

OCCURRENCE OF *NEREITES*, A FOSSIL POLYCHAET (ANNELIDA) IN RAJASTHAN

ANIMAL fossils of Jaisalmer area have been studied by Lubimova, Guha and Mohan¹; Sahni and Bhatnagar² and Subbotina, Datta and Srivastava³ in addition to the studies on fossils from different parts of Rajasthan by other workers. So far *Nereites* has not been recorded by these workers from Rajasthan. Here is reported for the first time the occurrence of this Polychaet worm from a location ca. 5 km. north of Jaisalmer, on way to Ramgarh.



FIG. 1. Photograph of *Nereites*.

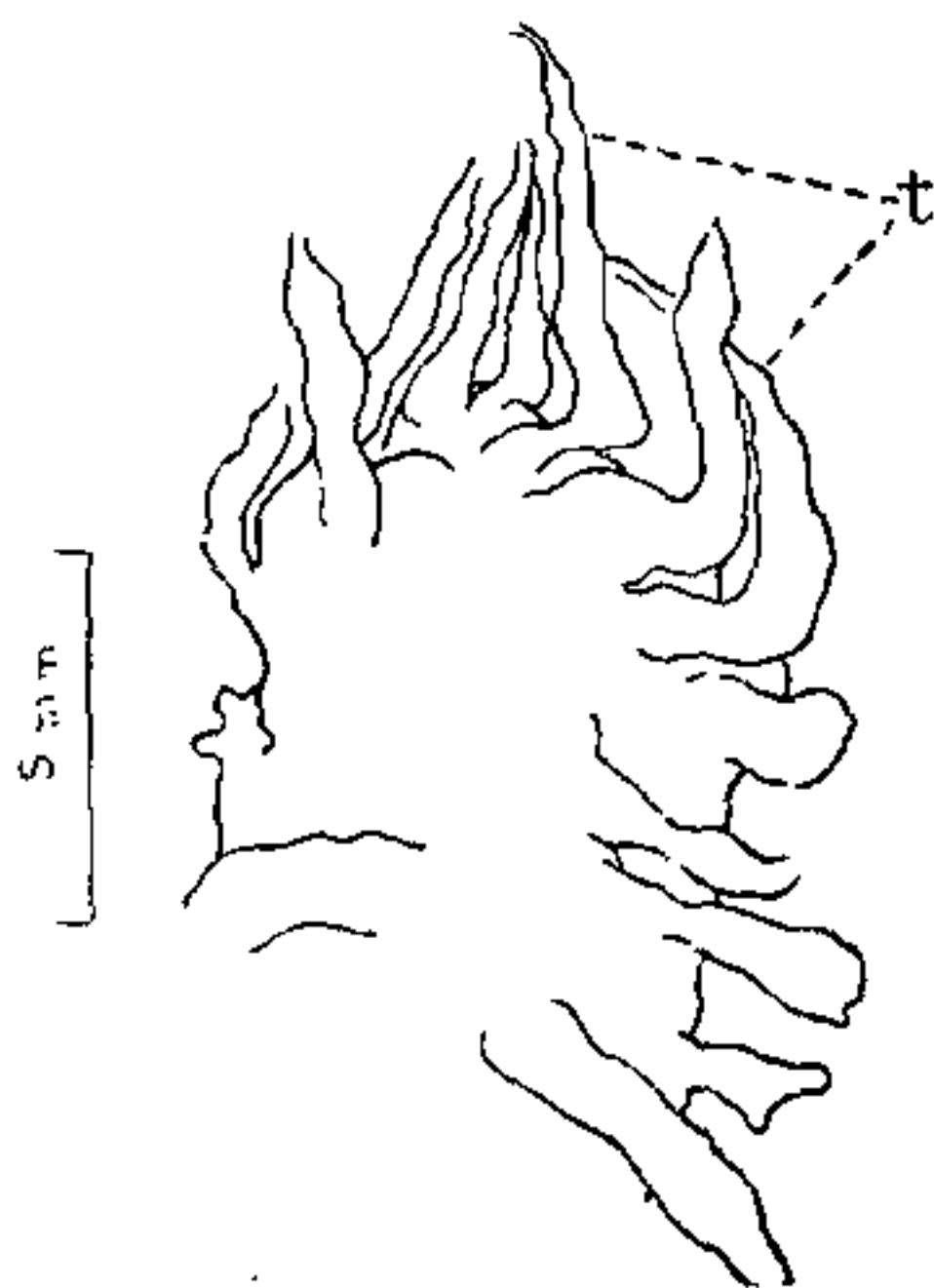


FIG. 2. Camera lucida diagram of head region (Magnified)

The scarp facing the road is constituted by pale yellow to yellowish-brown sandstone,

limestone and greyish-yellow to earthy shale and silt stone of Jaisalmer series of Upper Jurassic age.

The fossil (Fig. 1) is ca. 3 cm. in length, and is represented by the head and 16 segments of the body. The head region has four tentacles (Fig. 2, t). Along with the animal there are three (possibly four) roundish tubular structures seen in their cross-section. One of these structures appears to be a tube with the head of some worm protruding through it.

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P. D. GUPTA.*
M. L. SRIVASTAVA.**
V. C. AGRAWAL.*

* Desert Regional Station, Zoological Survey of India, Jodhpur.

** Exploratory Tubewell Organisation (Division III), Jodhpur.

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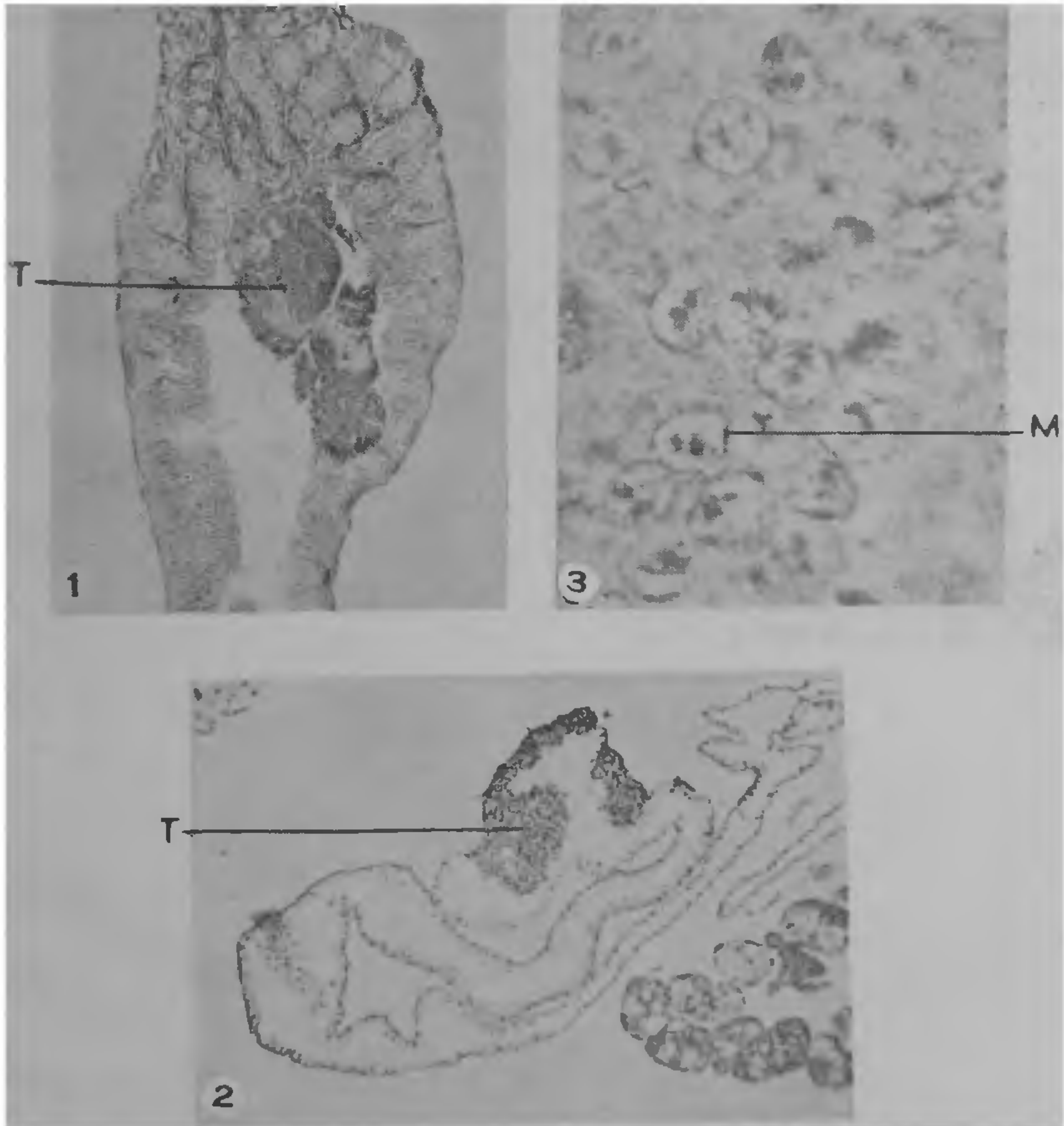
INDUCED GUT TUMOURS IN COCKROACHES

SEVERAL invertebrate groups have shown phenomena related to neoplastic growth¹ but details about their origin and relationships have been scanty. Insects have been observed to develop tumours as a response to various experimental interventions. Scharrer² discovered that the severance of the recurrent nerve in *Leucophaea maderæ* induces growth of tumour in the gut; later Matz³ has recorded in *Locusta migratoria* that injection of blood or crushed, cell-free filtrate of locust tumours exercises a carcinogenic effect.

Sectioning of the recurrent nerve has been found to induce tumour formation in the alimentary canal of the cockroaches *Periplaneta americana* and *Stylopyga* sp. It is observed that a rapid regenerative process sets in soon after nerve severance to restore the tract of the recurrent nerve. It has been found that neoplastic proliferations will develop, with even lethal effects, if regeneration and restoration of the nerve tract is prevented. The most common sites of tumour formation are the gastric caeca and the salivary receptacle (Figs. 1 and 2). The tumorous mass originates from the epithelium of the affected organ and pushes into the lumen. The regenerative cells or nidi, situated in the wall of the caeca, show an

increase in frequency of mitosis, and the migratory movement of the resultant cells towards the lumen indicates the origin of these tumours from the same. These cells are characterised by an increased size of their nuclei containing an abundance of sharply outlined, intensely staining, chromatin lumps. The nuclear enlargement and multiplication is not accompanied by a proportionate increase of cytoplasm and the presence of multinucleate cells is not uncommon. The cells within the tumorous mass are seen to undergo endomitosis (Fig. 3) with a bridge of chromatin between the two groups of chromosomes perhaps due to a rather disorganized

separation of the chromosomes during anaphase. Most of the nuclei at the site of the tumour develop a hyperpycnotic condition. Sections of tumorous tissues, stained according to Feulgen, reveal a considerably higher DNA content in the nuclei and this increase varies even within the same tumour and corresponds to the increase in nuclear volume. The migrant cells become distinctly discernible by about four to five weeks after nerve transection, the tumour growing larger and filling the lumen by about twelve to fourteen weeks. In the salivary glands the condition is one of hyperplasia, the nuclei being highly basophilic whereas in the



FIGS. 1-3. Fig. 1. Gastric caecum of *Periplaneta americana* showing tumour inside the lumen, 119 days after operation. About $\times 100$. Fig. 2. Salivary receptacle of *Periplaneta americana* having a prominent tumorous growth on its wall projecting into the lumen, 75 days after operation. About $\times 100$. Fig. 3. Tumorous growth of Fig. 1 at higher magnification showing endomitosis with chromatin bridges between the two groups of chromosomes. About $\times 1,200$. (T—Tumour; M—Mitotic figure.)

salivary receptacle the tumorous proliferation is observed to be well defined.

In *Periplaneta* the two sexes show differences in the tendency to develop tumorous growth, the females being more easily and seriously affected than males. Another striking feature is that the restoration of the recurrent nerve tract seems to bring about a regressive effect on the tumorous growth. It is interesting to recall here that the recurrent nerve which originates from the frontal ganglion is a pathway for the neurosecretory materials in insects.⁴ Studies are being continued to follow up the endocrine imbalances that set in as a result of the severance of this tract and also to assess the influence of the juvenile hormone from the corpora allata on the regenerative and oncogenic processes.

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Department of Zoology,
University of Kerala,
Trivandrum-7, June 8, 1966.

P. HEMA.

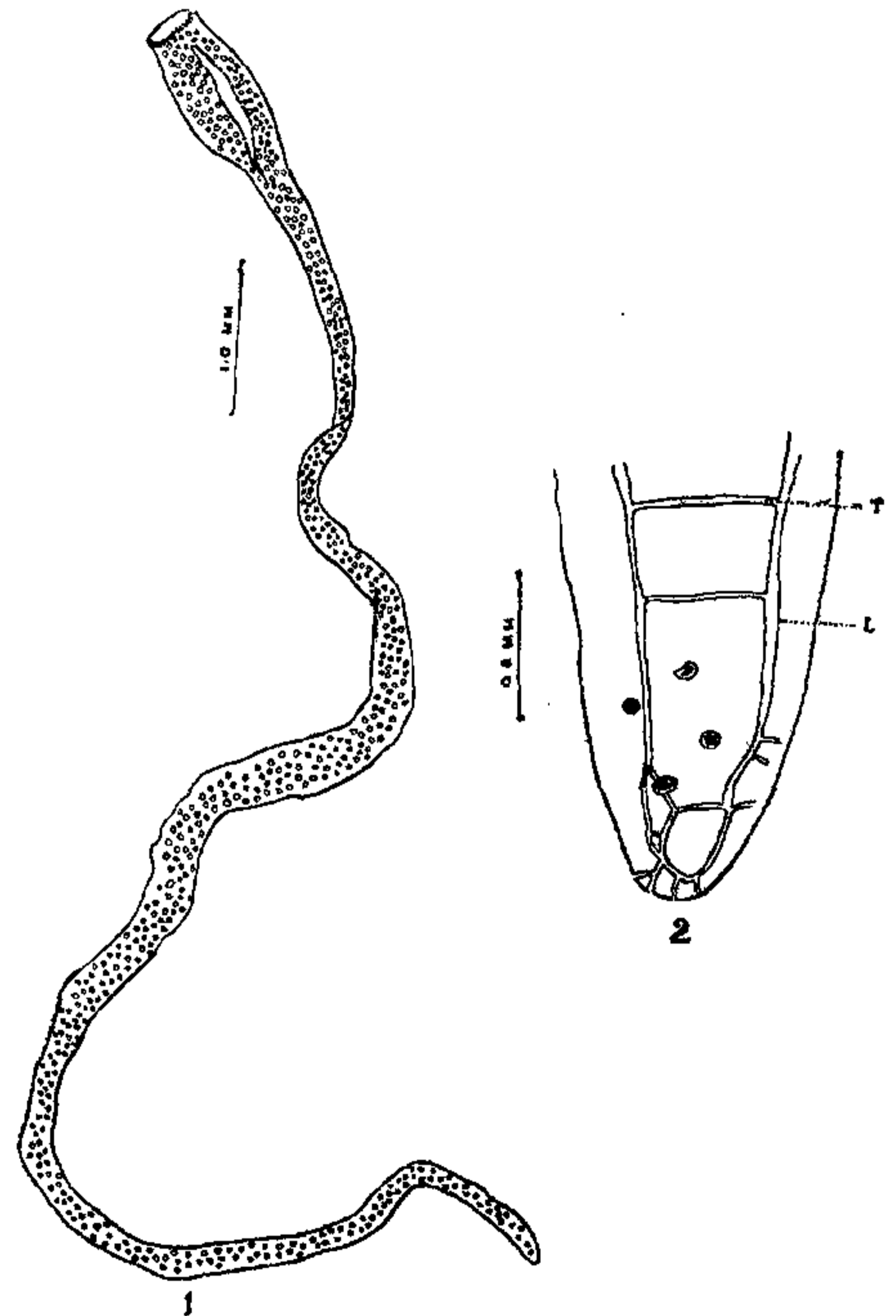
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PLEROCERCROID OF SENGGA SP.
(PSEUDOPHYLLIDEA : PTYCHOBOTH-
RIIDAE) FROM THE FRESHWATER
FISH *PANCHAX PANCHAX*
(HAM. AND BUCH.)

THE order Pseudophyllidea is a group of cestodes inhabiting freshwater and marine teleostean fishes as well as various amniotes including man. Although much information on adults of genera like *Bothriocephalus*, *Oncodiscus*, *Ptychobothrium*, *Sengga*, *Eubothrium*, *Penetrocephalus* and several others is available, data on life-cycles of many of the species included in these genera are extremely meagre. Nothing is known of the life-cycle of *Sengga* species of which occur in the intestine of freshwater fishes. In a study on the parasites of fishes of a lake at Kondakarla (Visakhapatnam District) it was discovered that the fish, *Panchax panchax* (Ham. and Buch.) harbours in its body cavity encysted plerocercoids which appear to belong to the genus *Sengga*.

The cysts are oval measuring 1.136 mm. in length. Three to four cysts may be present in each infected fish. The cyst wall is thin and

delicate and the larva could be seen actively moving inside. Slight pressure is enough to bring about rupture of the cyst wall. The plerocercoids (Fig. 1) measure 3.44 to 11.00 mm. in length. The scolex is 0.4–0.96 mm. in length and 0.304–0.4 mm. in breadth. Both the scolex and the body are loaded with calcareous bodies. The apical disc measures 0.24–0.32 mm. in diameter. It presents a dome-shaped appearance and bears the characteristic two rows of spines numbering 40–44. The spines measure 19.5 μ in length and are simple in structure. In each row 20–22 spines could be counted. These characters suggest that the present plerocercoid is referable to the genus *Sengga*. The osmoregulatory system consists of two prominent lateral canals which are interconnected by transverse vessels. At the posterior end is present a network of these canals opening out by branches as shown in Fig. 2.



FIGS. 1-2. Fig. 1. Plerocercoid of *Sengga* species. Fig. 2. Posterior end of osmoregulatory system, L—Longitudinal canal; T—Transverse canal.

Species of the genus *Sengga* are reported from labyrinthiform and cypriniform fishes of South-East Asia.^{4,6,8} *S. besnardi* Dollfus, 1934¹ is from *Betta splendens*, the Siamese fighting fish.