TWO NEW SPECIES OF ACANTHOCEPHALAN PARASITES OF BIRDS.

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While dealing with the unnamed helminth material in the collection of the Zoological Survey of India, we found a pair (a male and a female) Acanthocephalan specimens collected from Scops Owl (*Otus* sp.) and another pair collected from Woodpecker (*Dinopium* sp.). Both the birds had died in the Zoological Gardens, Alipore, Calcutta, and sent to the School of Tropical Medicine. Col. R. Knowles had collected them from the intestines of those birds and presented them to the Zoological Survey of India. On study, they have been found to represent two new species of the genus *Centrorhynchus* Luhe, 1911. They are described below.

Centrorhynchus knowlesi, sp. nov.[1]

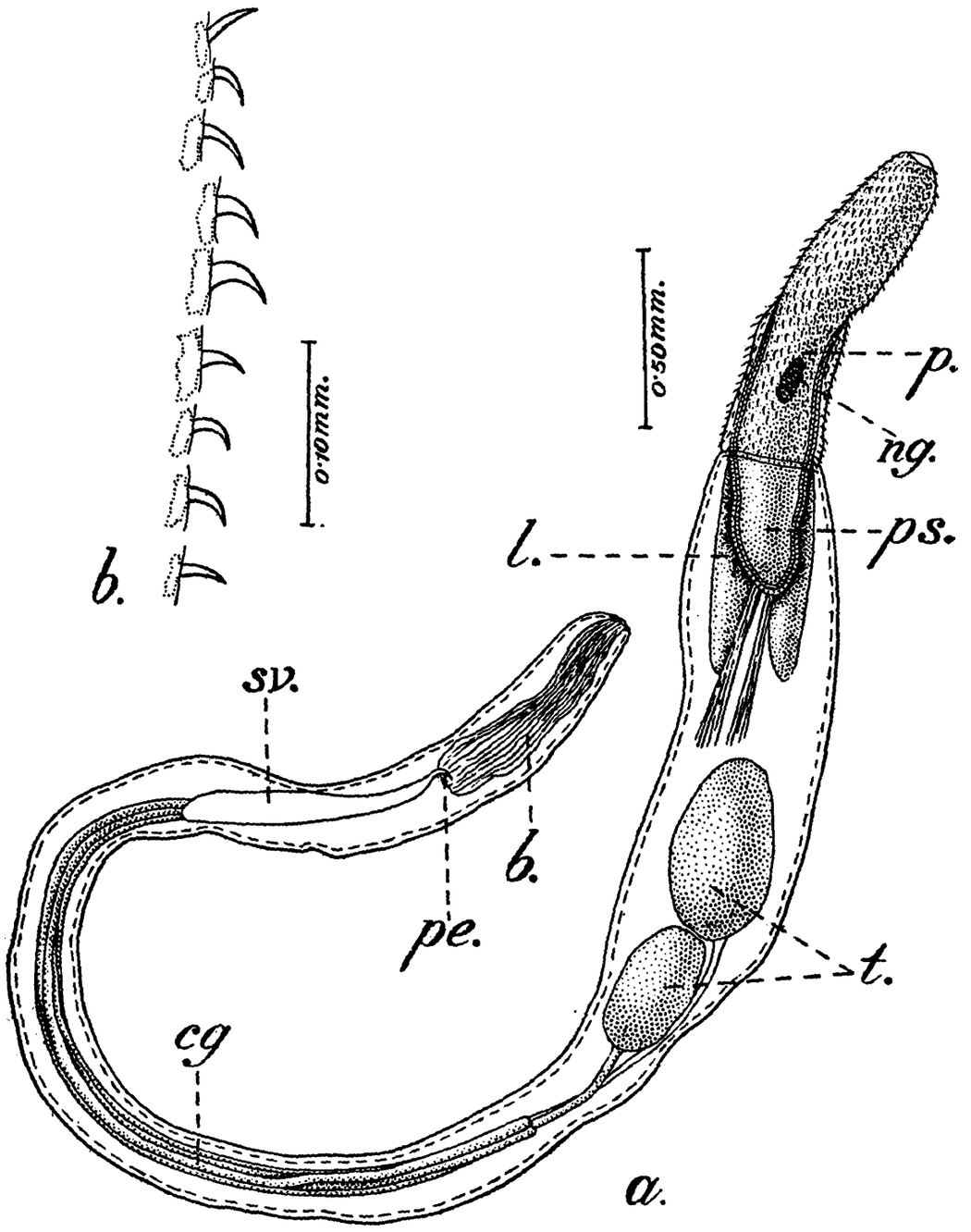
Male.—The body is divided into a broad oval anterior part and a narrow cylindrical posterior part. Total length of the worm is 7·37 mm. The anterior part including the proboscis measures 2·9 mm. in length and 0·48 mm. in width. The posterior part is 0·23 mm. wide. Proboscis is 0·53 mm. long and 0·23 mm. wide. Neck region measures 0·50 mm. in length and 0·29 mm. in width. The proboscis receptacle is 0·86 mm. long and 0·21 mm. wide. The portion anterior to the insertion of proboscis receptacle is slightly longer than the posterior part (neck region). The proboscis is armed with 42-46 longitudinal rows of hooks with 14-16 hooks in each circle. The hooks in the anterior region are bigger and measure 0·03-0·04 mm. while in the posterior region they diminish in size and measure 0·02-0·022 mm. The nerve ganglion is 0·62 mm. from the anterior end. The lemnisci measure 0·81 mm. in length.

The reproductive organs (Text-fig. 1 *a*) are fully developed. There is a pair of testes lying one behind the other. The anterior testis begins at 2·04 mm. from the anterior end and is 0·41 × 0·28 mm.; posterior testis is 0·38×0·23 mm. The portion of the worm from where cement glands arise is a bit damaged. The cement glands or prostate glands are long and cylindrical measuring 2·55 mm. in length. There is a prostatic reservoir. Seminal vesicle is 0·79 mm. long. Bursa is funnel like and measures 0·74 mm. in length. Small muscular and conical penis is situated at the top of the retracted Bursa.

Female.—The female specimen which is in three pieces is 9·16 mm. long. The anterior portion including the proboscis is 3·71 mm.

[1]. The new species has been named after Col. R. Knowles, Late Director, Tropical School of Medicine, Calcutta, for having donated the specimens to the Zoological Survey of India.

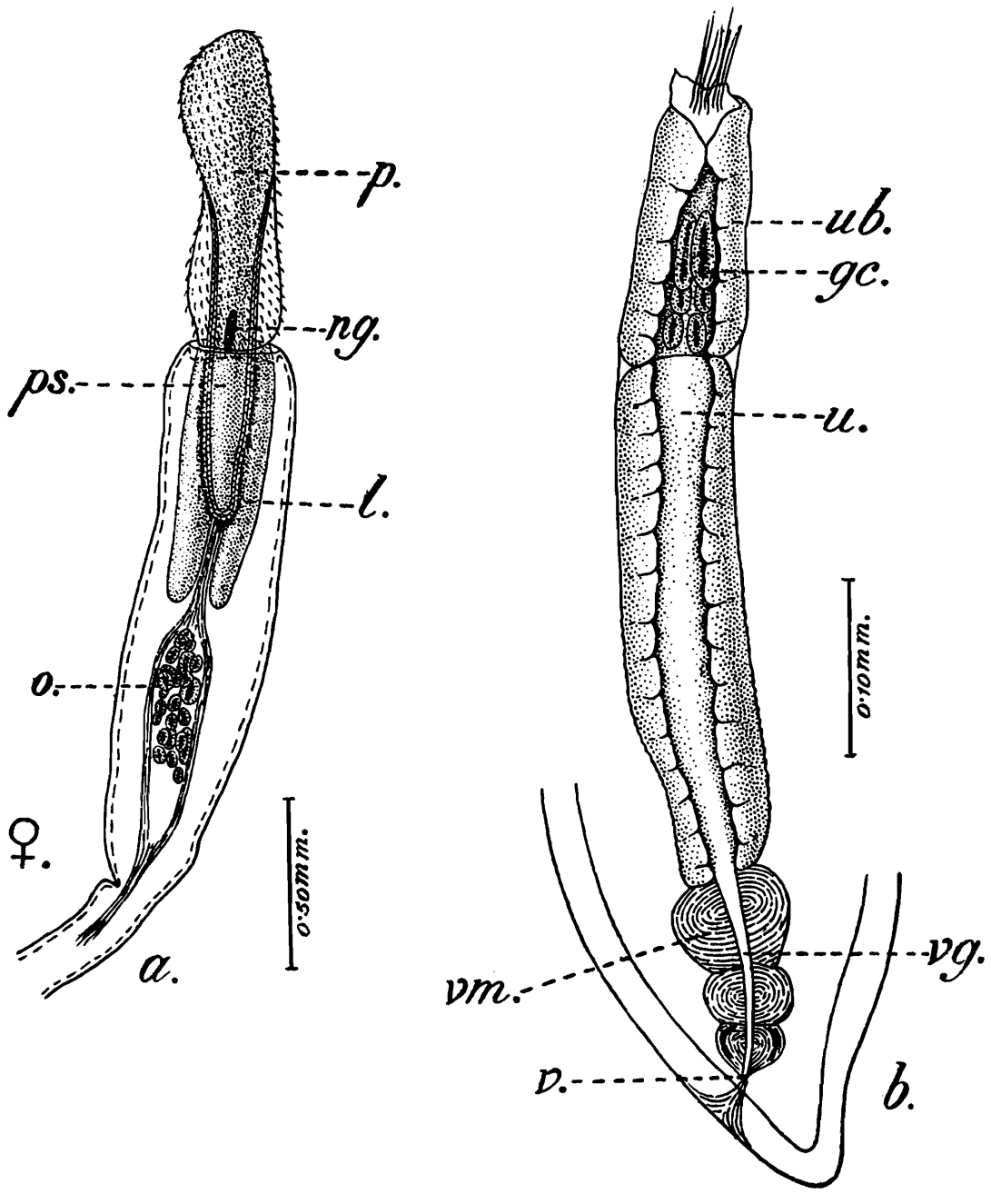
in length and 0·46 mm. in width. The posterior part is 0·21 mm. wide. Proboscis including the neck is 1·04 mm. in length. The hooks are of the same number and size as in the male. Proboscis sheath is 1·09 mm. long. Lemnisci measure 0·93 mm. in length. The nerve ganglion is 0·92 mm. from the anterior end.



Text-Fig. 1.—*Centrorhynchus knowlesi*, sp. nov. *a*. Entire male ; *b*. Some of the hooks on proboscis and neck ;

b., bursa ; *cg*., cement glands ; *l*., lemnisci ; *ng*., nerve ganglion ; *p*., proboscis ; *pe*., penis ; *ps*., proboscis sheath ; *sv*., seminal vesicle ; *t*., testes.

The reproductive organs (Text-fig. 2 *a* & *b*) are fully developed. The ovary is 0·46 mm. long and is having developing egg balls which after development will rupture the ovarian wall and the egg balls having the eggs in them will scatter all over the internal cavity. The eggs in turn after maturity will break away from the egg balls and will flow out



Text-Fig. 2.—*Centrorhynchus knowlesi*, sp. nov. *a*. Anterior region of female ; *b*. A part of posterior region of female.

gc., guard cells ; *l.*, lemnisci ; *ng.*, nerve ganglion ; *o.*, developing ovary with ova ; *p.*, proboscis ; *ps.*, proboscis sheath ; *u.*, uterus ; *ub.*, uterine bell ; *v.*, vulva ; *vg.*, vagina ; *vm.*, vaginal muscles.

through the uterine bell which measures 0·20 mm. in length. The uterus is 0·39 mm. and vagina 0·15 mm. in length.

	C. californicus.	*C. knowlesi.*
1. Length of the worms	3·15 mm.	♂—7·37 mm. ♀—9·16 mm.
2. Length of the broad anterior portion including the proboscis.		♂—2·9 mm. ♀—3·71 mm.
3. Width of the broad portion	0·38 mm.	♂—0·48 mm. ♀—0·46 mm.
4. Width of the narrow portion ..		♂—0·23 mm. ♀—0·21 mm.
5. Hooks .. .	48×21-22	42—46×14-16
6. Length of the hooks in the anterior region of the proboscis.	0·042 mm.	0·03—0·04 mm.
7. Length of the hooks in the posterior region of the proboscis.	0·031 mm.	0·02—0·022 mm.

Specific diagnosis.—Length of the specimens 7·37-9·16 mm. Body divided into a broad oval anterior and a narrow cylindrical posterior portion. In the male the broad portion extending nearly upto the testes while in the female upto the ovary. Number of longitudinal rows of hooks 42-46 and number of hooks in each circle 14-16. Hooks in the anterior region bigger than in the posterior region.

Type specimens.—No. W 3830/1, Zoological Survey of India, Calcutta.

Host.—Scops Owl.

Locality.—Calcutta.

Remarks.—The new species approximates *C. californicus* Millzner in body form and number of longitudinal rows of hooks but differs from it in the body size and the number of hooks in each row.

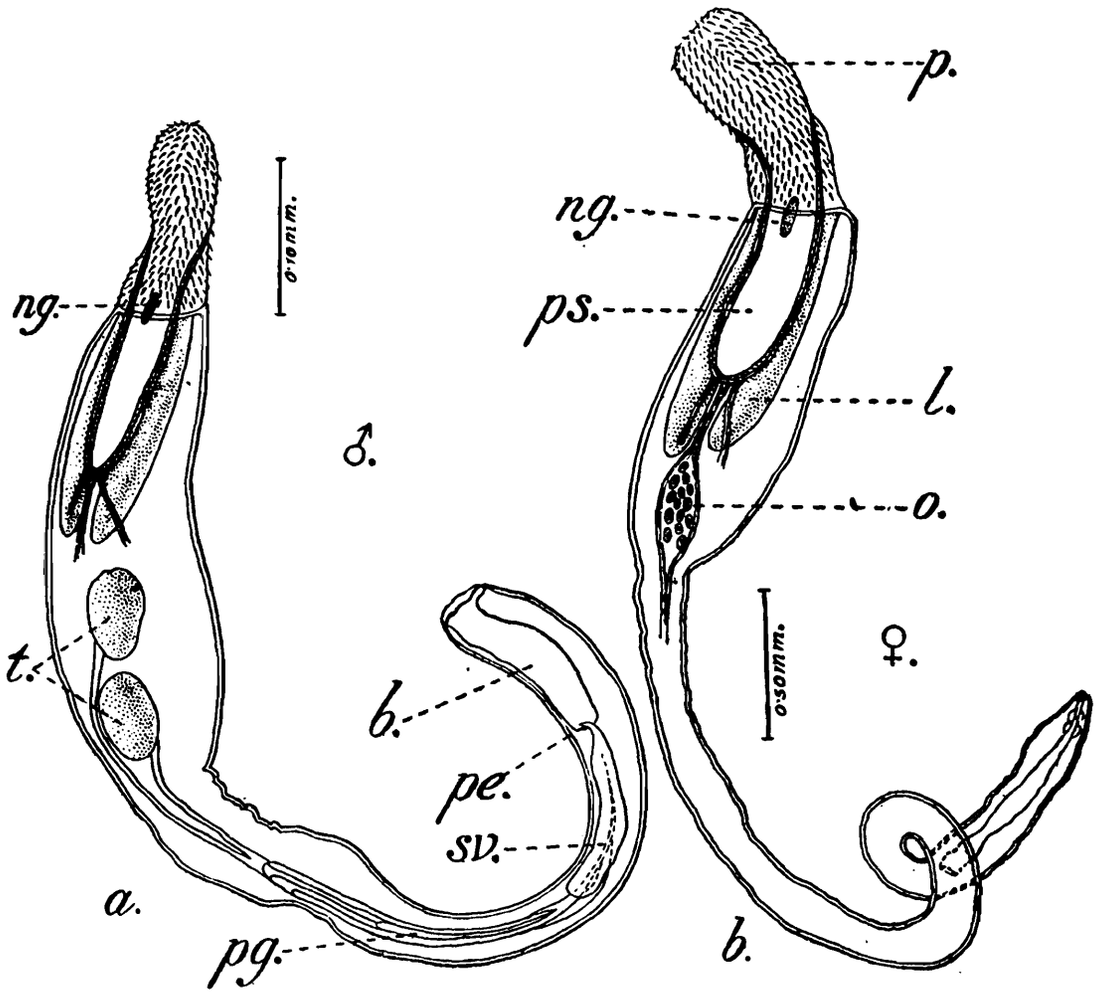
No comparison of the genital organs of the present species on the one hand and those of Millzners' specimens on the other, has been attempted because in the former the genital organs are fully developed, in the latter, only the male organs were developing and the female ones revealed nothing.

Centrorhynchus bengalensis, sp. nov.

Male.—The length of the worm is 5·35 mm. Body is divided into a broad oval anterior part and a narrow tubular posterior part. The former including the proboscis measures 2·44 mm. in length and 0·59 mm. in width. The latter is 0·30 mm. wide. The proboscis is 0·47 mm. long and 0·28 mm. wide. The neck is 0·27 mm. in length and 0·32 mm. in width. The proboscis is armed with 35-40 longitudinal rows of hooks with 14-18 hooks in each circle. The hooks in the anterior region are bigger than in the posterior region. The former measure 0·02—0·04 mm. and the latter 0·022—0·025 mm. in length. The proboscis sheath is 0·73 mm. long. The nerve ganglion is 0·87 mm. from the anterior end. The lemnisci are 0·7 mm. long.

Reproductive organs (Text-fig. 3 *a*) are fully developed. The testes are equal in size being 0·31 × 0·23 mm. The anterior testis is situated at 1·68 mm. from the anterior end. Cement glands are 1·28 mm. long. There is a prostatic reservoir. In the mounted specimen the origin of each cement gland could not be traced and so the total length of the cylindrical cement mass was taken. Seminal vesicle is a pear shaped organ which is 0·49 mm. long. Bursa is 0·58 mm. in length.

Female.—The female specimen is 5·39 mm. long. The body is divided into two parts as in the male. The broad anterior part of the body including the proboscis is 2·26 mm. long and 0·40 mm. wide. The narrow posterior part of the body is 0·17 mm. wide. The proboscis is 0·52 mm. in length and 0·32 mm. in breadth. The neck is 0·29 mm. long and 0·30 mm. broad. The number and arrangement of the hooks is the same



Text-Fig. 3.—*Centrorhynchus bengalensis*, sp. nov. *a*. Entire male ; *b*. Entire female ; *b*., bursa ; *l*., lemnisci ; *ng*., nerve ganglion ; *o*., ova ; *p*., proboscis ; *pe*., penis ; *pg*., prostatic glands ; *ps*., proboscis sheath ; *sv*., seminal vesicle ; *t*., testes.

as in the male. Proboscis receptacle is 0·93 mm. long. Nerve ganglion is 0·83 mm. from the anterior end of the body.

The ovary (Text-fig. 3 *b*) is attached to the base of the proboscis sheath by a ligament. Egg balls are clearly seen in it. Trace of uterine bell, uterus and vaginal duct was noticed in the specimen.

	C. erraticus.	*C. bengalensis.*
1. Length of the worms ..	7·5—8·5 mm.	♂—5·35 mm. ♀—5·39 mm.
2. Width of the anterior broad portion of the body.	1·2—1·4 mm.	♂—0·59 mm. ♀—0·40 mm.
3. Width of the posterior narrow portion of the body.	0·425—0·5 mm.	♂—0·30 mm. ♀—0·17 mm.
4. Hooks	36×21—22.	35—40×14—18
5. Length of the hooks in the anterior region of the proboscis.	0·055—0·065 mm.	0·02—0·04 mm.
6. Length of the hooks in the posterior region of the proboscis.	0·042 mm.	0·022—0·025 mm.

Specific diagnosis.—Length of the specimens 5·35 - 5·39 mm. Anterior portion of the body uniformally swollen nearly upto the region of the

testes in the male and the ovary in the female. Posterior portion of the body narrow and tubular. Number of longitudinal rows of hooks 35-40 with 14-18 hooks in each circle. The hooks in the anterior region of proboscis bigger than in the posterior region.

Type specimens.—No. W 3831/1, Zoological Survey of India, Calcutta.

Host.—Red-backed woodpecker.

Locality.—Calcutta.

Remarks.—The new species comes close to *C. erraticus* Chandler in the number of longitudinal rows of hooks but differs from it in the body shape and the number of hooks in each row.

In view of the fact that Chandlers' specimens were all immature, he did not give the description of the genital organs. Thus a comparison of the genital organs of the present species with those of Chandlers' does not arise.

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