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## Helminth fauna of Mt. Ontake. Part 2. Trematoda and Cestoda

Satyu Yamaguti\*

\*Okayama University,

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# Helminth fauna of Mt. Ontake. Part 2. Trematoda and Cestoda\*

Satyu Yamaguti

## Abstract

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**Helminth fauna of Mt. Ontake**  
**Part 2. Trematoda and Cestoda**  
(with 3 Plates)

By

**Satyu Yamaguti**

(Department of Parasitology, Okayama University Medical School)

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**I. Trematodes of mammals**

1. *Brachylaemus tokudai*<sup>1)</sup> n. sp. (Pl. I, Fig. 1)

Habitat. Small intestine of *Urotrichus talpoides*

Locality and date. Kiso; May 2, 1942.

Body rather slender, curved ventrally, especially at forebody, with blunt anterior and pointed posterior extremity, 1.3–3.5 mm in length, 0.3–0.45 mm in maximum breadth in uterine region. Cuticle unarmed. Subcuticular circular and longitudinal muscle fibers feebly developed, diagonal fibers absent. Cervical gland strongly developed, especially on each side of pharynx; their ducts opening around mouth aperture. Oral sucker usually subterminal but may

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1) Named in honor of the collector of the host, Dr. Mitosi Tokuda.

be terminal, with wide lumen,  $0.25-0.3 \times 0.23-0.29$  mm; its wall  $30-40 \mu$  thick. Prepharynx up to  $45 \mu$  long. Pharynx globular,  $80-110 \times 90-126 \mu$ . Esophagus very short. Ceca simple, terminating near posterior extremity behind posterior testis. Acetabulum prominent,  $0.17-0.26 \times 0.17-0.24$  mm, with comparatively wide lumen, situated at second sixth of body; its wall  $30-45 \mu$  thick.

Testes rounded,  $0.12-0.31 \times 0.1-0.22$  mm, situated one obliquely behind the other in caudal third of body, the anterior near dorsal cuticle and a little to one side of median line; the posterior in median field, separated from the anterior by ovary and shell gland complex. Vas deferens distended with spermatozoa in the type to form a tubular, twisted vesicula seminalis about  $27 \mu$  wide, situated immediately in front of anterior testis, with proximal portion dorsally and distal portion turned back on itself and continued into pars prostatica on ventral side of uterus. Pars prostatica cylindrical or subcylindrical,  $60-100 \mu$  long by  $20-27 \mu$  wide, surrounded by prostate cells, crossing distal end of uterus on its ventral side and leading into ductus ejaculatorius at level of anterior end of anterior testis. The ductus ejaculatorius is tubular, up to  $15 \mu$  wide and enclosed in a club-shaped cirrus pouch, which is up to  $165 \mu$  long and surrounded by gland cells, and whose basal swelling, up to  $60 \mu$  long by  $45 \mu$  broad, has a very thick wall of lamellar muscle fibers. Genital pore ventral to anterior testis at level of anterior end of ovary.

Ovary rounded,  $0.1-0.21 \times 0.12-0.18$  mm, situated at about middle of posterior third of body, overlapping anterior testis a little. The germiduct, arising from the center of the dorsal side of the ovary, gives off the Laurer's canal just before joining the vitelline reservoir. The Laurer's canal runs backward, and then turning forward or not, opens middorsally at the level of the ovary or of the posterior testis. It may form a fusiform receptaculum seminis up to  $27 \mu$  wide near its origin. Shell gland compact, posterodorsal and sinistral to ovary. Ootype fusiform, dorsal to ovary. Uterine coils confined to intercecal field between anterior testis and acetabulum, not extending further forward than acetabulum. Metraterm well differentiated, narrowed proximally, provided with a thick coat of accompanying cells at its distal portion, which is  $80-130 \mu$  long by  $20-28 \mu$  wide and runs with the cirrus pouch convergently toward the genital pore. Eggs elliptical, embryonated,  $27-33 \times$

12–15  $\mu$ . Vitellaria acinous, extending along outer side of intestine from behind acetabulum to level of anterior testis. On one side they may not reach to this level, and their anterior extent is also subject to some variation. Vitelline ducts running backwards along ceca, crossing them ventrally and joining together between ovary and posterior testis to form an elongate vitelline reservoir, whose tapering anterior end joins the germiduct just distal to the origin of the Laurer's canal.

Excretory vesicle tubular, up to 0.1 mm long, bifurcating at level of cecal ends into long arms, each of which runs forward on the ventral side of the intestine as far as the anterior end of the body, where it turns backward and descending dorsal to the intestine to near its posterior end turns forward again. Excretory pore terminal.

The present species differs from the most closely related *Brachylaemus helicis* (Meckel, 1846), *B. migrans* (Duj., 1845) of Baer and *B. nicolli* Witenberg, 1925, chiefly in the anterior extent of the uterus. In all of these species the uterine coils reach to the intestinal bifurcation.

## 2. *Acanthatrium ovatum* Yamaguti, 1939

Habitat. Small intestine of *Glirulus japonicus* (Schinz).

Locality. Sintaka at 1500 m. altitude.

Material. A single gravid specimen fixed in acetic sublimate under cover glass pressure, stained with Heidenhain's hematoxylin and mounted in balsam.

Body oval in outline, 0.82 mm in length, with maximum breadth of 0.675 mm behind its middle. Oral sucker  $93 \times 125 \mu$ . Prepharynx very short. Pharynx globular,  $38 \times 40 \mu$ . Esophagus crooked. Right intestinal cecum elongate saccular,  $0.225 \times 0.09$  mm, terminating on anterior margin of right testis, left cecum cylindrical, 0.26 mm long, intruding into space between acetabulum and left testis. Acetabulum  $95 \times 107 \mu$ , situated just in front of middle of body. Testes situated symmetrically on each side of body at junction of anterior with middle third of body; right one oval,  $0.22 \times 0.156$  mm; left one subglobular,  $0.18 \times 0.156$  mm. False cirrus pouch oval,  $0.3 \times 0.24$  mm, with membranous wall, extending from ventral side of intestinal bifurcation to anterior end of ovary between right testis and acetabulum, partly overlapping latter. Vesi-

cula seminalis tubular, convoluted, attenuated at its distal end leading into pars prostatica. Pars prostatica rounded,  $45\mu$  in diameter, opening directly into genital atrium lined with thick cuticle. Spined atrial diverticle present. Genital pore in front of acetabulum, surrounded by circular fold which encloses the acetabulum posteriorly. Prostate cells filling up all available space of false cirrus pouch.

Ovary transversely elongated,  $0.11 \times 0.16$  mm, situated immediately behind middle of body, pressed against posterior end of cirrus pouch, giving rise to germiduct at its posterosinistral end. Receptaculum seminis on the left of ovary. Laurer's canal turning back on itself and opening dorsally a little to left of median line at level of posterior end of ovary. Shell gland and vitelline reservoir immediately behind acetabulum. Uterus forming transverse loops behind testes and ovary, leaving free space behind; metraterm running sinuously between acetabulum and left cecum, then turning toward genital atrium into which it opens from the left after penetrating the false cirrus pouch. Eggs elliptical,  $27-30 \times 15-18\mu$ . Vitellaria of each side made up of over a dozen comparatively large follicles forming a grape-like bunch just outside intestinal cecum, partly overlapping it dorsally. Posteriorly they reach to the anterior end of the testis of the same side. Excretory vesicle V-shaped, with terminal pore.

## II. Cestodes of frogs

### 3. *Baerietta montana* n. sp. (Pl. II, Figs. 2-3)

Habitat. Small intestine of *Bufo vulgaris japonicus*.

Locality. 1950 m. altitude.

Strobila cylindrical, up to 64-76 mm long, 1.0 mm broad at about middle, slightly tapering toward neck and posterior extremity. Scolex 0.7-0.85 mm in diameter, suckers 0.22-0.36 mm in diameter. Neck 5-6.5 mm long, 0.45-0.55 mm broad at narrowest part. Immature proglottides crowded, without indication of external segmentation, mature proglottides also not distinguishable one from another externally, 0.08-0.11 mm long as calculated from the number of the genital sets, 0.75-0.85 mm broad. External segmentation commences in gravid proglottides, which are broader than long except at the terminal, and have smooth parallel sides. End

proglottides longer than broad,  $0.65-1.0 \times 0.41-0.65$  mm, more or less constricted at intersegments. Cuticle up to  $6 \mu$  thick, beset with exceedingly minute spines all over except at head end, very thin at end proglottides. Subcuticular longitudinal musculature well developed throughout strobila. Subcuticular cells large, with round nuclei  $4-4.5 \mu$  in diameter, forming a very conspicuous layer. Inner longitudinal muscle bundles  $40-50$  in number, each comprising up to 10 fibers or more. Dorsal excretory stems as wide as ventral stems in anterior part of strobila, but much narrower posteriorly, both close together at about middle of each lateral half of proglottis.

Testes 2 in number, transversely elongated oval, measuring  $50-75 \mu$  anteroposteriorly,  $80-120 \mu$  transversely in mature proglottides, situated dorsally in nearly same submedian frontal plane. Vas deferens winding in anterior part of proglottis immediately in front of cirrus pouch; it may well reach the poral end of the ovary and may be distended with spermatozoa without forming a definite vesicula seminalis. In gravid proglottides, especially in the terminal one, it is somewhat stretched owing to elongation of the segment. Cirrus pouch  $50-85 \mu$  in outside diameter, with very thick wall of lamellar muscle fibers, markedly atrophied in terminal proglottides, its proximal end extending into medulla. Ductus ejaculatorius narrow, surrounded by compact mass of nuclei. Cirrus slender, unarmed,  $5 \mu$  thick, may be protruded to opening of genital atrium. Latter funnel-shaped,  $12 \mu$  deep, surrounded by dense layer of accompanying cells, opening on lateral margin, alternating irregularly from side to side just in front of middle of proglottis.

Ovary oval,  $50-60 \times 75-90 \mu$  in mature proglottides, situated between two ventral excretory stems, containing a number of germ cells at same stage of development. Germiduct somewhat swollen at beginning, joining vagina posterodorsal to cirrus pouch and soon after that uniting with short duct from vitelline gland, to be continued into uterus, which extends transversely usually toward the antiovarian side. Vitelline gland oval,  $35-40 \times 45-84 \mu$  in mature proglottides, lying very close to proximal end of cirrus pouch with its long axis directed dorsoventrally. Gravid uterus oval and measuring  $0.1-0.2 \times 0.2-0.25$  mm when distended with eggs, but as the two para-uterine organs lying in front of it become hollowed

out and communicated with itself, it tends to degenerate, and some of the eggs come to lie in the para-uterine organs. In the end proglottis the two para-uterine organs are oval, about  $90\ \mu$  long by  $70\ \mu$  broad, and lie at about the center of the proglottis, one being exactly dorsal to the other. They have a half-chitinized cuticular lining  $2\ \mu$  thick, each containing 3 to 10 eggs. Eggs up to 24-33 in total number for each gravid segment; outer shell subglobular, about  $50\ \mu$  in diameter, embryonic shell  $27-30 \times 24-28\ \mu$ , oncospheres  $24 \times 18-20\ \mu$  in mounted condition. Vagina very narrow, opening into genital atrium immediately behind male aperture. In end proglottides it disappears completely.

The differences between the present species and the most closely related *Baerietta baeri* Hsü, 1935, from the Chinese *Bufo bufo asiaticus* are shown in the following table.

	<i>B. baeri</i>	<i>B. montana</i>
Length of strobila . . . . .	23 mm	64-76 mm
Diameter of scolex . . . . .	0.34 mm	0.7-0.85 mm
Diameter of sucker . . . . .	$113\ \mu$	0.22-0.36 mm
Number of inner longitudinal muscle bundles . . . . .	56	40-50
Number of fibers in each bundle	2-4	up to 10 or more
Diameter of cirrus pouch . . . . .	$13\ \mu$	$50-85\ \mu$
Number of eggs in each segment	9-23	24-33
Size of embryonic shell . . . . .	$22 \times 16\ \mu$	$27-30 \times 24-28\ \mu$

The specific name refers to the habitat of the host.

#### 4. *Baerietta claviformis* n. sp. (Pl. III, Figs. 7-8)

Habitat. Small intestine of *Rana temporaria ornativentris* (Werner).

Locality. 1000-1500 m. altitude.

Strobila filiform, up to 50 mm or more in length, with maximum breadth of 0.5 mm at about middle. Scolex 0.32-0.5 mm in diameter under cover glass pressure, suckers 0.11-0.14 mm in diameter. Neck 4-10 mm in length, 0.2-0.3 mm in minimum breadth. External segmentation commences in fully mature proglottides. Posterior gravid proglottides club-shaped, easily detachable, 0.5-0.8 mm in length, with maximum breadth of 0.13-0.21 mm near



anterior end; anterior gravid proglottides  $0.1-0.35 \times 0.21-0.35$  mm. Cuticle about  $3 \mu$  thick, beset with very minute spines except at head end. Subcuticular longitudinal muscle fairly well developed, underlying cell layer distinct, with comparatively large rounded nuclei  $4-5 \mu$  in diameter. Inner longitudinal muscle bundles  $45-55$  in number, each bundle comprising up to 10 or more fibers. Calcareous corpuscles in posterior gravid proglottides, vermiform or rod-shaped, may be curved or branched. Dorsal excretory stem very narrow in mature segments, immediately dorsal to wide ventral stem, both ventral to vagina. Medullary parenchyma containing abundant, closely packed, cellular elements, whose rounded nuclei are up to  $6 \mu$  in diameter.

Testes subglobular to oval,  $30-63 \times 45-66 \mu$ , situated side by side in dorsal medulla. Cirrus pouch short claviform, with comparatively thin wall,  $27-40 \mu$  in diameter near its base, intruding into the medullary parenchyma for about half its length. Ductus ejaculatorius narrow, somewhat twisted in swollen basal part of cirrus pouch, surrounded by compact mass of glandular cells probably of prostatic nature. Cirrus slender, unarmed, protrusible. Genital pores alternating irregularly from side to side.

Ovary oval,  $15-33 \times 22-45 \mu$ , situated ventrally with its inner end between two ventral excretory stems. The germiduct, arising from the pore side of the ovary, unites with the vagina dorsal to the dorsal excretory stem of the pore side and then with the duct from the vitelline gland. Latter oval, immediately dorsal to ovary,  $15-33 \times 22-45 \mu$ . Uterus at about middle of proglottis, broader than long in anterior gravid proglottides but pyriform in club-shaped posterior gravid proglottides, measuring  $63-105 \mu$  long by  $54-100 \mu$  broad. Para-uterine organs subglobular to oval,  $70-80 \mu$  long by  $45-75 \mu$  broad in end proglottides, situated dorsoventrally in front of uterus. Eggs oval, with delicate outer and rigid inner shell,  $5-13$  in total number for each proglottis,  $1-4$  in para-uterine organs; outer shell  $35-45 \times 30-36 \mu$ , inner embryonic shell ovoid,  $24-30 \times 15-26 \mu$ , embryonic hooks  $14 \mu$  long. Vagina opening into genital atrium immediately behind cirrus.

This species differs notably from the most closely related *Baerietta japonica* Yamaguti, 1938, in the size of the suckers. In *B. japonica* the suckers are  $54-84 \mu$  in diameter, whereas in the present species they are  $0.11-0.14$  mm across. The host and its

habitat are also different. The specific name refers to the shape of the end proglottides.

### III. Cestodes of birds

#### 5. *Choanotaenia barbara* Meggitt, 1926. (Pl. III, Figs. 9-10)

Habitat. Small intestine of *Prunella collaris erythropygus* (Swinhoe).

Locality. Summit of Mt. Ontake.

Material. A number of gravid specimens, partly fixed in acetic sublimate under cover glass pressure and stained with Heidenhain's hematoxylin, partly fixed in 70% alcohol and stained with hematoxylin.

Gravid strobila 8-21 mm long by 0.8-1.2 mm<sup>1)</sup> broad, comprising 30-40 segments, gradually tapering anteriorly. Scolex 0.25-0.35 mm in diameter, with prominent suckers 90-135  $\mu$  in diameter. Rostellum elliptical or plug-shaped, 60-120 $\times$ 30-45  $\mu$ , with a crown of 23-26 hooks which are arranged somewhat irregularly and measure 15-18  $\mu$  in length. Rostellar sac elliptical or oval, thin-walled, 0.114-0.18 $\times$ 0.08-0.12 mm, not extending back of suckers, containing compact mass of cells around posterior portion of rostellum as well as behind it. Neck very short, as broad as scolex in flattened specimens, otherwise distinctly narrower. Proglottides imbricated, with more or less convex sides, longer and broader posteriorly; mature ones trapezoidal when extended, 0.25-0.8 mm long by 0.47-0.95 mm broad, gravid end proglottides elliptical, 1.2-1.9 mm long by 0.8-1.2 mm broad. Cuticle smooth, 2  $\mu$  thick in sections. The outer circular subcuticular musculature is practically lacking, though the inner longitudinal fibers are distinct. Subcuticular cells well developed. Inner longitudinal muscle sheath two-layered, outer bundles over 40 in number, consisting of a few to 10 fibers, inner bundles less numerous but more powerful. No definite layer of transverse muscles. Dorsal and ventral excretory stems running in same sagittal plane, with cirrus pouch and vagina between. Transverse anastomosis between ventral stems at posterior end of each proglottis. Nerve trunk in lateral edge of medulla.

1) Dimensions especially in breadth, are exaggerated by cover glass pressure.

Testes rounded, 50-60  $\mu$  in diameter, 16-28 in number, arranged in one layer in intervascular medulla at posterior half of proglottis behind vitelline gland and ovary. Vas deferens narrow, convoluted at anterior end of proglottis between excretory stems of two sides. Neither external nor internal seminal vesicle. Cirrus pouch elliptical, 0.12-0.21 mm long by 20-42  $\mu$  broad, with well developed longitudinal muscles, lying transversely in contracted proglottides but more or less obliquely in extended proglottides with the inner end directed forwards. To this end of the pouch is attached a strong muscle bundle which passes ventral to the convoluted vas deferens and is split up into individual fibers running into the parenchyma as it proceeds obliquely toward the antiporal anterior corner of the proglottis. Ductus ejaculatorius very narrow, winding in greater proximal portion of cirrus pouch. Cirrus protrusible, covered with minute spines, measuring 75-100  $\mu$  long by 12-15  $\mu$  broad when protruded in end proglottides. Genital pore irregularly alternating, dividing margin of proglottis in ratio of 1:3-5 in mature proglottides, of 1:5-6 in gravid end proglottides, in which it is usually depressed.

Ovary situated transversely just in front of middle of proglottis with a slight inclination toward genital pore, consisting of two, irregularly lobulated wings, of which the poral is a little smaller than the antiporal. In the proglottis shown in Fig. 10, it measures 0.18 mm anteroposteriorly at the larger antiporal wing and 0.3 mm in transverse diameter. The germiduct, arising from the ovarian isthmus, describes a loop before uniting with the ductus seminalis and then an S-shaped curve toward the shell gland, in which it receives the duct from the vitelline gland. The uterine duct passes forwards sinuously dorsal to the germiduct. The uterus is divided into a number of compartments and confined to the intervascular medulla, but as it becomes filled with eggs it assumes a reticular appearance and may extend a little beyond the excretory stems. In the end proglottides, however, the uterine walls degenerate, and each egg comes to lie free in the parenchyma, though the surrounding tissue forms a membranous false uterine capsule. Mature eggs with a membranous outer and a thick inner shell; as measured in life outer shell 33-48 $\times$ 34-42  $\mu$ ; inner shell 3  $\mu$  thick, 27-33 $\times$ 25-30  $\mu$ ; oncosphere 18-24 $\times$ 15-21  $\mu$ ; embryonic hooks 10  $\mu$  long. Vitelline gland compact, 30-60 $\times$ 60-120  $\mu$ , situated at

center of proglottis, facing toward genital pore, giving rise to short efferent duct at middle of its anterior margin. Vagina opening into genital atrium immediately behind cirrus, running obliquely toward ovary between the dorsal and the ventral excretory stem; distal portion thick-walled for a distance of 0.12 - 0.24 mm, forming claviform or fusiform dilatation 18-35  $\mu$  wide, then suddenly attenuated to be continued into narrow thin-walled proximal portion which in turn becomes swollen again to form an oval or elliptical receptaculum seminis. Latter 30 - 100  $\times$  25 - 60  $\mu$  in flattened mature proglottides, 0.1 - 0.18  $\times$  0.03 - 0.045 mm in fully gravid proglottides, overlapping anterolateral lobe of ovary on pore side, giving rise to seminal duct at its inner end.

The present worm agrees well with *Choanotaenia barbara* Meggitt, 1926 and *C. innominata* Meggitt, 1926, in the number and length of the rostellar hooks as well as in the number of testes, though different markedly in the size of the scolex relative to the length of the strobila. In our material the strobila is 8 - 21 mm in length, but in the Indian it is 20 - 30 mm and 24 mm respectively, whereas the scolex of the former is much larger than that of the latter, the diameter of which is given as 0.02 mm (misprint for 0.2 mm?) and 0.11 mm respectively. That the diameter of the rostellum is given as only 0.01 mm for *C. barbara* is undoubtedly an error either in measurement or in printing. Upon a closer examination of additional material *C. innominata* may turn out to be identical with *C. barbara*.

#### IV. Cestodes of mammals

##### 6. *Hymenolepis apodemi* n. sp. (Pl. II, Figs. 4-6)

Habitat. Small intestine of *Apodemus geisha geisha*.

Locality. Sintaka at an altitude of 1500 m.

Strobila over 100 mm in length, with maximum breadth of 3 mm, broadened posteriorly but tapering again at rounded posterior extremity. Scolex rounded, 0.3 - 0.4 mm in diameter at level of suckers. Rostellum truncated or rounded in front and behind, 45 - 50  $\mu$  long by 42 - 60  $\mu$  broad; rostellar hooks 17 - 23 in number, 9 - 12  $\mu$  long, with a rather slender blade, a stout guard as long as the blade, and a smaller root. Rostellar sac ellipsoidal, 0.12 - 0.16  $\times$  0.1 - 0.13 mm. The inner longitudinal muscle fibers attached to the

rostellum form two lateral, two dorsal and two ventral bundles as they penetrate the rostellar sac. Suckers 0.08-0.1 mm in diameter. Neck slender, 0.25-0.3 mm in minimum diameter. Genital primordia discernible 5 mm behind scolex in the type 50 mm long, although the internal segmentation is indicated more anteriorly. In contracted paratypes the neck is only 1.0 mm long. Proglottides crowded, with more or less salient posterior border; mature ones 0.12-0.17 mm long by 0.77-0.84 mm broad; gravid ones averaging 0.125 mm by 1.0 mm in the type. In the largest flattened specimen the gravid proglottides are on the average 0.15 mm in length and 2.5 mm in breadth. Cuticle about  $2\mu$  thick. Subcuticular musculature almost lacking. Inner longitudinal muscle bundles very fine, forming two separate layers dorsally and ventrally, each composed of a few fibers. Transverse muscles lacking except at intersegments. Dorsal and ventral excretory stems in same sagittal plane, at about middle of each lateral third of proglottis in smaller strobilas but more laterally in larger strobilas, both ventral to cirrus pouch and vagina. No transverse anastomosis. Nerve trunk in outskirts of medulla ventral to vagina and cirrus pouch.

Testes subglobular,  $0.1-0.17 \times 0.07-0.125$  mm in mature proglottides of the type, situated in dorsal medulla, one on the pore side behind vesicula seminalis and receptaculum seminis, the other two obliquely tandem on the opposite side, the anterior being medial to the posterior. Vesicula seminalis club-shaped, 35-60  $\mu$  in maximum diameter, lying transversely dorsal to receptaculum seminis vaginae at anterior end of proglottis, with its attenuated distal end twisted just medial to base of cirrus pouch or overlapping it ventrally. Cirrus pouch claviform, thin-walled, 0.12-0.175 mm long by 30-40  $\mu$  broad in mature proglottides of the type, situated transversely or obliquely with its base dorsal to dorsal and ventral excretory stems. Vesicula seminalis interna occupying greater proximal portion of cirrus pouch. Ductus ejaculatorius narrow, winding. Genital atrium very small, up to 12  $\mu$  in diameter, opening on right or left margin of proglottis a little in front of its middle.

Ovary irregularly lobed in ventral medulla partly overlapping testes, especially the anterior antiporal testis in fully mature proglottides. The germiduct, arising from the posterior midventral surface of the ovary, proceeds forwards toward the medial end of

the receptaculum seminis, and turns abruptly backwards as it joins the seminal duct. Immediately dorsal to the poral end of the vitelline gland it receives the vitelline duct and turns dorsad to open into the uterus. Shell gland dorsal to vitelline gland. When fully gravid the uterus occupies all the available space of the medulla, and may extend into the cortex in the lateral fields as well as into the space between the two layers of the inner longitudinal muscle bundles or a little farther outwards. Vagina opening into genital atrium immediately ventral to male aperture, running inwards ventral to cirrus pouch and vesicula seminalis, forming elongated club-shaped receptaculum seminis, which is 27 - 65  $\mu$  in diameter and reaches as far as the median field. Ductus seminalis narrow and short (30  $\mu$  long by 5  $\mu$  wide in the proglottis shown in Fig. 6). Vitellarium approximately triangular or coarsely 3-lobed, 60 - 90  $\times$  72 - 135  $\mu$ , situated in median field immediately postero-ventral to ovary, giving rise to its efferent duct on dorsal side. As measured in life the elliptical outer egg shell is 45 - 54  $\mu$  long by 34 - 40  $\mu$  broad, the embryonic shell 30 - 33  $\mu$  by 22 - 25  $\mu$ , and the embryonic hook 12 - 13  $\mu$  long.

According to the key to *Hymenolepis* species as given by Hughes the present species comes near *H. pistillum* (Dujardin, 1845) Blanch., 1891, but differs from it distinctly in the size of the strobila and in the shape of the rostellar hook.

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### Explanation of Plates

#### Pl. I.

Fig. 1. *Brachylaemus tokudai* n. sp., ventral view.

#### Pl. II.

Figs. 2 - 3. *Baerietta montana* n. sp.

Fig. 2. Scolex, ventral view.

Fig. 3. Mature proglottis, lateral view.

Figs. 4 - 6. *Hymenolepis apodemi* n. sp.

Fig. 4. Scolex, ventral view.

Fig. 5. Rostellar hooks, free hand drawing.

Fig. 6. Mature proglottis, dorsal view.

#### Pl. III.

Figs. 7 - 8. *Baerietta claviformis* n. sp.

Fig. 7. Scolex, ventral view.

Fig. 8. Transverse section of mature proglottis.

Figs. 9 - 10. *Choanotaenia barbara* Meggitt, 1926.

Fig. 9. Scolex, ventral view.

Fig. 10. Mature proglottis, dorsal view.

### Abbreviations used in Figures

A = acetabulum, CG = cervical gland, CP = cirrus pouch, D = vas deferens, DV = dorsal vessel, EP = excretory pore, ET = excretory tubule, GP = genital pore, H = hook, I = intestine, IL = inner longitudinal muscle, LC = Laurer's canal, M = mouth, Mt = metraterm, O = ovary, OS = oral sucker, P = pharynx, PS = posterior sucker, RS = receptaculum seminis, SG = shell gland, T = testis, U = uterus, VG = vagina, VI = vitello-intestinal duct, VS = vesicula seminalis, VSE = vesicula seminalis externa, VT = vitellaria, VV = ventral vessel.







