

ON A NEW GENUS OF AMPHISTOMES (TREMATODA) FROM A SILUROID FISH OF RANGOON.

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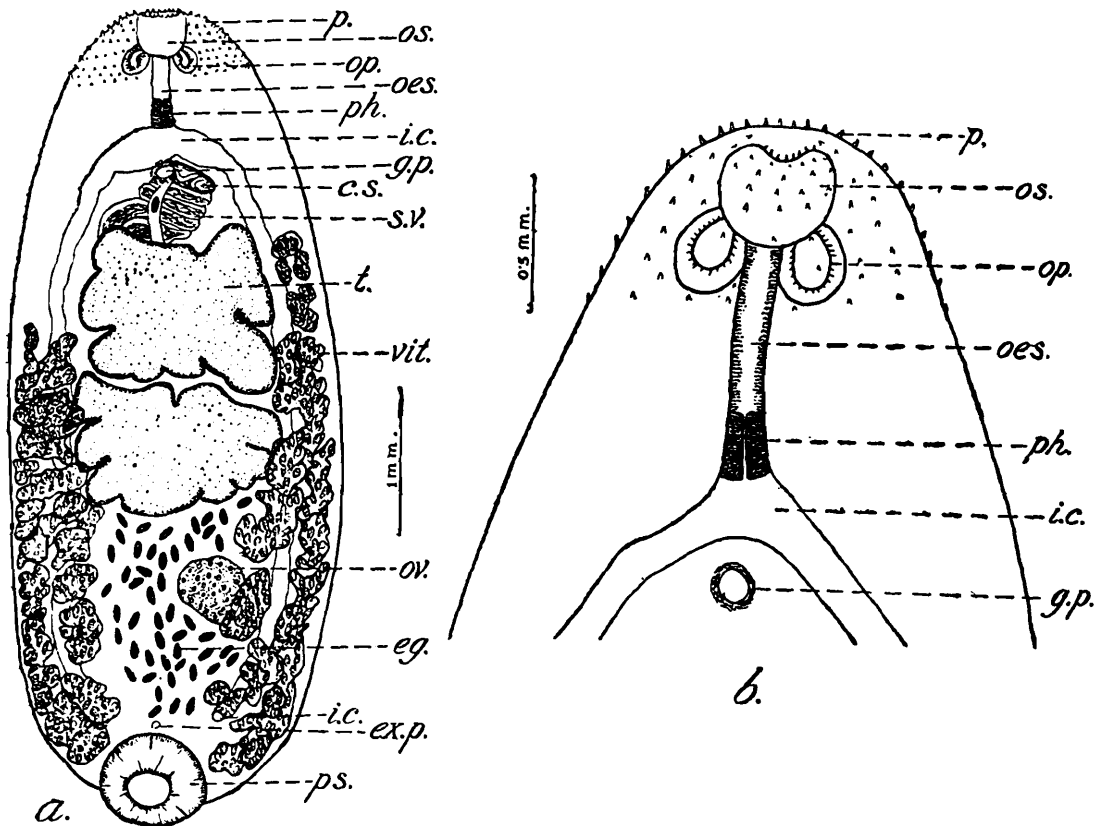
Four specimens of the 'siluroid' fish—*Pangasius pangasius* (Ham.) on being examined for helminth parasites gave the following results: first had two nematodes in the intestine—one, a larval form of *Ascaris capsularia* Rudolphi 1802, and the other a male *Cucullanus* (species undetermined on account of the scarcity of the material); second and third free from infection and the fourth infected with seven amphistomes and one young female nematode (*Paranisakis* sp.) from the intestine and nine nematodes (*Goezia* sp., probably new, but as all were females a specific diagnosis is held in abeyance) from the stomach. The present paper deals with the amphistomes obtained from the last fish. All the anatomical details except those of excretory system, which were studied in the live specimens, are from prepared slides.

***Maccallumia burmanica*, gen. et sp. nov.**

Body oval and flattened, more attenuated anteriorly than posteriorly. Mature specimens 3.5-7.2¹ long and 1.43-2.7 in maximum breadth. Anterior extremity of body to just posterior to oral pouches surrounded by transverse rows of papillae, those in the anterior rows being more condensed than those in the posterior: rest of body smooth. Mouth small, terminal, surrounded by a row of papillae. Oral sucker strong, subspherical, deeply embedded in the tissue, 0.217-0.334 × 0.24. Posterior sucker terminal, almost spherical, slightly raised from body surface, 0.4-0.835 × 0.45-0.9. Two lateral muscular evaginations slightly smaller than oral sucker, measuring 0.15-0.27 in diameter, arising from posterolateral aspect of the latter organ and lying dorsally. Between and below them runs the oesophagus, 0.132-0.62 long: the great variation in length being due to the extreme power of expansion and contraction of this organ. It is surrounded externally by deeply stained nuclei while the inner wall is provided into irregular glandular outgrowths. Posteriorly it continues into a peculiar elongated muscular pharynx, 0.14-0.25 long, in which the lumen is narrowed to a very fine tube surrounded by many dense concentric layers of muscles, closely applied to which are a large number of cells with deeply stained nuclei. Immediately anteriorly to the genital pore—which lies 0.55-1.65 from the anterior extremity of the body—the pharynx passes into the intestine, which in its turn almost immediately divides into more or less sinuous caeca, that closely approach the body margin and finally reach the posterior end of the body and end blindly a short distance anterior to the posterior sucker. The body parenchyma is soft and spongy, being composed of (1) ramifying cells, whose nuclei are very conspicuous and small, and

¹ All measurements in millimetres.

(2) large spaces between the cells which are filled with a coagulable fluid, the density of which differs in different places, being either slightly granular and staining quite lightly or denser and staining deeply. Nervous system consists of lateral ganglia near the oesophagus joined by a transverse commissure which passes over the dorsal surface of the latter organ a little posterior to the oesophageal pouches. Longitudinal nerve cords run, as usual, forward and backward along the sides of the body. Testes deeply lobed, one behind the other, more or less equal



Maccallumia burmanica, gen. et sp. nov.

a. Ventral view of the entire animal; b. Ventral view of the anterior end.

c. s. cirrus sac; eg. egg; ex. p. excretory pore; g. p. genital pore; i. c. intestinal caeca; oes. oesophagus; op. oral pouch; os. oral sucker; ov. ovary; p. papillae; ph. pharynx; ps. posterior sucker; s. v. vesicula seminalis; t. testis; vit. vitelline gland.

in size; anterior testis $0.768-1.2 \times 0.87-1.7$, posterior testis $0.8-1.34 \times 0.87-1.7$: some specimens showing anterior testis slightly larger than the posterior whereas in others the reverse is the condition. They occupy more or less one-third body length lying partly in middle third and partly in anterior third. Vas deferens usually thick and filled with spermatozoa and arises from the anterior dorsal portion of the testis, uniting with one another dorsal to anterior margin of anterior testis to continue forward as an elongated, thin-walled, much-folded vesicula seminalis. This communicates with the thick-walled, oval cirrus sac enclosing a parsprostatica and a coiled ductus ejaculatorius; the latter opens into the genital atrium, the external opening of which is provided with elastic fibrils to which are closely applied a large number of cells with deeply stained nuclei. Ovary almost spherical, $0.267-0.46$ in diameter more or less median, sometimes pressed slightly to left or to right side of body during fixation, lying rather towards ventral surface, posterior to testes and slightly anterior to posterior sucker. Dorsally it gives off a short

oviduct which opens into an ootype, situated at the posterior margin of ovary. Vitellaria of lateral lobulated masses, consisting chiefly of granules and extending from a little posterior to anterior margin of anterior testis to end of caeca or slightly beyond : sometimes the glands on one side extending further anteriorly than those of the opposite side. Uterus very much convoluted, coils lying transversally and extending posterior to ovary, most tortuous in posterior part of body behind testes where they are closely packed with eggs. Ova oval, smooth, thin-walled, numerous, $0.08-0.097 \times 0.056-0.06$, becoming dark-brown and thick-walled when fertilized. Excretory pore on mid-ventral line, immediately anteriorly to posterior sucker and leading into a small spherical excretory bladder into which open two ducts from both sides, each forming an arm of an U-shaped structure. The two arms on each side run laterally and anteriorly upto the anterior margin of posterior testis, where they bend and then descend as far back as the level of ovary. The descending branch runs internal to the ascending branch and forms a loop at the level of ovary, from where it turns forward running as far as the level of the genital pore. Then, descending again upto the level of the posterior margin of anterior testis, it turns forward and runs upto the oral pouch. Further details regarding the finer branches were not studied.

Remarks.—The form agrees closely with the genus *Dadaytrema* Travassos 1931, the chief points of resemblance being the shape and the relative position of the testes, presence of a cirrus sac, spherical nature of the ovary and its position a little anterior to posterior sucker. It differs, however, chiefly in the extent of the vitellaria—these being more profusely developed and not confined only to post-testicular region of the body—and in the shape of the pharynx—it being a long cylindrical structure with strong musculature instead of a mere thickening. In the shape of the pharynx the present form resembles *Nematophila* Travassos 1934 but this similarity does not extend to other characters. MacCallum (1905, pp. 668-673) described under the name *Cladorchis pangasii*, an amphistome from the intestine of *Pangasius nasutus* from Sumatra, which greatly resembles the present form. The differences are, however, the absence of papillae on the body of the former, the restriction of vitellaria to a more limited field in the latter and in both the difference in the degree of development of the uterus and the number of eggs contained therein. Other minor differences are the relative size of the testes, position and size of the ovary, position of the nerve commissure and details of the excretory system. An important point of difference from the present form—the structure of the cirrus sac, which MacCallum (1905, p. 671) mentions as “very thin-walled, very long, and much folded upon itself, and is usually filled with spermatozoa”—can easily be eliminated, as what he has described as a cirrus sac is in reality the vesicula seminalis. Travassos (1934, p. 81) was justified by the important differences between MacCallum’s species and *Cladorchis* in removing it from that genus. In assigning it to the genus *Dadaytrema* Travassos expressed doubts : these, in view of the present material, seem well founded. On account of vital differences in the structure of oesophagus and the disposition of the vitellaria between MacCallum’s

species and *Dadaytrema* it would appear advisable to separate the former with the present form in a new genus for which I propose the name *Maccallumia*, in honour of the late Dr. W. G. MacCallum with the following diagnosis :—

Maccallumia, gen. nov.

Cladorchinae : Body oval. Posterior sucker terminal, strong. Oral sucker with a pair of strong diverticula. Oesophagus present. Pharynx long, cylindrical. Genital pore median, near intestinal bifurcation. Intestinal caeca extending to posterior sucker or slightly anterior to it. Cirrus sac present. Vesicula seminalis much coiled, external to cirrus sac. Testes much lobed, one behind the other in median field, in inter-caecal zone. Vitelline gland consisting of lateral lobulated masses and extending from intestinal bifurcation or a little posterior to it to end of caeca or slightly beyond. Uterus extending posterior to ovary. Excretory pore median, just anterior to posterior sucker.

Type-species.—*Maccallumia burmanica*, gen. et sp. nov.¹

Other species.—*Maccallumia pangasii* (MacCallum 1905); synonyms : *Cladorchis pangasii* MacCallum 1905, *Chiorchis pangasii* (MacCallum 1905) Fukui 1929, *Dadaytrema pangasii* (MacCallum 1905) Travassos 1934.

REFERENCES.

- MacCallum, W. G., 1905.—On two new Amphistome parasites of Sumatran fishes. *Zool. Jahrb. Syst.* XXII, pp. 667-678.
 Travassos, L., 1934.—Synopsis dos Paramphistomoidea. *Mem. Inst. Osw. Cruz.* XXIX, pp. 19-178.
 Vaz, Z., 1932.—Contribuicao ao conhecimento dos trematoides de peixes fluviaes do Brasil. *Thesis, Fac. Med. São Paulo*, pp. 1-47.

¹ Type-specimen (No. W-3421/1) in the Collection of the Zoological Survey of India, Indian Museum, Calcutta.