ACANTHOCEPHALAN PARASITES OF CERTAIN FISHES FROM CALCUTTA.

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(Plate V.)

During a survey of the parasites of fishes of the Calcutta markets we examined the intestines and viscera of *Labeo rohita* (Ham. Buch.), *Catla catla* (Ham. Buch.) and *Ophicephalus striatus* Bloch, during the months of May to September 1934. With the exception of a few specimens all were heavily infected with Acanthocephalan parasites. In one large specimen of *Catla catla* which was caught in a tank near Diamond Harbour more than 250 of these parasites were found in the intestine. All the parasites were fixed and preserved in the usual way. Sagittal and transverse sections were cut, where necessary, for study.

In all the three Acanthocephalan worms described below we find that the vasa efferentia from the two testes join each other to form the vas deferens instead of opening directly into the prostatic glands, as described by Thapar (1930). The vas deferens runs for a short distance and opens separately at the side of the seminal vesicle near its opening at the base of the penis. The organ which we have termed as the penis is a muscular ending into which all the tubes from the prostatic glands and the testes open. It is clearly differentiated and can be readily distinguished in all cases.

Acanthogyrus acanthogyrus Thapar.

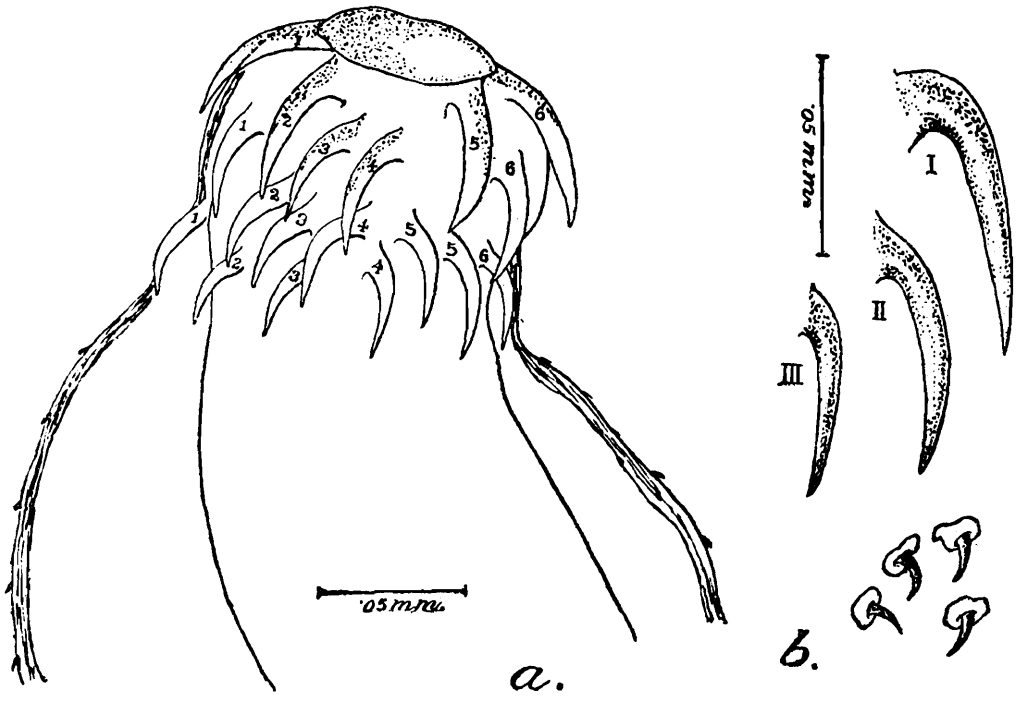
1927. *Acanthogyrus acanthogyrus*, Thapar, *Journ. Helminthol.* V, pp. 109-120.

The body is club-shaped and swollen at the anterior end just behind the proboscis. The males are smaller and more slender than the females. The males are 2·80—8·00 mm. long and 0·60—1·10 mm. broad; the females 3·00—15·50 mm. long and 0·70—1·70 mm. broad. The maximum number of worms found in one host was 14.

The proboscis is globular and is armed with 3 rows of recurved hooks with 6 hooks in each row. The proboscis sheath is a thick walled muscular sac.

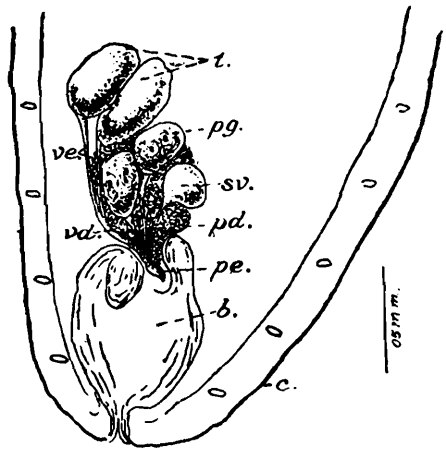
The body is studed with regular rows of fine, curved hooks. At the anterior two-third portion there are 23 rows of complete rings encircling the body, the next four rows form incomplete rings (24th row has 12 hooks, 25th-8, 26th-5 and 27th-3) followed by several rows with 2 hooks in each row. The rows of hooks correspond to the lateral branches of the lacunar canals which arise from two longitudinal canals to form a regular lacunar system in the body wall.

On the two sides of the proboscis-sheath there are two long and narrow lemnisci, each with a large nucleus.



TEXT-FIG. 1.—*Acanthogyrus acanthogyrus.* (*a*) Anterior region, (*b*) spines of the proboscis and the body magnified.

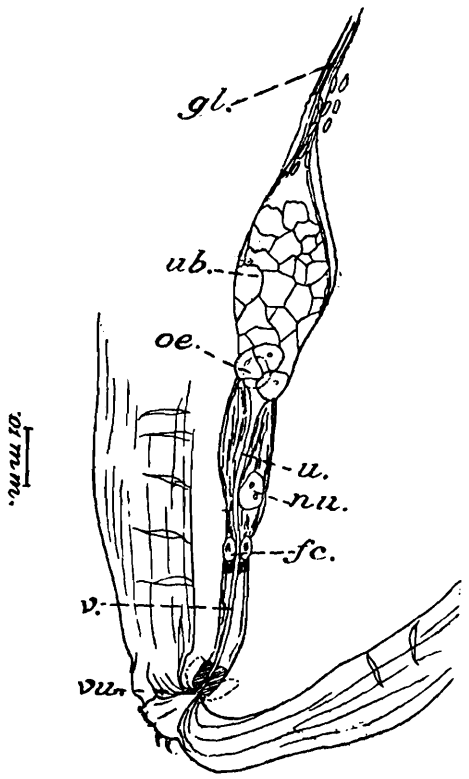
There is a single nerve ganglion situated near the posterior end of the proboscis-sheath. It sends out fine branches, called retinaculi, which are distributed in the body wall.



TEXT-FIG. 2.—Male genitalia of *Acanthogyrus acanthogyrus.* *b.*, bursa; *c.*, cuticle; *pe.*, penis; *pd.*, prostatic duct; *pg.*, prostatic glands; *sv.*, seminal vesicle; *t.*, testes; *ve.*, vasa efferentia; *vd.*, vas deferens.

The male genitalia lying at the posterior third of the body consist of a pair of ovoid testes, two vasa efferentia, one vas deferens, a seminal vesicle, a bilobed prostatic gland, a small conical penis and a bursa. The two testes are situated close behind one another. The vasa efferentia, arising from the testes after a short distance, unite to form the vas deferens; this terminates at the base of the rudimentary penis. A tube

from the small sac-like seminal vesicle joins the vas deferens before its opening into the penis. The prostatic glands consist of a bilobed mass with two or more nuclei embedded in it. Short tubes lead out of this mass and end at the base of the penis.



TEXT-FIG. 3.—Female genitalia of *Acanthogyrus acanthogyrus*. *fc.*, flask-shaped cells; *gl.*, genital ligament; *nu.*, nucleus, in the wall of the uterus; *oe.*, ovijector; *u.*, uterus; *ub.*, uterine bell; *v.*, vagina; *vu.*, vulva.

The female genitalia consist of a uterine bell, the uterus, thick muscular vagina, vulva and ova scattered in the body cavity in various stages of development. A pair of flask-shaped cells lie at the posterior end of the uterus, a big nucleus is also found in its wall. The vulva which is at the postero-lateral end of the body is armed with a few very fine spines.

Host.—*Labeo rohita* (Ham.).

Location.—Intestine.

Locality.—Calcutta, Bengal.

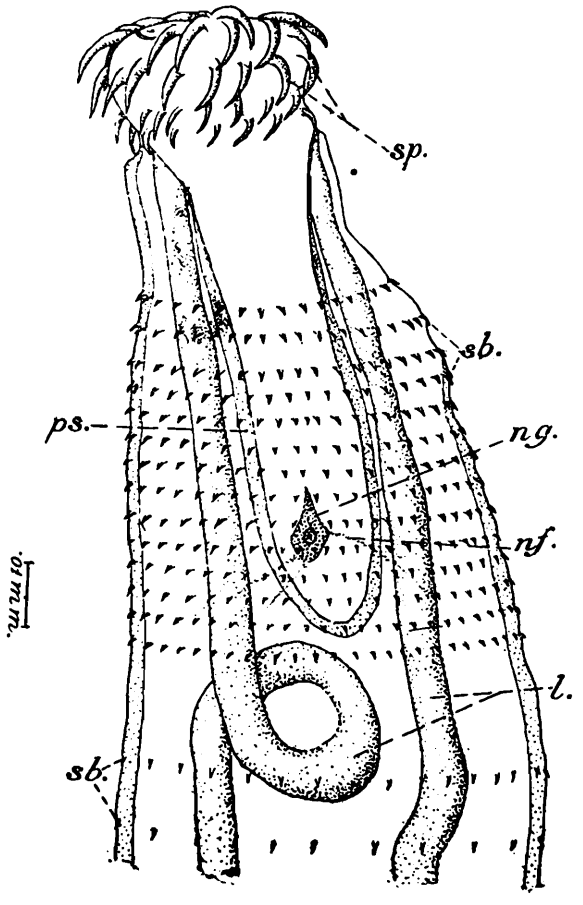
Specimens of *Acanthogyrus acanthogyrus* were also collected from *Catla catla* (Ham.) obtained at Calcutta, Diamond Harbour and Port Canning. These specimens were smaller than those from *Labeo rohita* (Ham.) The largest male measured 3·49 mm. by 0·68 mm. and the largest female 7·00 mm. by 1·45 mm. The proboscis is 0·10 mm. long and 0·09 mm. broad. The action of the proboscis is controlled by strong retractor and protrator muscles. The proboscis-sheath is single walled. The two lemnisci, which are filamentous structures, arise from the two sides of the proboscis-sheath near its point of origin; they measure 0·86 mm. by 0·14 mm. A few large nuclei are embedded in the lemnisci.

The genitalia in both the sexes are similar to those of worms obtained from *Labeo rohita*.

Pallisentis nagpurensis (Bhalerao).

1931. *Farzandia nagpurensis*, Bhalerao, *Ann. Mag. Nat. Hist.* (10) VII, pp. 569-573.

In almost all the specimens of *Ophicephalus striatus* Bloch dissected by us the intestines contained 14-17 of these parasites, while one specimen, about 12 inches long, had in its intestine 29 parasites. In specimens left in water in a tray the protrusion of the proboscis was clearly observed; the protrusion is the result of a sudden springing movement, while the withdrawal is much slower and gradual. These worms, when fresh, were pinkish brown in colour, but after fixation and preservation in alcohol became whitish. The males in all cases were more numerous than the females.



TEXT-FIG. 4.—Anterior region of *Pallisentis nagpurensis*. *l.*, lemnisci; *nf.*, nerve fibres; *ng.*, nerve ganglion; *ps.*, proboscis sheath; *sb.*, spines of the body; *sp.*, spines of the proboscis.

The proboscis is somewhat globular and there is a distinct long neck devoid of spines. The proboscis is armed with 4 rows of 8-10 hooks each. At the anterior part of the body there are 14 rows of close-set spines followed by a spineless region, after which again there are regular rows of widely placed thinner spines.

Measurements.—The males are 14·00 mm. × 0·45 mm. and the females 17·50 mm. × 0·56 mm.; the proboscis is 0·20 mm. × 0·23 mm.; the proboscis sheath 0·88 mm. × 0·28 mm.; lemnisci 2·43 mm. × 0·09 mm.; anterior testis 1·04 mm. × 0·23 mm.; posterior testis 0·74 mm. × 0·23 mm.; prostatic gland 2·65 mm. × 0·20 mm.; seminal vesicle

0·85 mm. × 0·13 mm.; and the bursa 0·94 mm. × 0·27 mm. In the collection from Uttarbhag the largest male measured 22·00 mm. × 0·75 mm. and the female 32·00 mm. × 0·90 mm.

The male genitalia, situated in the posterior half of the body consist of a pair of elongated testes situated one behind the other, from each of these a duct, vas efferens, runs for a short distance alongside the prostatic gland, and then joins with the other to form the vas deferens, which opens at the base of the penis. A duct from the thin elongated sac-like seminal vesicle joins the vas deferens before it opens into the penis. The prostatic gland which is a bilobed elongated structure has in the anterior part 15 or more nuclei. The two prostatic ducts from the prostatic mass after meeting each other open at the base of the minute penis. There is a funnel shaped eversible bursa.

The female genitalia consist of the uterine bell, the uterus, the vagina, the vulva and the ovary which is seen only in very young specimens. In mature worms the ovary bursts, liberating the oval egg-balls which float in the body cavity. The egg-balls contain ova in all stages of development. The uterine bell is a thin wide-mouthed funnel-shaped structure attached at one side by a thin ligament, the genital ligament, to the base of the proboscis sheath. At its basal portion there are a few guard cells which serve the function of sorting out the ova, and only allow the mature ova to pass out into the uterus. The uterus is a thick walled, long tube which leads into an elongated vagina. The vagina has two bands of strong muscles at its two ends which apparently allow the ova to pass out in a single file. The vulva is placed more or less postero-ventrally.

Host.—*Ophicephalus striatus* Bloch.

Location.—Intestine.

Locality.—Calcutta and Uttarbhag, Bengal.

In conclusion we have to express our gratitude to Dr. Baini Prashad, Director, Zoological Survey of India, for his unceasing guidance and kind help, as also for going through the manuscript.

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