

Nymphs of *Armillifer moniliformis moniliformis* Sambon, 1922 in Civet Cats and Wild Boar in Ceylon*

by

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(With two Text Figures & one Plate)

WHILE collecting parasites from wild animals in the jungles of the Northern, North Central, North Western and Eastern Provinces of Ceylon the writer came across a number of encysted forms in the omentum, wall of the intestine and the liver of civet cats (*Viverricula indica mayori*) and wild boar (*Sus cristatus cristatus*). These specimens were either fixed in 5% formalin or 70% alcohol and were brought to the laboratory for detailed examinations. They were identified as nymphs of *Armillifer moniliformis moniliformis* Sambon, 1922.

Description of the Nymphs

The nymphs are found coiled like snail shells and encysted in whitish capsules (Fig. 1). Table 1 shows the locality, host, number of worms, sex, number of annulations and the length of the worms collected. The body is cylindrical and annulated ending in an acuminate conical terminal segment (Fig. 2). Thick, prominent brownish yellow bands are seen in each annulation giving the species the characteristic beaded appearance. There is no sharp demarcation between the cephalothorax and the abdomen. The annulations near the cephalothorax are not always distinct as those in the posterior region. The cephalothorax carries a pair of terminal papillae, two pairs of hooks and the mouth (Fig. 3). The hooks are strong, brownish yellow in colour and located each in a hook pit. The mouth is almost circular and is located just above the inner hook line. The large number of epidermal glands (Text Fig. I B) whose openings are distributed all over the surface of the body are referred to as stigmata. According to Hett (1924) this is a misnomer (applied and still retained) for the apertures before their true nature was understood. The male genital openings (Text Fig. IA) and (Fig. 4) are a pair placed anteriorly on the mid ventral surface of the first segment. The female opening is located a little above the anus on the ventral surface of the terminal segment or at the junction of the terminal and the penultimate segments (Text Fig. I, C). The anus opens at the apex of the terminal cone in both sexes (Text Figs. I. B & C).

Discussion

Pentastomids are blood sucking strictly endoparasitic arthropods. They are parasites of mammals, birds, reptiles, amphibians and fishes. They are legless and worm like, but near the mouth are two pairs of hollow, curved, retractile hooklets, which are rudimentary

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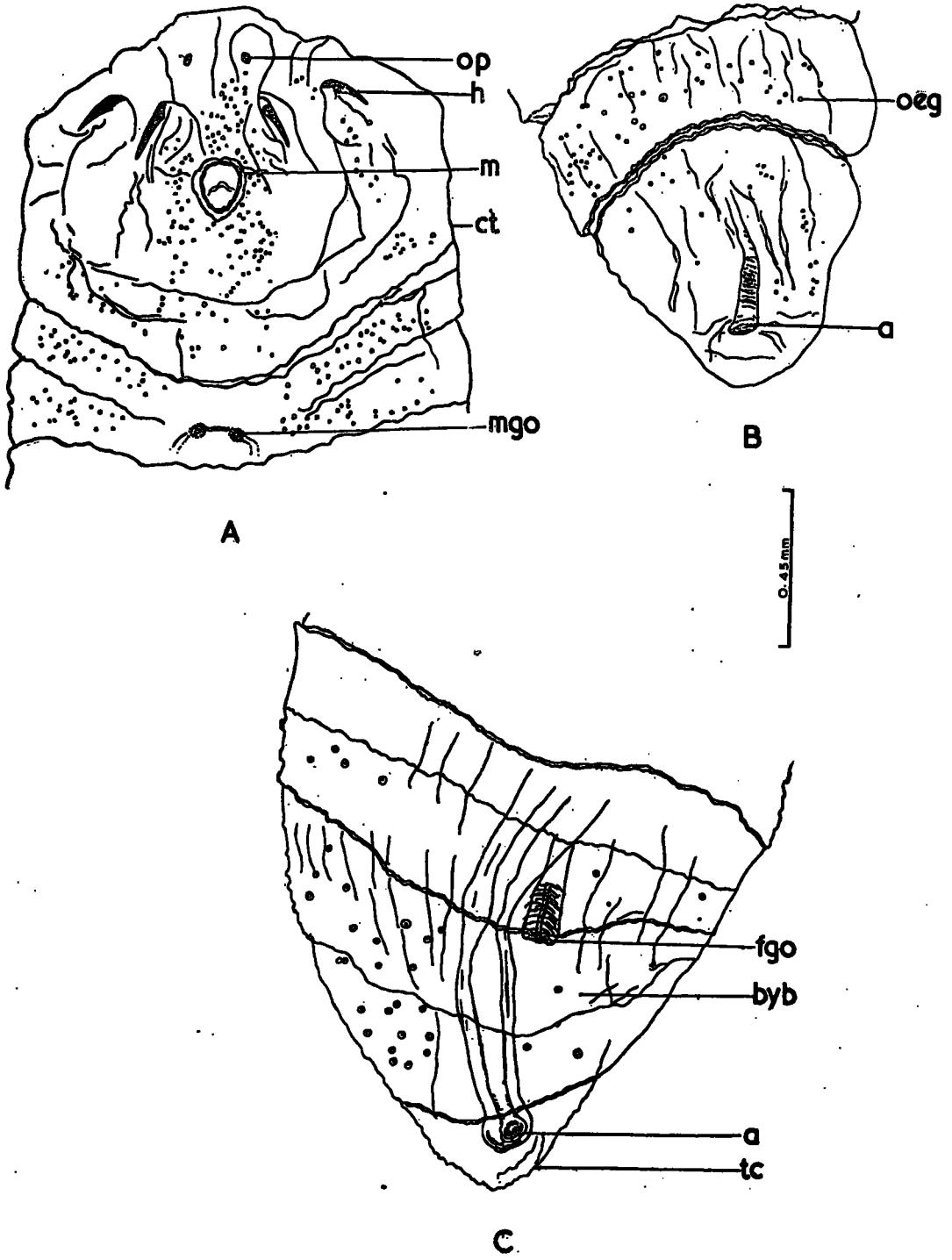
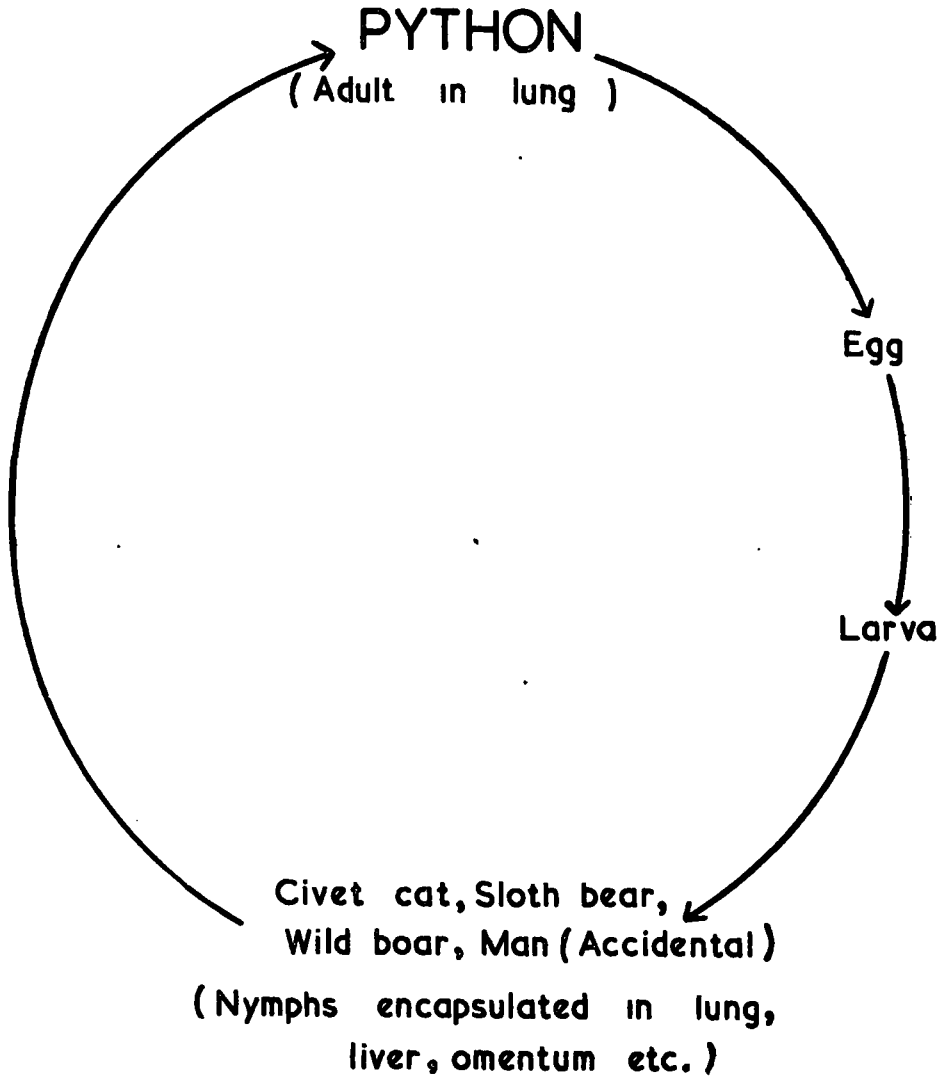


FIG. I

appendages. The immature stages are mite-like in appearance with 2 or 3 pairs of legs. The adults feed on blood and mucosal cells in the mouth, oesophagus or respiratory passages of their host.

Relatively little is known of life histories and general biology of these worms. In most genera a life cycle involving two hosts would be expected because the adult parasites normally occur in carnivores, lizards or snakes which regularly feed on smaller reptiles, amphibians and mammals in which larval pentastomids have been found.



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FIG. II

The outline of the life cycle is represented in Text Fig. II. In general the life cycle is as follows. The adults live in the lung cavities of the python. The eggs reach the outside with the sputum and are eaten by the small mammals in which they hatch in the small intestine. Larvae migrate to the viscera, viz, liver, lungs, omentum etc. where they become encapsulated in the tissues. In about 3 months they develop into nymphs. If the nymph-infested mammal is eaten by the python, the nymphs migrate up the oesophagus into the trachea and lungs where they become adult pentastomids.

The nymph of *Armillifer moniliformis moniliformis* Sambon, 1922 has been reported earlier in Ceylon from the sloth bear (Fernando, 1953). The civet cat and the wild boar are two new hosts from which this parasite is reported in Ceylon. Shipley (1903) obtained a single adult worm in a python (*Python molurus*).

Sambon (1922) first suggested a varietal difference between the tongue worms of the two Oriental species of python, *Python reticulatus* and *Python molurus*. He proposed the name *A.moniliformis* var. *Heymonsi* for the linguatulid of the Malay python *Python reticulatus*. Later Heymons (1935) distinguished 3 sub-species in *Armillifer moniliformis* viz. *A.moniliformis moniliformis* Sambon, 1922 in *Python molurus*, *A.moniliformis heymonsi* Sambon, 1922 in *Python reticulatus* and *A.moniliformis australis* Heymons, 1932 in *Python amethystinus*. *Python molurus* and *Python reticulatus* are confined to the Oriental region and the former is the only species found in Ceylon. Hence, the nymphs reported belong to the sub-species *A.moniliformis moniliformis* Sambon, 1922. Other characters in support of this identification are the annulations which range from 29—34 in both sexes, and the acuminate conical terminal segment.

Fernando (1953) while describing a single male specimen of a nymph of this species for the first time in the sloth bear (*Melursus ursinus*) mentions the presence of an oblong appendage at the extreme posterior end of the body. The four male specimens that we have collected from different hosts and from different Provinces in Ceylon do not show this structure and as such it may not be of any specific significance as suggested by him. Unfortunately his specimen was not available for comparison.

Though nymphal stages of Pentastomids have not been reported from man in this country, it is possible that man may get accidentally infected in the jungle areas. On the other hand infection in man may have been overlooked as the disease Porocephaliasis is not easy to diagnose especially when it is not suspected.

Summary

1. The occurrence of the nymphs of *Armillifer moniliformis moniliformis* Sambon, 1922 in Civet cats and Wild boar is recorded for the first time in Ceylon.
2. A description of the nymphs is given.
3. The possibility of human infection occurring in Ceylon is suggested.

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EXPLANATION OF FIGURES IN PLATE

- Figure 1.—Encysted Nymph (×8).
 Figure 2.—Nymph dissected out from cyst. (×8).
 Figure 3.—Anterior end of Nymph showing hooks and the mouth (×63).
 Figure 4.—Transverse section of Nymph passing through the male genital openings (×29.5).

TABLE I

No.	Host	Locality	Province	Length	Sex	No. of Annulations
1	Civet cat	Gommarankadawella	E.P.	13mm	Male	31
2	Civet cat	Gommarankadawella	E.P.	13.5mm	Male	31
3	Civet cat	Gommarankadawella	E.P.	11.5mm	Male	31
4	Civet cat	Gommarankadawella	E.P.	14.0mm	Female	32
5	Civet cat	Gommarankadawella	E.P.	14.0mm	Female	34
6	Civet cat	Gommarankadawella	E.P.	14.0mm	Female	31
7	Civet cat	Vavunikulam	N.P.	17.0mm	Female	32
8	Wild boar	Moonamalgaswewa	N.C.P.	17.0mm	Female	32
9	Civet cat	Anuradhapura	N.C.P.	14.5mm	Male	32
10	Civet cat	Anuradhapura	N.C.P.	16.0mm	Female	29

