

salinity of the water remained constant and there was no evidence of the dilution of the sea-water due to fresh-water drainage from land. The possibility of water-borne contamination from land sources being the cause of increase in total phosphate must therefore be excluded.

We have great pleasure in expressing our indebtedness to Prof. R. V. Seshaiya, Director, U.G.C. Centre in Marine Biology, for suggesting the problem and guidance. Our thanks are also due to Dr. L. H. N. Cooper, F.R.S., for helpful suggestions. One of us (V. D. R.) is grateful to the University Grants Commission for the award of a Junior Research Fellowship.

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A RARE RECORD OF *LETHACOTYLE* (MONOGENEA), ITS POST- ONCOMIRACIDIAL LARVA WITH OBSERVATION ON DISTRIBUTION

A COLLECTION of marine fishes from Andamans, obtained in February to March 1961, were examined for their parasites and from a single *Caranx sexfasciatus* (total length 15.5 cm.) available in that collection, one monogenetic trematode belonging to *Lethacotyle* Manter and Prince,¹ a post-oncomiracidial larva of *Lethacotyle* and fifteen monogenetic trematodes belonging to *Cemocotylella* Price² were collected.

There is so far no record of *Lethacotyle* since its first description by Manter and Prince¹ from Fiji in 1953. In view of the absence of clamps in it, Hargis³ considered this feature as reported by Manter and Prince,¹ though possible, is so unusual that further observations are necessary to confirm this condition. Since the present one is the second record of *Lethacotyle* and it confirms the observation of Manter and Prince, it is of interest to report on the occurrence of the genus.

There is so far no record of the larva of *Lethacotyle* or of its related genera belonging to the family Protomicrocotylidæ (Llewellyn⁴

and the post-oncomiracidial larva reported here is the first record to be known in the family.

Lethacotyle recorded from Andamans differs from the one described by Manter and Prince¹ in that the posterior lobed portion of the body being on the left and the distal portion of the vagina on the right side of the worm. These and other differences observed will be included in a redescription of *Lethacotyle* to be published together with the larva elsewhere.

The record of *Lethacotyle* from Andamans is of interest from the point of geographical distribution. Monogenea have direct life-cycle and show high specificity so that it might be expected of them to show the same distribution as their hosts (Dawes⁵; Manter⁶). Though *Caranx sexfasciatus* and its related hosts occur along the coasts of peninsular India, they have yielded monogenea other than *Lethacotyle* (Chauhan^{7, 8}; Ramalingam⁹⁻¹¹; Tripathi¹² Unnithan¹³⁻¹⁵).

An intensive examination of *C. sexfasciatus* (total length ranging from 5.2 cm. to 26.5 cm.) netted from inshore and offshore waters around Mandapam over a two-year period did not yield *Lethacotyle*, but yielded *Cemocotylella*. The data obtained from the studies on carangid fishes at Madras show results similar to that obtained at Mandapam with the difference that *Cemocotylella* was found on *C. atropus* and was recorded only once.

Although *Lethacotyle* occurs along with *Cemocotylella* in the same host, the former is confined to fishes from Andamans whereas the latter is more widely distributed and has been recorded from Mandapam and Madras. Thus from the point of distribution, *Lethacotyle* shows a discontinuity. Such discontinuity in distribution is seen even in more successful digenetic trematodes of marine fishes like *Derogenes varicus*. Though this species has been recorded from well over 50 species of fishes all over the world, yet it has not been recorded from fishes of the coast of North Carolina and is absent from surface-water fishes of Tortugas (Dawes⁵). The significance of the restriction of *Lethacotyle* is not clear although it is suggestive that they are more susceptible to unfavourable conditions of the environment than *Cemocotylella*. That this may be so is supported by the observation of Manter,⁶ who considers that temperature may be a factor responsible for the discontinuous distribution of *Derogenes varicus* as it may have an effect on the intermediate host or hosts. It is possible that factors such as temperature may operate directly to a greater extent on monogenea than

digenea since the former are found in superficial locations in aquatic vertebrates and consequently are much exposed to changes in the environmental conditions.

The observations on the discontinuity in the distribution of *Lethacotyle* is significant in view of the statement made by Manter¹⁶ that "parasites of the same or related hosts now having a discontinuous distribution are of special interest because if the parasites in the two localities are the same or closely related the evidence of a former continuity and sympatry is strong".

Studies on the distribution of parasites similar to the one presented, if extended to more hosts from different regions, according to Manter,¹⁶ may give information not only about the ecology and travels of the host but also furnish evidence of origin and phylogeny of hosts. Further investigations on these lines are in progress.

I am grateful to Dr. G. Krishnan, Director, for his encouragement.

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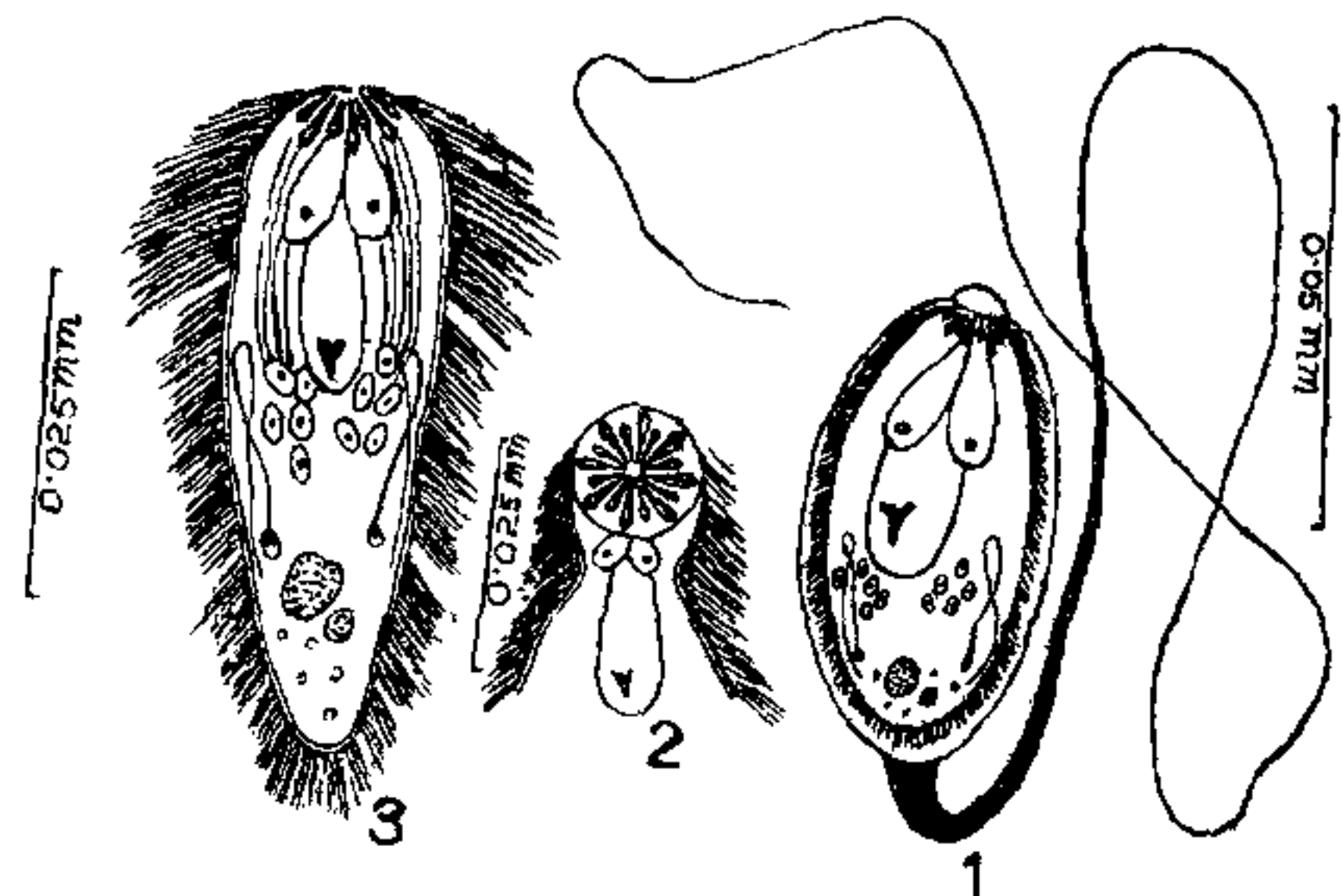
EGG AND MIRACIDIUM OF A GENARCHOPSID FLUKE (HEMIURIDAE) IN LOCAL FISHES

HEMIURID FLUKES, which are usually parasitic in oesophagus and stomach of fishes and sometimes reported from other lower vertebrates, have been described from Indian fresh-water

fishes.^{1,2} Out of a total of eleven species recognised by Yamaguti³ under the halipegine genus *Genarchopsis* Ozaki, 1925 (characterised by the posterior union of its intestinal caeca and possession of filamented eggs) as many as six species have alone been reported from *Ophiocephalus punctatus* and *O. striatus* and a seventh one from *Mastacembelus armatus*. These species: *G. lobata*,² *G. ovocaudata*,² *G. piscicola*,² *G. singularis*,² *G. dassus*,¹ *G. indicus*¹ and *G. faruquis*,¹ have been differentiated on such topographical variations as the position of genital pore, the presence or absence of oesophageal pouch, the lobed or compact character of vitellaria and the extent of the uterine coils. Adequate details of the structure of the embryonated egg including its filament and the contained miracidium are lacking.

The incidence of genarchopsid representatives without oesophageal pouch, in *O. punctatus*, *M. armatus* and *Mystus seenghala*, was ascertained by collecting adult specimens during different months. The embryonated eggs with the miracidia have been studied in tap-water and are briefly described here.

The oval eggs are straw-coloured, operculate, fully embryonated and carry a prominently long but tapering filament at the opposite pole (Fig. 1). These measure 0.046-0.07 mm. ×



FIGS. 1-3. Fig. 1. An egg with filament. Fig. 2. Apical crown of spines (dorsal view). Fig. 3. The miracidium.

0.023-0.032 mm. in size and the filament, with a broader base and pointed tip, is 0.276-0.358 mm. long. The contained embryo is clearly visible and exhibits such structural details as the characteristic anterior crown of spines placed against the operculum, the apical gland with the eye spot, the pair of penetration glands with the ducts lying lateral to the hind margin of the apical gland, the two flame cells with their sinuous ducts, and the masses of germ cells.