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A DETAILED ACCOUNT OF *NEOADENOGASTER GLANDULARIS* MEHROTRA, 1973 (TREMATODA : PRONOCEPHALIDAE) FROM THE INTESTINE OF *CHELONE MYDAS* (LINN.) IN INDIA

N. K. GUPTA AND VEENA MEHROTRA*

(*Department of Zoology, Panjab University, Chandigarh, India*)

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ABSTRACT

In this paper is given a detailed account of *Neoadenogaster glandularis* Mehrotra, 1973, since the earlier report contained only the diagnostic features of the parasite. The validity of this form is discussed and confirmed.

During the survey of the helminth fauna of the Indian reptiles, seven specimens of flukes were recovered from the stomach of one marine turtle, *Chelone mydas* (Linn.), from the Gulf of Mannar (Pamban, Tamil Nadu).

The flukes were washed in saline. Five specimens were processed for the whole-mount preparations. After studying the live worms, they were narcotized in a weak solution of alcohol, fixed in Bouin under the pressure of a cover glass, stained in borax carmine, Mayer's carmalum, as modified by Gower, or Ehrlich's haematoxylin, cleared in methyl benzote, and mounted in balsam. Sections were cut 6 μ thick and stained, using the double-staining technique. All the measurements taken from the flattened preparations, unless otherwise stated, are given in microns. The sketches were made with the help of a camera lucida.

Family Pronocephalidae Looss, 1902
Subfamily Pronocephalinae Looss, 1899
Genus *Neoadenogaster* Mehrotra, 1973
Neoadenogaster glandularis Mehrotra, 1973
(Figs. 1—5)

Description (five specimens measured) : Body creamish white and its lateral and posterior margins curved inwards, with the result that the ventral surface becomes deeply concave and the dorsal arched in live condition; 3.198-3.822 mm long, 1.423-1.852 mm in maximum breadth at about the equatorial line, breadth across the collar region 1.179-1.462 mm; the rear extremity provided with a pair of small projections. Collar uninterrupted. The ventral surface of the body provided with numerous noudle-like glands, the ventral glands; the latter not arranged in any regular pattern, commencing at the leve of the genital pore and reaching up to the testicular region, leaving the lateral sides of the body uncovered. The oral sucker highly muscular, 368-633 × 604-682. The oesophagus a narrow tube, 331-409 in length, surrounded by gland cells. The intestinal caeca provided with unequal, blind pocket-like diverticula on their outer aspects throughout their length, and only a few, on the inner sides of their distal portions; running first obliquely backwards, then soon bending inwards and proceeding almost parrallel to one another up to a little in front of

*Present address : Assistant Professor, Department of Biosciences, Himachal Pradesh University, Summer Hill, Simla

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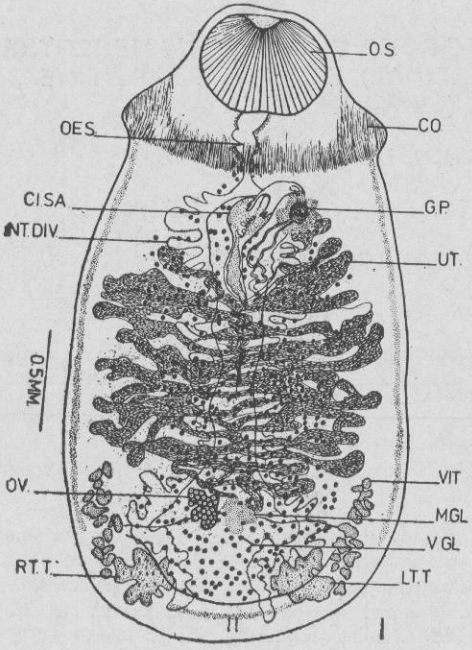
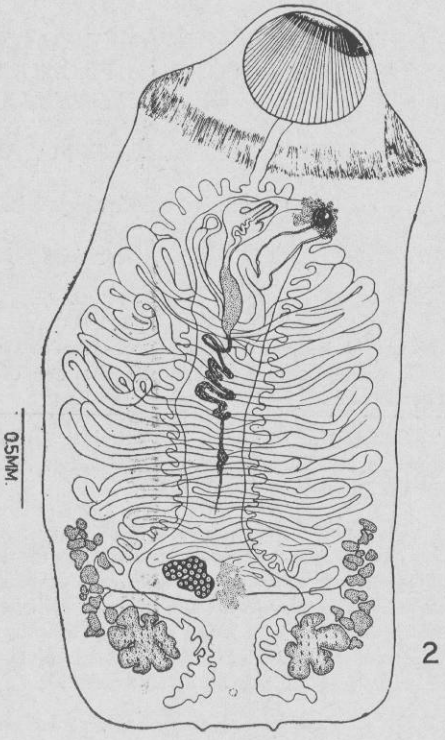
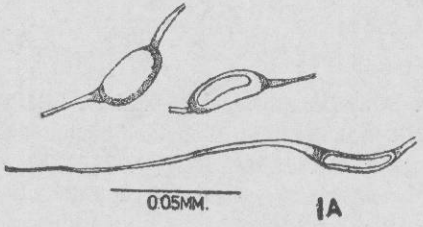




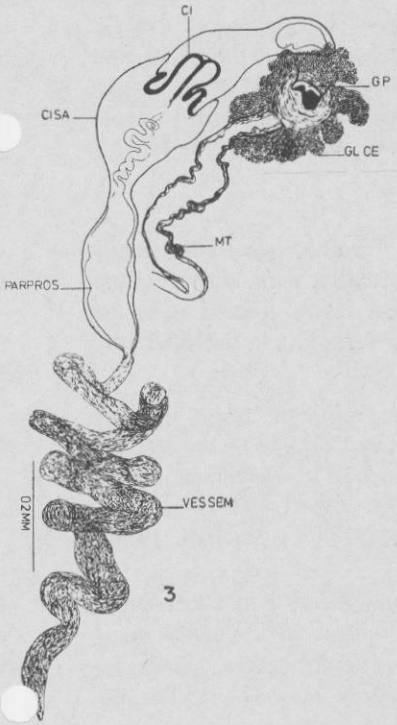


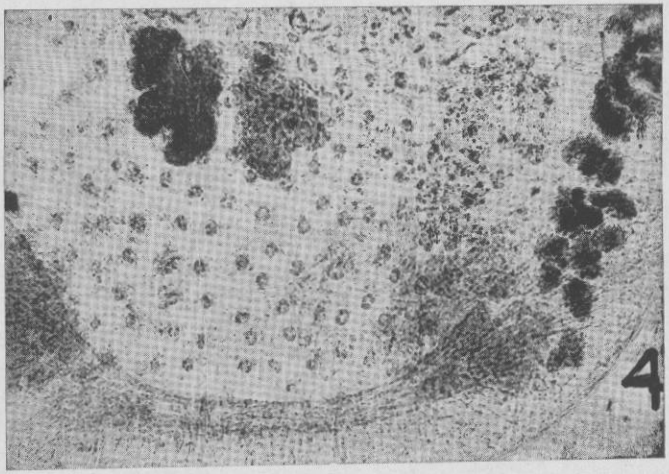
Neoadenogaster glandularis n.g., n. sp.

FIGURE 1, A whole mount (ventral view). 1a, eggs of the same
FIGURE 2, Another whole mount showing the projections at the posterior end of the body (ventral view)

ABBREVIATIONS

CI.—cirrus; CI.SA.—cirrus sac; CO.—collar; G.P.—genital pore; GL.CE.—gland cells; INT. DIV.—intestinal diverticula; LT.T.— left testis; M.GL.—Mehlis' gland; MT.—metraterm; O.S—oral sucker; OES.—oesophagus; OV.—ovary; PAR. PROS.—pars prostatica; RT. T.—right testis; UT.—uterus; V.GL.—ventral glands; VES.SEM.—vesicula seminalis; VIT.—vitellaria





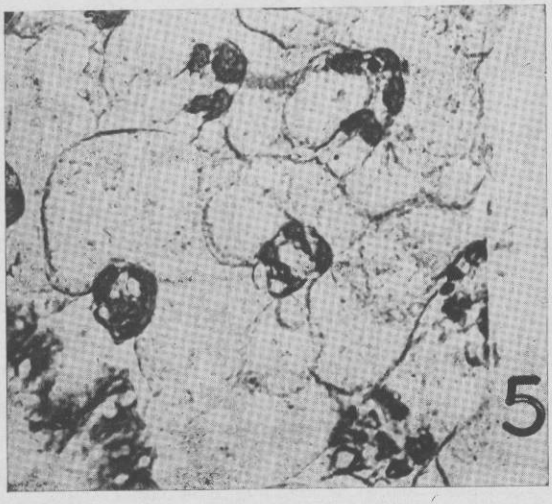


FIGURE 3, Terminal genital ducts in whole mount (magnified);

FIGURE 4, A microphotograph of the ventral glands in a whole mount (X 80 approx.)

FIGURE 5, A microphotograph of a portion of longitudinal-horizontal section, showing the magnified ventral glands (X 750 approx.)

the ovary here they diverge and soon converge, forming a sharp angle so as to give a bracket-like appearance, ultimately terminating at the level of the posterior edges of the testes or a little behind them.

The excretory vesicle thin-walled; the excretory pore dorsal, a little in front of the hind end of body.

Testes deeply lobed, extracaecal, postovarian, symmetrically situated near the posterior extremity of the body; the right testis 273-370 × 224-351, the left testis 263-370 × 214-370. The vesicula seminalis, a sinuous tube, median, forming four to five transverse bends distally. The cirrus sac bipartite; the lower part muscular, 253-331 long, enclosing

pars prostatica surrounded by the cells of the prostate gland; the upper part somewhat obliquely placed, enveloping the narrow and sinuous ductus ejaculatorius and a protrusible cirrus. The genital pore sinistral, ventral or outer to the left intestinal caecum on a level with the caecal bifurcation.

The ovary pretesticular on the right side of the median line, lobed, 195—273 ×117—234. The Mehlis' gland median, to the left of the ovary, measuring 195—292 ×117—214. The Laurer's canal present. The uterus transversely coiled between the Mehlis' gland and the upper part of the cirrus sac, ventral to the intestinal caeca, the coils extending into extracaecal zones. The metraterm well developed, its distal end surrounded by circular muscles, giving the appearance of a sphincter, and also by a large number of gland cells. Eggs filamented, with a single filament at each pole, 297—302 long (excluding filaments) and 108—135 in breadth. The vitellaria comprising eleven to seventeen follicles on each side, extending from the level of the middle of the testes anteriorly up to a little in front of the ovary (occupying 604—643 lengthwise on the right side and 565—702 on the left).

Discussion

In being monostomatous with a head collar, the present form belongs to the family Pronocephalidae Looss, 1902. The presence of the intestinal caeca with outpocketings or the diverticular and the symmetrically arranged postovarian testes located near the posterior extremity of the body leave no doubt that the present form fits in the subfamily Pronocephalinae Looss, 1899.

This subfamily so far includes thirteen genera from reptilian hosts, namely *Pronocephalus* Looss, 1899; *Cricocephalus* Looss, 1899; *Pyelosomum* Looss, 1899; *Adenogaster* Looss, 1901; *Pleurogonius* Looss, 1901 (syn *Glyphicephalus* Looss, 1901); *Epibathra* Looss, 1902; *Astrorchis* Poche, 1926; *Medioporus* Oguro, 1936; *Iguanacola* Gilbert, 1938; *Myosaccus* Gilbert, 1938; *Renigonius* Mehra, 1939; *Neocricocephalus* Gupta, 1962; and *Ruicephalus* Skrjabin, 1955.

The present form stands closest to the genus *Adenogaster* and differs from all the other genera of the subfamily in possessing numerous glands on the ventral surface of the body. However, it can be differentiated from *Adenogaster* also in which the ventral glands are arranged in four longitudinal rows; the collar is incomplete (deeply incised ventrally), the testes are ventrolateral to the intestinal caeca, the genital pore is a little behind the intestinal bifurcation, the vitellaria are more extensive, the uterine coils are restricted to the intercaecal zone and the eggs lack the polar filaments.

The above-mentioned differences necessitate the erection of a new genus for the reception of this form, since it cannot be accommodated in the genus *Adenogaster*. Hence a new genus *Neoadenogaster*, with *Neoadenogaster glandularis* n. sp. as its type species, has been formed.

Generic diagnosis.—Pronocephalidae, Pronocephalinae : The body in the live flukes deeply concave ventrally, its posterior extremity provided with a pair of small projections. Collar uninterrupted. The ventral glands present in the region between the genital pore and the testes and not arranged in any regular pattern. The oral sucker highly muscular. The oesophagus moderately long, surrounded by gland cells. The intestinal caeca with unequal diverticula on their entire outer sides,

and a few on the inner aspects of their distal parts. The excretory por dorsal, a little in front of the posterior extremity. Testes deeply lobed. The postovarian, symmetrical, extra-caecal, near the posterior end of the body. The vesicula seminalis median, sinuous. The cirrus sac bipartite. The genital pore sinistral, ventral or outer to the left intestinal caecum on a level with the caecal bifurcation. The ovary lobed, slightly to right of the median line. The Mehli's gland median, to the left of the ovary. The Laurer's canal present. The uterus transversely coiled between the Mehlis gland and the upper part of the cirrus sac, extending into extracaecal zones. Metraterm well developed, its distal end forming a sphincter surrounded by gland cells. Eggs filamented. The vitellaria consisting of a few follicles, from the level of the middle of testes anteriorly up to a little in front of the ovary. Parasitic in the stomach of marine turtles.

Type Species : *Neoadenogaster glandularis* Mehrotra, 1973

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