes and acetabulum and the extent of the caeca as far as mid-acetabulum are more like *Paragyliauchen*. The lack of a well-developed pharynx, the post-bifurcal genital pore, the almost straight prepharynx, the follicular but unclustered vitellaria, and the Scarid host are more like characters of *Apharyngogyliauchen*. Unlike either genus, the ovary of *Leptobulbus* is postacetabular and in large part intertesticular, and the pharynx, while inconspicuous, is present and composed of circular muscles only. The very slightly developed pharynx present in *Leptobulbus* is intermediate between *Apharyngogyliauchen* and other gyliauchenids, and would seem to make unjustified the subfamily Apharyngogyliaucheninae Yamaguti, 1958.

Leptobulbus magnacirratus Gen. et Sp. Nov.
(Figs. 10–11)

Host: *Callyodon* sp. (Scaridae, parrot fishes and uhus); five specimens from two of three fishes.

Location: Intestine.

Holotype: U. S. Nat. Mus. Helminth. Coll., No. 39461.

DESCRIPTION (based on four specimens): Body thick, pyriform, 1.621 to 2.566 long by 0.838 to 1.178 wide at level of acetabulum (the fifth specimen, found singly, was 4.462 long with proportionately larger measurements); oral sucker subterminal, rounded, 0.208 to 0.295 wide by 0.241 to 0.315 long; acetabulum in posterior half of body, rounded, 0.523 to 0.637 wide by 0.469 to 0.650 long; aperture rounded or subquadrate; sucker ratio 1:1.95 to 2.2; prepharynx 0.121 to 0.268 long, straight or slightly curved; pharynx 0.064 to 0.134 long by 0.096 to 0.136 wide, consisting of inconspicuous circular muscles; both prepharynx and pharynx surrounded by numerous small gland cells; esophagus absent; caeca moderately wide, bifurcating ¼ to ⅓ body length from anterior end of body and extending posteriorly to level of mid-acetabulum.

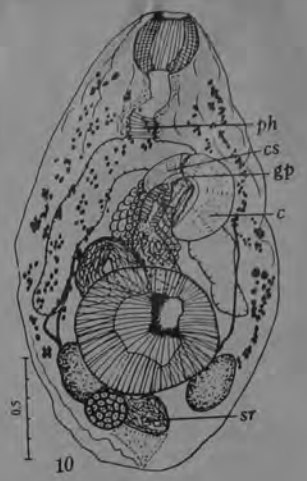
Testes symmetrical (side by side) or subsymmetrical, laterodorsal to posterior third of acetabulum, 0.121 to 0.288 long by 0.114 to 0.181 wide, long axis oblique to median line; seminal vesicle anterior to acetabulum or overlapping only anterior border, 0.503 to 0.985 long by 0.072 to 0.168 wide, more or less bipartite, with narrow bend between parts; distal part 0.201 to 0.348 long by 0.094 to 0.168 wide, extending posteriad; proximal part 0.302 to 0.637 long by 0.072 to 0.168 wide with bend near middle, extending first anterolaterally and then bending either posterolaterally or posteromedially; *pars prostatica* 0.256 to 0.278 long by 0.128 to 0.134 wide, anterior part projecting into cirrus sac; prostatic cells numerous, surrounding *pars prostatica* and its union with seminal vesicle, and pressed against cirrus sac; cirrus sac 0.201 to 0.240 long by 0.134 to 0.144 wide, immediately posterior to caecal bifurcation; cirrus large, protrusible, consisting of both muscular and glandular tissue; genital pore 0.637 to 0.851 from anterior end of body.

Ovary 0.167 to 0.176 long by 0.180 to 0.184 wide, postacetabular, median or submedian, between posterior ends of testes; seminal receptacle 0.201 to 0.384 long by 0.152 to 0.201 wide, rounded to elongate; Laurer's canal long; Mehlis' gland anterodorsal to ovary; vitelline follicles small or medium-sized, extending from near oral sucker to tips of caeca or anterior border of testes; most numerous dorsally and laterally, although a few follicles extend across the body ventral to caecal bifurcation; principal vitelline ducts lateral, prominent, subdivided three or four times; uterus not posterior to ovary, extending forward in small coils dorsal

to acetabulum and continuing beside seminal vesicle, entering genital atrium from left; uterus may be constricted at irregular intervals, but no metraterm differentiated; eggs few to numerous, 51 to 80 by 27 to 45.

Excretory pore terminal; vesicle 0.080 to 0.248 long by 0.032 to 0.147 wide; collecting vessels not observed; lymphatic system present (but could not be traced).

DISCUSSION: In spite of its size the large specimen (Fig. 11) is distinguished only by its small seminal receptacle and relatively larger vitelline follicles; the eggs are more numerous and average longer, but there is an overlapping of egg-size among all specimens.



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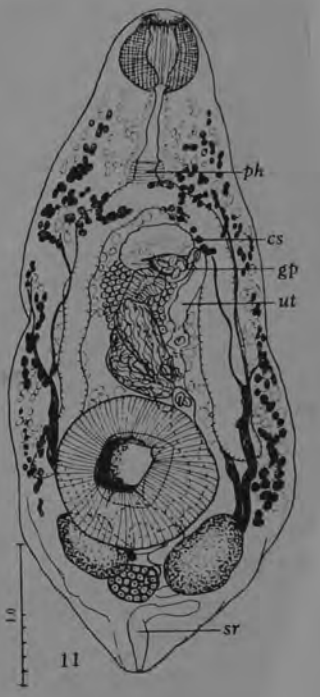

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313. *Leptobulbus magnacirratus*
Manter et Pritchard, 1962

(Fig. 313) Yamaguti, 1970

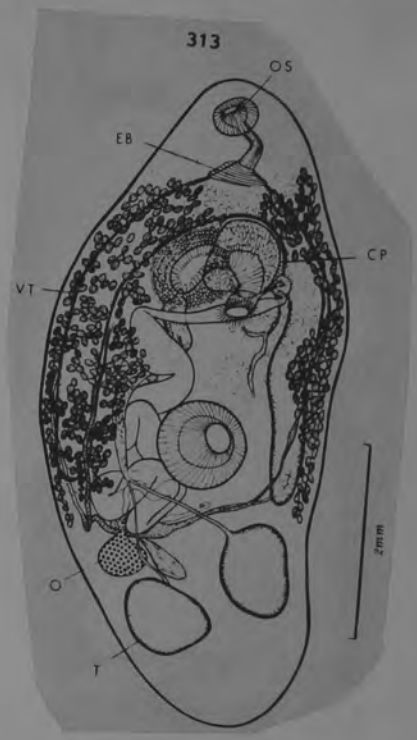
HABITAT: Intestine of *Scarus sordidus*, *S. dubius*, *Scaridea zonarcha*, and *Calotomus sandvicensis*, Hawaii.

DESCRIPTION (based on 61 whole mounts): Body reddish orange in life, elongate pyriform, 2.0-7.6 mm long, 1.1-3.3 mm wide at level of acetabulum. Cuticle smooth, relatively thick. Oral sucker subterminal, 0.24-0.6 × 0.2-0.6 mm, surmounted by preoral lobe 0.06-0.2 mm thick. Esophagus cylindrical, usually straight, 0.2-1.0 mm long, with well developed longitudinal and circular muscles, or occasionally bulbous swelling simulating a pharynx at its bifurcation. Ceca wide, terminating one on each side of acetabulum. Acetabulum prominent, 0.45-1.0 × 0.5-1.1 mm, postequatorial or at junction of middle with posterior third of body.

Testes subglobular, oval or elliptical, 0.2-1.32 × 0.13-0.95 mm, situated subsymmetrically or obliquely juxtaposed at about middle of postacetabular region. Vasa efferentia joining together at posterior end of seminal vesicle. Seminal vesicle very long, tubular, variable in width, may or may not be constricted into two portions, usually dorsal, anterodorsal, or anterior to acetabulum; its anterior portion is straight or winding, usually wider than posterior portion, with its anterior end enclosed in compact mass of prostate cells. Pars prostatica cylindrical or elliptical, 0.2-1.0 × 0.1-0.42 mm, provided with strong longitudinal muscles and lined with cylindrical epithelia, lying completely outside cirrus pouch and enclosed in a large compact mass of prostate cells 0.35-1.3 mm in diameter. Cirrus pouch postbifurcal, usually oval, 0.3-1.0 × 0.2-0.6 mm, with thick wall of fine, mainly longitudinal muscle fibers, containing a wide, strongly muscular, eversible cirrus lined with corrugated cuticle and abundant small glandular cells. Genital pore wide, definitely postbifurcal, at anterior part of middle third of body.

Ovary subglobular or somewhat oblong, 0.2-0.65 × 0.15-0.5 mm, middorsal or anterior to right or left testis. Germiduct arising from anterior end of ovary, joining attenuated anterior end of seminal receptacle where the Laurer's canal is given off, and then running forward a little to receive vitelline duct. Laurer's canal originating from anterior end of seminal receptacle, opening dorsally behind acetabulum. Seminal receptacle oval, claviform, retort-shaped or subcylindrical, exceptionally reniform, 0.08-0.4 mm wide, situated dorsomedial to ovary, with its posterior end usually a little further back of ovary. Uterus winding forward in intercecal field from in front of ovary; metraterm following distal margin of cirrus pouch and opening into genital atrium from left side. Eggs asymmetrical, shaped like persimmon-seed, 65-83 × 40-45 μ in life, 65-84 × 37-49 μ in balsam mounts. Vitelline follicles forming grape-like bunches, extending in lateral fields, surrounding ceca from behind or beside oral sucker to cecal ends, may be confluent in median field anteriorly; vitelline reservoir triangular, near anterior end of ovary. Excretory vesicle saccular, funnel-shaped or cylindrical, may or may not reach to ovary; pore terminal.

DISCUSSION: This genus differs from the closely related *Paragyliauchen* Yamaguti, 1934 in the character of the esophagus, in the enormous development of the male terminalia, and in the more profuse development of the vitellaria.



LEPTOBULBUS

Paragyliauchen Yamaguti, 1934

Generic diagnosis. — Gyliauchenidae, Gyliaucheninae: Body elongate pyriform, with somewhat prominent protuberance at caudal end. Oral sucker subterminal, elliptical. Esophagus sigmoid in lateral view, muscular, covered with gland-like accompanying cells, forming fusiform swelling posteriorly. Esophageal bulb sphincter-like. Intestine wide, horseshoe-shaped. Acetabulum large, at about middle of posterior half of body. Testes symmetrical, postacetabular. Vesicula seminalis long, tubular. Pars prostatica short, entirely outside cirrus pouch. Cirrus pouch relatively small. Genital atrium opening at level of esophageal bulb. Ovary and receptaculum seminis dorsal or posterodorsal to acetabulum. Vitelline follicles forming grape-like bunches, extending over ceca from esophageal bulb to cecal ends. Uterus coiled in median field; eggs numerous, comparatively large. Excretory vesicle elongate, giving off a pair of collecting vessels at its anterior end, opening on caudal protuberance. Parasitic in rectum of marine fishes.

Genotype: *P. chaetodontis* Yamaguti, 1934 (Pl. 29, Fig. 384), in *Chaetodon* sp.; Amakusa, Kyusyu, Japan.

Genus *Paragyliauchen* YAMAGUTI, 1934.

GENERIC DIAGNOSIS.—Body ellipsoid, slightly attenuated anteriorly. Excretory papilla not differentiated. Integument smooth. Acetabulum large, rounded, at about middle of posterior half of body. Oral sucker subterminal, ellipsoidal, without oral diverticula. Prepharynx somewhat long, wavy. Pharynx globular, muscles solely circular. Intestinal caeca short and wide, in the middle third of body length.

Testes two, oval, symmetrical, behind acetabulum. Cirrus pouch small, elongate, enclosing large pars prostatica, penis and few penis gland cells. Prostate gland cells outside of cirrus pouch, opening with ducts into pars prostatica. Vesicula seminis, tubular, winded, behind cirrus pouch. Genital sinus well developed, opening in ventral median line at pharyngeal level.

Ovary small, oval, submedian, antero-testicular. Receptaculum seminis and Laurer's canal present. Vitelline follicles grouped into grape-like bunches, on the ventral and dorsal sides of caeca. Uterine coils slightly developed, intercaecal, pretesticular.

Excretory vesicle I-shaped, short, pore opening at the posterior end of body.

Lymph system present, tubular canals, extending whole length of body.

Type species.—*Paragyliauchen chaetodonis* YAMAGUTI.

Paragyliauchen chaetodonis YAMAGUTI, 1934.

(Figs. 5, 37 and 47)

SPECIFIC DIAGNOSIS.—Body 3.3–5.5 mm long, 1.6–2.1 mm broad, conical or spindle-shaped. Integument smooth. Acetabulum large 0.65–1.16 mm in diameter, situated at the middle of the posterior half of the body. Oral sucker 0.34–0.53 mm in length, 0.28–0.38 mm in maximum breadth. Prepharynx comparatively long, wavy or twisted in a circlet. Pharynx 0.3–0.48 mm in diameter, circular in musculature. Intestinal

caeca short, posterior end reaching to the anterior border or central level of the acetabulum, never beyond the latter.

Testes oval or ellipsoid, symmetrically placed behind the acetabulum, 0.41–1.28 × 0.3–0.78 mm. Genital pore median, varies from pharyngeal level to behind bifurcation. Cirrus pouch small, 0.27 mm in length, 0.1 mm in maximum breadth; cirrus straight with few penis gland cells. Prostate gland cells profusely developed, surrounding the posterior half of cirrus pouch, their ducts opening into the pars prostatica. Vesicula seminis, tubular, winded, anterior half with comparative thick muscular wall.

Ovary 0.18–0.25 × 0.24–0.3 mm, directly anterior to the right testis. Receptaculum seminis small, anterior to right testis. Laurer's canal present. Vitelline follicles ventral and dorsal side of intestinal caeca, extending from the pharyngeal level to the end of caeca. Uterine coils in the median field with slight convolutions; metraterm opens into deep genital sinus which leads to genital pore. Eggs 0.084–0.091 mm long, 0.063–0.066 mm broad.

Excretory vesicle bottle-shaped, short, 0.5 mm in length, pore opening at the posterior extremity of the body. Excretory papilla not differentiated from the body proper.

Lymph system composed of many independent tubular canals, extending whole length of body.

Habitat.—Rectum of *Chaetodon* sp. and *Holacanthus septentrionalis* TEMMINCK & SCHLEGEL.

Locality.—South Japan.

My specimens were obtained from the rectum of *Holacanthus septentrionalis* TEMMINCK & SCHLEGEL at Shimonoseki. The outline of the body presents a spindle shape, and internally my specimens show some differences in the shape of the prepharynx, extent of intestinal caeca and size and shape of testes, from the discription of YAMAGUTI, but I have identified my specimens with *Paragyliauchen chaetodonis*, considering these differences as specific modifications. In the Diagnosis I have modified YAMAGUTI's description in some points. The measurements of my specimens are as follows: Body 4.3–5.5 mm in length, 1.9–2.1 mm in maximum breadth. Oral sucker 0.34–0.45 × 0.28–0.38 mm. Acetabulum 0.7–0.95 in diameter. Pharynx 0.3–0.48 mm in diameter. Testes 0.55–0.1 × 0.36–0.43 mm. Ovary 0.2–0.3 × 0.13–0.2 mm. Egg 0.07–0.075 in length, 0.04–0.044 mm in maximum breadth.

Opistholebetidae
Fukui, 1929

Paragyliauchen Yamaguti, 1934

Opistholebetidae Fukui, 1929; Gyliaucheninae Fukui, Body pear-shaped, attenuated anteriorly, rounded posteriorly. Cuticle smooth. Proroal lip with muscular pad. Oral sucker subterminal, ellipsoidal. Prepharynx long, S-shaped in lateral view, with cellular coating. Pharynx globular, mainly composed of circular muscular lamellae, at junction of anterior with middle third of body. Acetabulum large, globular, at about middle of posterior half of body. Testes oval, symmetrical, behind acetabulum. Vesicula seminalis tubular, long. Pars prostatica short, but distinct. Cirrus pouch relatively small. Genital atrium well developed, opening in ventral median line at level of pharynx. Ovary smaller than testes, oval posterodorsal to acetabulum, slightly to one side. Receptaculum seminis elongate, dorsal to ovary. Laurer's canal present. Vitellarium follicular, grouped into grape-like bunches, extending along ceca from pharyngeal level to cecal termination. Vitelline reservoir median, posterodorsal to acetabulum. Uterus spirally coiled in median field. Uterine eggs oval, thin-shelled, numerous. Excretory vesicle bottle-shaped, opening on top of dorsoterminal protuberance.

Genotype, Paragyliauchen chaetodonis

Opistholebetidae

Paragyliauchen chaetodonis Yamaguti, 1934

Paragyliauchen; with generic characters. Body 3.3-3.6 mm long. Oral sucker 0.34-0.53 mm long. Pharynx 0.3-0.37 mm in dianeter. Acetabulum about 0.65-1.16 mm long. Testes 0.41-1.28 x 0.3-0.78 mm. Ovary 0.18-0.25 x 0.24-0.3 mm. Eggs 0.084-0.092 x 0.063-0.066 mm.

Habitat. Rectum of Chaetodon sp.
Locality and date. West coast of Kyusyu; Oct. 24, 1928
Types and paratypes in Yamgauti Coll.

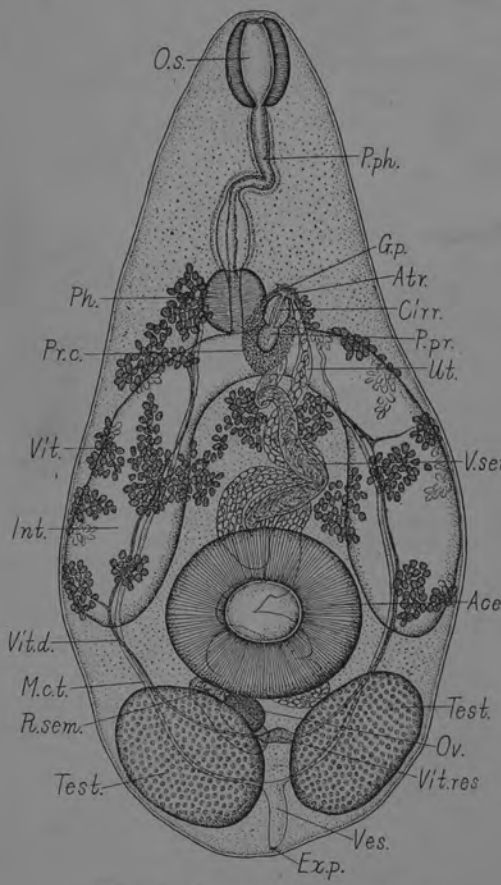


Fig. 142. *Paragyliauchen chaetodonis*; ventral view. Type 5.625 × 2.5 mm.

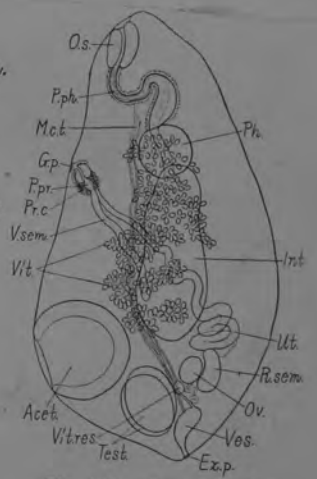


Fig. 143. *Paragyliauchen chaetodonis*; lateral view. Paratype 4.58 mm long.

PARABLIAUCHEN

Allocreadiidae

Petalocotylinae Ozaki, 1937

Subfamily diagnosis. — Allocreadiidae: Body much elongated, unarmed. Prepharynx unusually long and wide, esophagus practically absent. Ceca wide, terminating at posterior extremity. Acetabulum large, with petaloid marginal projections. Testes tandem, in posterior half of body. Seminal vesicle postacetabular, free in parenchyma. Pars prostatica well differentiated outside cirrus pouch, surrounded by dense mass of prostatic cells. Cirrus pouch long, slender. Genital pore median, immediately postbifurcal. Ovary submedian, pretesticular. Vitellaria confined to hindbody. Uterus winding anterior to ovary. Excretory vesicle tubular, reaching to ovary.

Petalocotyle Ozaki, 1934

Generic diagnosis. — Allocreadiidae, Petalocotylinae: Body elongate, unarmed. Oral sucker followed by long wide prepharynx, esophagus practically absent. Ceca wide, terminating at posterior extremity. Acetabulum in anterior half of body, with a number of petaloid marginal appendages. Testes tandem, in posterior half of body. Vesicula seminalis free in parenchyma behind acetabulum. Pars prostatica well differentiated, immediately behind cirrus pouch, surrounded by dense mass of prostate cells. Cirrus pouch long, slender. Genital pore median, postbifurcal. Ovary lobed, on the right, between anterior testis and vesicula seminalis. Receptaculum seminis present. Vitellaria circumcecal, in hindbody. Uterus winding anterior to ovary. Excretory vesicle tubular, reaching to ovary. Parasitic in intestine of marine fishes.

Genotype: *P. nipponica* Ozaki, 1934 (Pl. 11, Fig. 145), in *Xesurus scalprum;* Japan.

This genus was assigned by Ozaki in 1937 to the ~~Opistholebetidae~~ Gyliauchenidae in spite of anterior portion of the acetabulum and marked difference in the structure of the male terminal genitalia.

~~Allocreadiidae~~ Gyliauchenidae

PETALOCOTYLE Ozaki, 1934

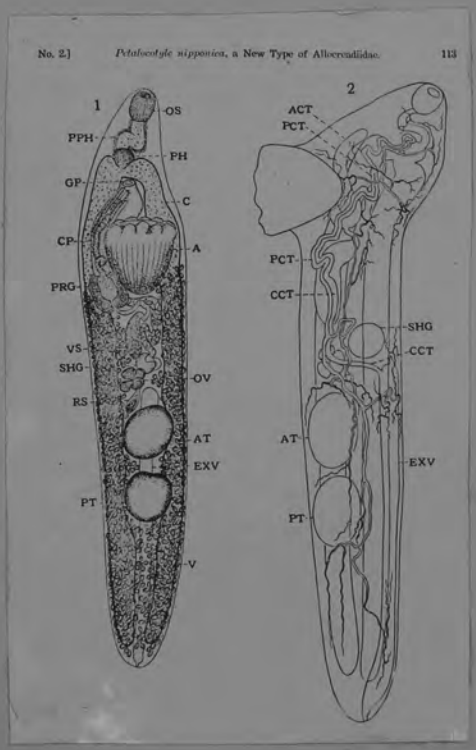
Diagnosis condensed from Ozaki:

Body smooth, elongated; acetabulum anterior to midbody, elongated, with 10 petalic lobes. Prepharynx long somewhat winding, with gland cells. Pharynx globular, ceca to near posterior end. Genital pore median, near intestinal bifurcation. Testes two, rounded, tandem, posterior to midbody. Cirrus sac slender, conical, inclosing ejaculatory duct and cirrus; prostate gland and tubular seminal vesicle external. Ovary 4-lobed, pretesticular. Laurer's canal and seminal receptacle present. Uterus short, preovarian. Excretory vesicle a single tube reaching about to the ovary. Lymph vessels in forebody,.
Type species: P.nipponica Ozaki, 1934

P.nipponica Ozaki, 1934

9,5 by 1.4. Acetabulum 1.1 long, 0.85 wide, with 10 petalic lobes. Oral sucker elongated, 0.45 by 0.36. pharynx 0.25 in diameter. Vitellaria from posterior margin of acetabulum to end of body. Eggs 71 to 76 by 43 to 48.
Host: Xesurus scalprum (Cuv. & Val.)
Locality: Japan.

Compared with Lepidapedon but differs in lacking spines, in external prostate and in lymp vessels.



In 1937, Ozaki considers this genus in the family Gyliauchenidae, together with Gyliauchen, Paragyliauchen, Flagellotrema. He considers Opistholebes in a different family.

PETALOCOTYLE