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ON SOME ALREADY KNOWN PRONOCEPHALIDS (TREMATODA : PRONOCEPHALIDAE) WITH A DISCUSSION ON THE SYNONYMY OF *PLEUROGONIUS LINFARIS* LOOSS, 1901 WITH *P. LONGISCULUS* LOOSS, 1901 AND AN EMENDED KEY TO THE SPECIES OF THE GENUS *PLEUROGONIUS* LOOSS, 1910

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ABSTRACT

In this paper are recorded six pronocephalid trematodes, namely, *Adenogaster serialis* Looss, 1901; *Cricocephalus albus* (Kuhl and Hasselt, 1822) Looss, 1899; *Pleurogonius longisculus* Looss, 1901; *Pronocephalus obliquus* Looss, 1899; *Pyelosomum posterorchis* Oguro, 1936; and *Charaxicephalus loossi* Mehra, 1939, recovered from marine turtles collected from the gulf of Mannar (Pamban, Tamil Nadu). Variations in the size of the body and its organs and also in their shape have been noticed. *Pleurogonius linearis* Looss, 1901 has been considered a synonym of *Pleurogonius longisculus*. Key to the species of the genus *Pleurogonius* Looss, 1910, as given by Prudhoe (1944), has been amended and enlarged so as to make it up-to-date.

RESULTS

Subfamily Pronocephalinae Looss, 1899

Genus *Adenogaster* Looss, 1901

Adenogaster serialis Looss, 1901

(Fig. 1)

Host : *Eretmochelys imbricate* (Linn.)
Habitat : Intestine
Locality : Gulf of Mannar (Pamban, Tamil Nadu)

Remarks : The authors' observations on this species tally with those of Looss (1902) in all the respects except for some minor variations in the size of the body and its organ. The collar is indistinct in the specimen studied by the authors and the metraterm is about half the length of the cirrus sac, not equal as in Looss' description. However, the present observations seem to be identical with those of Caballero (1954) who reported this species from Panama.

Genus *Cricocephalus* Looss, 1899

Cricocephalus albus (Kuhl and Hasselt, 1822) Looss, 1899

(Figs. 2-8)

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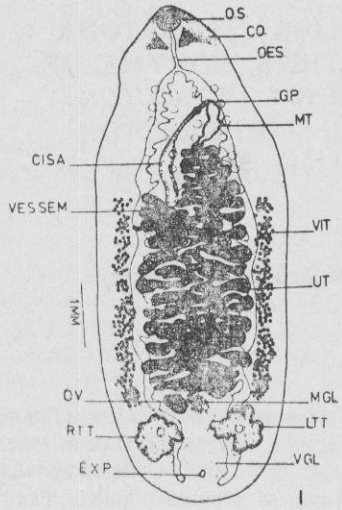

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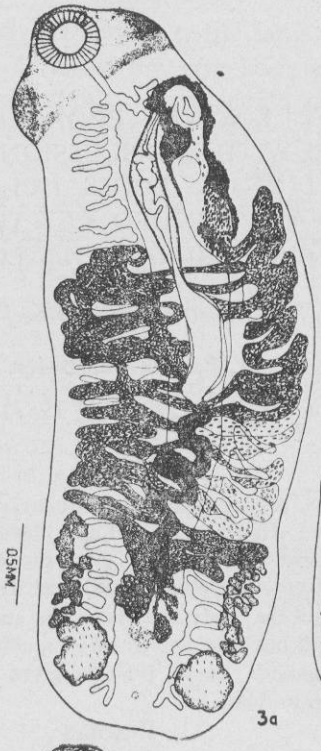

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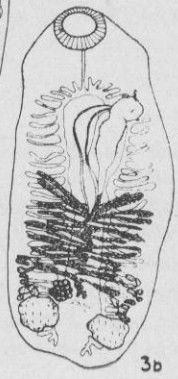

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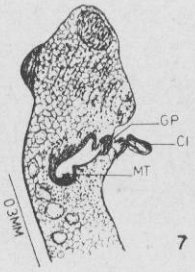

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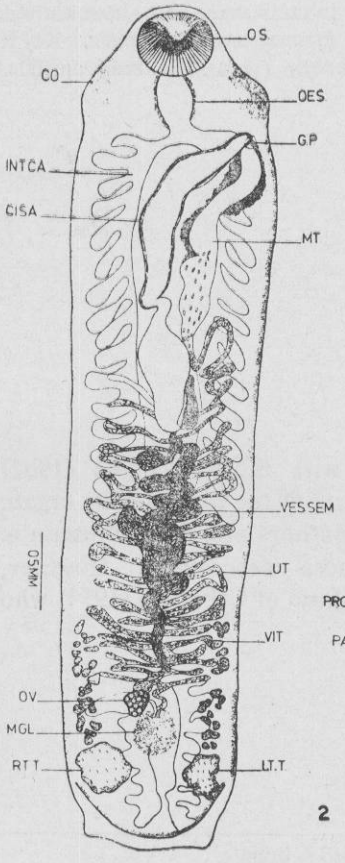

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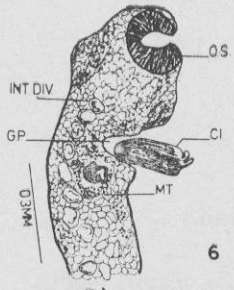

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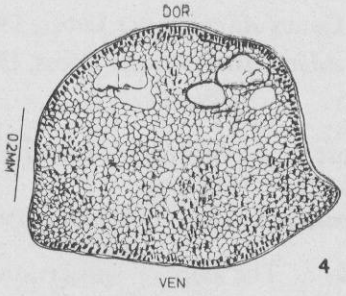

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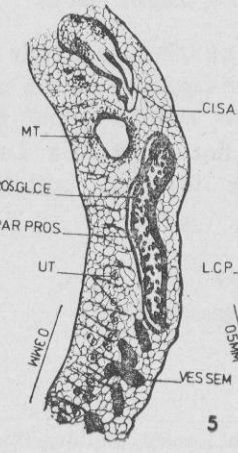

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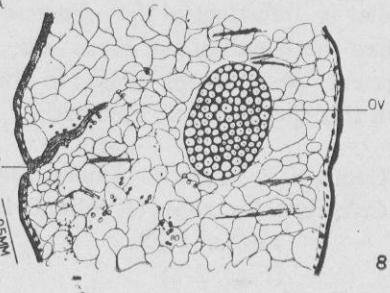

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Hosts : *Chelone mydas* (Linn.), *Eretmochelys imbricata*

Habitat : Intestine

Locality : Gulf of Mannar (Pamban, Tamil Nadu)

Remarks : Fifty-three specimens of *C. albus* were recovered. Variations in the shape of the intestinal diverticula have been observed; in the specimens in which the diverticula are stout, the first two or three of them are transverse to the body axis and the rest are directed backwards, whereas in the forms in which they are slender the majority of them are somewhat transversely directed. Illustrations depict the unincised nature of the collar, the protruded cirrus, the cirrus sac, the distal muscular end of the metraterm and the Laurer's canal in sagittal section.

This species has also been reported from *Chelone mydas* in the Indian subcontinent by Simha, Rao and Chattopadhyaya (1971).

Genus *Pleurogonius* Looss, 1901

Syn. *Glyphicephalus* Looss, 1901*

Pleurogonius longisculus Looss, 1901

(Figs. 9, 10a and b)

Host : *Chelone mydas* (Linn.)

Habitat : Intestine

Locality : Gulf of Mannar (Pamban, Tamil Nadu)

Remarks : This species has also been recorded by Simha, Rao and Chattopadhyaya (1971) from the Indian subcontinent. The present authors recovered 14 specimens of this form. Variations from the original description in the size of the body and its organs have been noticed. In the specimens studied herein, the body measures 2.77—6.77 × 0.3—0.63**; the oral sucker 0.05—0.7 × 0.06—0.1; the cirrus sac 0.32—0.77

*Though Skrjabin (1955) and Yamaguti (1971) recognized *Glyphicephalus* as a valid genus, in agreement with Mehra (1939) Prudhoe (1944) and Ruiz (1946) this genus is being regarded as a synonym of *Pleurogonius* Looss, 1901.

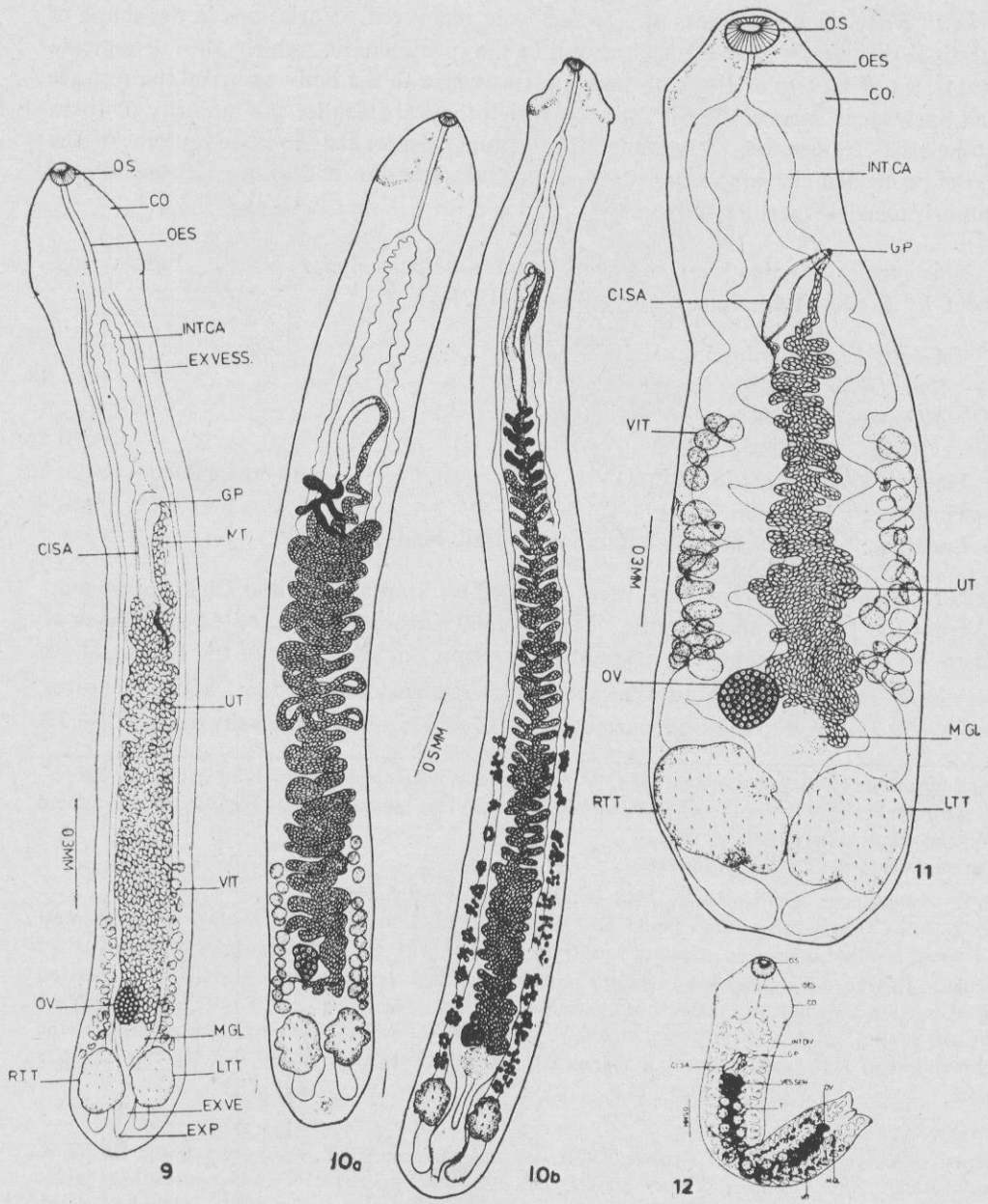
**all the measurements are in millimeters.

FIGURE 1. *Adenogaster serialis* Looss, 1901 (whole mount, ventral view).

FIGURES 2—8. *Cricocephalus albus* (Kuhl and Hasselt, 1822) Looss, 1899; 2, a whole mount (ventral view); 3 a and b, other specimens showing variations in the size of the body and shape of the intestinal diverticula; 4, a transverse section showing the collar unincised on the ventral surface; 5, a portion of sagittal section showing the vesicula seminalis and cirrus sac; 6, a portion of sagittal section showing the genital pore and protruded cirrus; 7, a portion of sagittal section passing through the distal muscular end of the metraterm; 8, a magnified portion of sagittal section showing the Laurer's canal pore.

ABBREVIATIONS :

CI=cirrus; CISA=cirrus sac; CO.=collar; DOR.=dorsal surface; EX.P.=excretory pore; EX.VE.=excretory vesicle; EX. VESS.=excretory vessel; G. P.=genital pore; INT. CA.=intestinal caeca; INT.DIV.=intestinal diverticulum; L. C. P.=Laurer's canal; LTT.=left testis; M.GL.=Mehlis's gland; MT.=metraterm; O. S.=oral sucker; OES.=oesophagus; OV.=ovary; PAR. PROS.=pars prostatica; PROS. GL. CE.=prostate gland celles; RT. T.=right testis; T_1=anterior testis; T_2=posterior testis; UT.=uterus; V.GL,=ventral glands; VEN.=ventral surface; VES. SEM.=vesicula seminalis; VIT.=vitellaria.



FIGURES 9—10. *Pleurogonius longisculus* Looss, 1901. 9, a whole mount (ventral view); 10, a and b, other specimens showing variations in the shape and anterior extent of the vitelline follicles.
Figure 11, *Pyelosomum posterorchis* Oguro, 1936 (whole mount, ventral view).
FIGURE 12, *Charaxicephalus loossi* Mehra, 1939 (whole mount).

in length and the eggs are 0.024—0.03×0.012—0.016. According to Looss (1901), the body is up to 10.7 long by 0.7—0.8 broad; the oral sucker 0.17×0.12; the cirrus sac generally 1.7—1.8 long (even 0.8 in contracted specimens); and the eggs are 0.028×0.015.

Discussion on the synonymy of *Pleurogonius linearis* Looss, 1901.

Looss (1901) described two species, *P. longisculus* and *P. linearis* from *Chelone mydas* in Egypt. He differentiated the latter species from the former on the basis of the smaller size of the body and its organs. According to Looss, the body in *P. longisculus* is up to 10.7×0.7—0.8 and *P. linearis* it is 1.3—1.4×0.25—0.3. However, Oguro (1936), while redescribing *P. linearis* from *Chelone japonica* in Japan, gave the body measurements of this species as 2.13—2.14×0.57—0.66.

If the size is taken as a criterion, the smallest form in the present collection of the material should be considered to belong to *P. linearis*, since it approaches the range of the length given by Oguro and that of the breadth given by Looss, for this species; similarly, the largest specimen from the present collection should be taken as *P. longisculus*. In fact, all these specimens show all the similarities in the structure and topography of the organs. Hence, in the view of the present authors the specimens so recognized by Looss and also by Oguro as *P. linearis* represent the smaller form of *P. longisculus*. Since the difference in the body size cannot be regarded as an adequate criterion to separate the two species, the present authors purpose to synonymise *P. linearis* with *P. longisculus*.

Key to the species of the genus *Pleurogonius* Looss, 1901 (emended) [Prudhoe's key (1944)] to the species has been emended in order to make it up-to-date).

1. Ventral lobes of collar joining medially behind oral sucker..... 7
   Ventral lobes of collar not joining medially but remaining separate and extending to oral sucker..... 2
2. Genital pore situated outer to left caecum.....*P. chelonii* Mehra, 1939
   Genital pore intercaecal, between middle line and left caecum.....3
3. Cirrus sac constricted in the middle becoming bipartite.....*P. keamari* Mehra, 1939 Cirrus sac not constricted or bipartite.....4
4. Eggs with polar filaments.....5
   Eggs without polar filaments.....6
5. Cirrus sac usually arched, well developed. Vitellaria not in linear series, reaching up to posterior end of vesicula seminalis, the latter lying medially..... *P. bilobus* Looss, 1901 Cirrus sac very small, obliquely placed. Vitellaria in a linear series, not reaching up to but stopping far behind vesicula seminalis, the latter lying to the right of median line .....*P. karachii* Mehra, 1939
6. Body fairly large, its breadth being about one-third of its length, Cirrus sac about two times longer than metraterm.....*P. ozaki* Oguro, 1936

Body slender and elongate. Cirrus sac equal to or slightly longer than metraterm.....
.....*P. longisculus* Looss, 1901
(=*P. linearis* Looss, 1901)

7. Parasites of marine fishes. Genital pore extracaecal.....*P. candibulus* (Linton, 1910) Manter, 1947* Parasites of chelonians. Genital pore not extracaecal.....8

8. A rudimentary pharynx present.....
.....*P. sindhii* Mehra, 1939 pharynx absent..... 9

9. Eggs without polar filaments..... 10
Eggs with polar filaments..... 12

10. Ovary intertesticular ("since its anterior margin seldom extends more than a few micra beyond right testis"), non-lobate. Vitellaria in form of two lateral masses of follicles ..... *P. malaclemys* Hunter, 1961
Ovary pretesticular, lobate..... 11

11. Vitellaria composed of few follicles forming rosettelike shape, almost of the same size as that of gonads..... *P. minutissimus* Looss, 1901
Vitellaris arranged in a linear series.....*P. trigonocephalus* (Rud., 1809) Looss, 1901

12. Cirrus sac small..... 13
Cirrus sac quite long..... 16

13. Characteristic narrow caecal outgrowths, one on either side of oesophagus, present in addition to regular and distinct pocketings. Vitelline follicles numerous and small.....*P. solidus* (Looss, 1901) Mehra, 1939
Characteristic caecal outgrowths, one on either side of oesophagus, absent. Walls of caeca wavy or forming faint pocketings. Vitelline follicles few and relatively large..... 14

14. Posterior end of body not truncated. Metraterm much smaller than cirrus sac.....*P. lobatus* (Looss, 1901) Mehra, 1939
Posterior end of body truncated. Metraterm relatively long..... 15

15. Genital pore almost just behind intestinal bifurcation. Cirrus sac more or less erect and slender. Eggs small, 0.022—0.025×0.012—0.015 mm in size
.....*P. truncatus* Prudhoe, 1944
Genital pore considerably behind intestinal bifurcation. Cirrus sac stout, obliquely placed. Eggs large, 0.038—0.042×0.019 mm.....
.....*P. americanus* Caballero, Zerecero and Grocott, 1955

P. candibulus syn. *Barisomum candibulus* (Linton, 1910) Price, 1931 was considered by Prudhoe (1944) identical with *P. erubscens* (Linton, 1910) Mehra 1939. Manter (1947) reaffirmed the validity of *P. candibulus* and the genus *Barisomum*, with *B. erubscence* Linton, 1910 as its type species.

16. Cirrus sac extending posteriorly beyond the equatorial line. Uterine loops surpassing the proximal one-third of cirrus sac.....
.....*P. longibursatus* Perez Vigueras, 1955 Cirrus sac not extending posteriorly up to equatorial line. Uterine coils restricted to the region behind cirrus sac.....*P. grocotti* Caballero, 1954

Genus *Pronocephalus* Looss, 1899

Pronocephalus obliquus Looss, 1899

Host : *Chelone mydas*
Habitat : Intestine
Locality : Gulf of Mannar (Pamban, Tamil Nadu)

Remarks : Only 2 mature and 4 immature specimens of ***P. obliquus*** were collected from the eastern coast of the country. Earlier, Mehra (1939) had reported the occurrence of this species from the same host from the west coast at Karachi (now in Pakistan).

Genus *Pyelosomum* Looss, 1899

Pyelosomum posterorchis Oguro, 1936

(Fig. 11)

Host : *Eretmochelys imbricate*
Habitat : Intestine
Locality : Gulf of Mannar (Pamban, Tamil Nadu)

Remarks : Originally described by Ogurd (1936) from *Eretmochelys squamosa* in Japan, *P. posterorchis* was also reported from *Chelone mydas* in Panama by Caballero, Zerecero and Grocott (1955). We could obtain only a single specimen of this species.

Variations from the original description in the measurements of some organs have been observed. The oral sucker measures 0.097×0.14; the oesophagus is 0.175 long, and the eggs are $0.034—0.036 \times 0.014—0.017$, whereas according to the original description, the oral sucker is 0.2 in diameter, the oesophagus is 0.09 in length and the eggs are $0.05—0.06 \times 0.022—0.028$.

Subfamily Charaxicephalinae Price, 1931

Genus *Charaxicephalus* Looss, 1901

Charaxicephalus loossi Mehra, 1939

(Fig. 12)

Host : *Chelone mydas*

Habitat : Stomach

Locality : Gulf of Mannar (Pamban, Tamil Nadu)

Remarks : Earlier reported by Mehra (1939) from the same host from the Arabian sea near Karachi (now in Pakistan), *C. loossi* has now been recorded from the eastern coast of India. Only one specimen of this species could be obtained. Variations from the original description observed are that the posterior extremity of the body is provided with two conical projections instead of having stumpy protuberances; the testes are entire, not lobed, both the cirrus sac and metraterm are surrounded by gland cells, and not the metraterm alone; and the Mehlis' gland lies to the left side of the ovary and not behind it.

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