

A NEW SPECIES OF SPINITECTUS, A NEMATODE, FROM INDIA.

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Spinitectus indicus, sp. nov.

Locality.—Allahabad.

Host.—*Pseudotropius garua* and *Eutropiichthys vacha*.

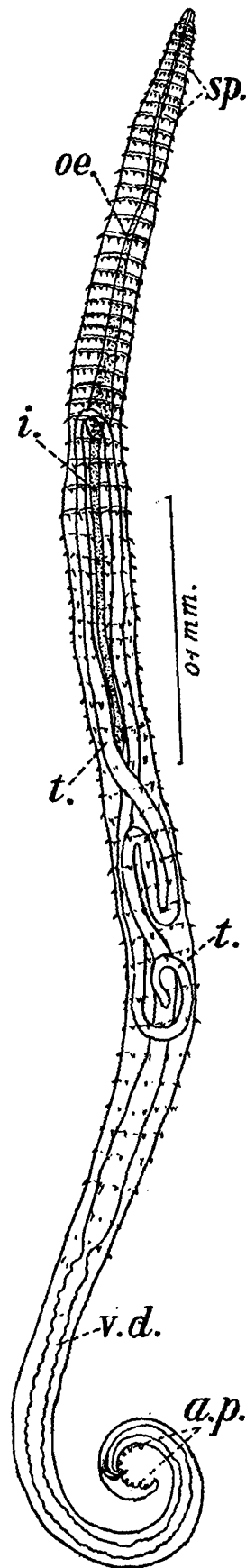
Time.—September 1930 to January 1931.

Ten Siluroid fishes of the two species noted above, obtained from the fish market at Allahabad were examined from time to time, during September 1930 to January 1931. Of these only three of each kind were found infected with the nematode described below. The total number of worms obtained on different dates consisted of thirteen females and eight males. The incidence of infection is not heavy; less than 30 per cent. of the fishes examined were infected, and the number of parasites in a single host varied from one to three or four.

Owing to the presence of characteristic spines on its body the nematode is clearly referable to the genus *Spinitectus* Fourment 1883, a number of new species of which have been described during the last five years. Morishita (5) in 1926 described a new species from an amphibian—all the previous ones having been recorded from fishes only—and published a useful key to the five species of the genus then known. In 1927 Lemaire (6) furnished a detailed account of *S. inermis* (Zeder 1800), and the same year a new form was described by Fujita (3) from a Japanese fish. A year later, two more species were added to the genus by Travassos and his colleagues (7) from Brazil in South America. At present, eight well defined species of the genus are known from widely separated areas of the earth's surface. The present species, the first found in India, is the ninth member of this cosmopolitan genus, and is designated *S. indicus*.

The worms belonging to this species are nearly straight, of moderate length, slender and tapering towards the posterior extremity in both sexes. The female is larger than the male. In the living condition, they are often attached to the wall of the intestine and usually occur in its hinder part only. The cuticle is thick and spiny throughout. Transverse cuticular striations are clearly visible, in the last half of the body, only in specimens which were not well extended at the time of fixation. The spines are arranged in transverse circles, twenty to thirty of which are quite distinct under the low power of a microscope. The following fifteen or twenty rows can also be made out easily, but the succeeding ones become more and more inconspicuous until they disappear near the anus. The distance between successive rows of prominent spines gradually increases from before backwards, but after the anterior third of the body, the rings are more or less equidistant. The first spinous ring begins, in the male, at a distance of 0.4 mm. from the front end and, in the female, at 0.1 mm. The total number of circles in both cases exceeds 150, and the number of spines in each prominent row

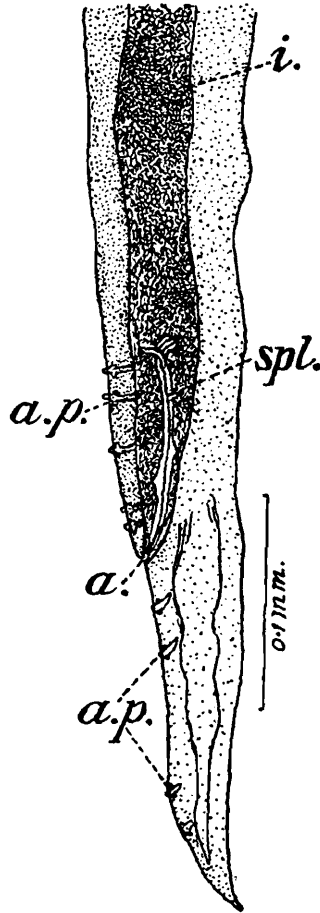
varies from 22 to 28. The average length of the larger spines in the male is 25 and in the female 23.5 μ .



TEXT-FIG 1.—*Spinitectus indicus*, sp. nov. Camera lucida drawing of a male specimen.
a. p. anal papillae; *v. d.* vas deferens; *t.* testis; *i.* intestine; *oe.* oesophagus;
sp. spines.

The head is not distinctly marked off from the body, which narrows down gradually towards the blunt anterior extremity.

The mouth is terminal and bounded by four inconspicuous papillae or valves as in *S. gigi*. It is followed by a narrow tubular vestibule 0.3 mm. in length. The oesophagus is very long (1.5 mm.) and not marked off into an anterior and a posterior portion. Its anterior part, near the vestibule, is narrow, but the posterior part is fairly thick, being 0.12 mm. wide near the extremity. The intestine is straight, less than



TEXT-FIG. 2.—*Spinitectus indicus*, sp. nov. Camera lucida drawing of posterior part of male, showing papillae and spicules. *a. p.* anal papillae; *a.* anus; *spl.* spicules; *i.* intestine.

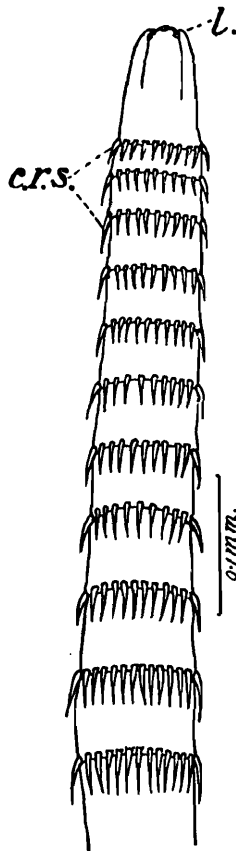
half as wide as the oesophagus, and of a nearly uniform thickness throughout. It ends in the anus which is situated, in the male, 0.16 mm. and in the female, 0.2—0.3 mm. ahead of the posterior extremity.

The nerve ring, in the female, lies at a distance of 0.19 mm. from the front-end, and is easily visible under the high power of a microscope. It was not observed in the male specimens.

The excretory pore is not conspicuous.

Male.—An average-sized male individual measures 6.0 mm. in length and 0.11 mm. in breadth. The tail is 0.16 mm. long and is slightly bent. It bears nine, paired, papillae, five anterior and four posterior to the anal aperture as indicated in fig. 2. The papillae are symmetrically placed and unequal in size, (largest 0.022 mm. ; smallest 0.0154 mm.): the anterior ones are larger than the posterior ; their exact shape is indicated in fig. 2. The alae are absent. The spicules are equal in length, 0.11 mm. and similar in shape. The anterior part is rod-like and outwardly inclined, almost at right angles to the main axis ; but the main body is somewhat depressed and bears, about its middle, a minute tubercle

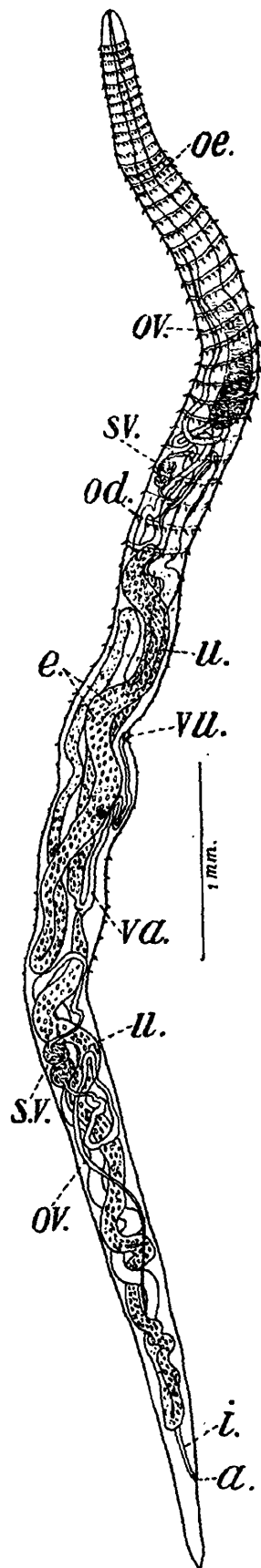
along the outer margin. The testis is, as usual, tubular, coiled, as shown in fig. 1, and extends from before the termination of the oesophagus to about the middle of the body. It then continues imperceptibly into a somewhat dilated but straight vesicula seminalis. The latter, at about one third the distance of the body from the posterior end, leads by a short, narrow, duct-like portion into the vas deferens which has somewhat crenulated walls and runs to the anus as a more or less straight tube.



TEXT-FIG. 3.—*Spinitectus indicus*, sp. nov. Camera lucida drawing of anterior end of male; showing arrangements of spines in circular rings. *c. r. s.* circular rows of spines; *l.* lip.

Female.—An average-sized individual measures 9.0 mm. in length and 0.39 mm. in greatest breadth. The tail is short, pointed, and has a length of about 0.28 mm. The ovaries are two in number. The anterior ovary commences as a narrow tube, a little behind the middle of the oesophagus, and is coiled in the manner indicated in fig. 4. It passes imperceptibly into the oviduct which opens into a receptaculum seminalis, situated a short distance behind the origin of the intestine. The receptacle is very clearly visible, in the living condition, and often appears constricted in the middle. A short narrow tube passes out of the seminal receptacle and dilates into the uterus. The latter runs backwards, as a nearly straight tube, and after passing behind the vulva to some distance forms an anteriorly directed loop before joining the vagina. The posterior ovary lies at about one third the distance of the body from the hind extremity, runs anteriorly, before it is coiled like the first one, and continues into the oviduct and seminal receptacle. The uterus runs backwards to within a short distance of the extremity, before it doubles upon itself, and takes a forward course. Just after

crossing the receptacle, from which it originated, it is usually thrown into a short loop before joining its fellow to form the vagina. The



TEXT-FIG. 4.—*Spinitectus indicus*, sp. nov. Camera lucida drawing of a female specimen. *a.* anus; *i.* intestine; *ov.* ovary; *s. v.* seminal vesicle; *u.* uterus; *va.* vagina; *vu.* vulva; *e.* eggs; *u.* uterus; *od.* oviduct; *s. v.* seminal vesicle; *ov.* ovary; *oe.* oesophagus.

latter is a narrow muscular tube, which is fairly long and runs anteriorly to open into the vulva. The vulva is a slit-like aperture, surrounded with muscle fibres, situated a very short distance in front of the middle of the body.

The present species differs from all the known ones in the position of the vulva, the length and nature of oesophagus, in the number and arrangement of the spiny rings, in the form and arrangement of the papillae and the spicules and in size, etc.

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