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A NEW GENUS AND SPECIES OF PARASITIC COPEPOD FROM LOWER CALIFORNIA[1]

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In 1912 Gravier published as one of the scientific documents of the second French Antarctic Expedition under Dr. Jean Charcot a paper entitled 'Crustacés parasites d'annélides polychètes.'[2] In addition to presenting new genera and species he gave a general discussion of many forms previously described belonging to that heterogeneous group known as the Ascidicolidæ. He noted that this name is very poorly suited to the parasites that compose the group, since it includes a large number whose hosts are not ascidians, and he was equally opposed to the name Annelidicolidæ proposed by some authors for such copepods as are found parasitic upon annelids. He stated very clearly that our present knowledge of these annelid parasites is insufficient to enable us to group them at all rationally. The males of many of them have never been seen and we know nothing of the development stages of most of them.

We may make a general distinction between those that live within the digestive tube of their host and those that live upon the outside of the host's body. But this difference in habitat ought not to separate related genera, and Gravier located his new genus, *Bactropus*, an intestinal parasite, in the same family with genera that live upon the outside of the annelid's body.

This family was first proposed by Giesbrecht in 1895, Mittheilungen Zool. Station Neapel, XII, p. 225. After describing *Seridium rugosum*, a new annelid parasite, he remarked that several of these copepods agreed in having an elongated body and rather distinct segmentation. For this reason he grouped them into a family which he named Clausiidæ from *Clausia*, the oldest of them. He included in the family *Clausia* Claparède, 1863; *Donusa* Nordmann, 1864; *Rhodinicola* Levinsen, 1878; and *Seridium* Giesbrecht, 1895. He mentioned also *Sabellacheres* M. Sars, 1861, but said it had never been described with enough detail to be certain of its systematic position. This statement was undoubtedly

[1] Scientific Results of the Expedition to the Gulf of California in charge of C. H. Townsend, by the U. S. Fisheries Steamer 'Albatross,' in 1911; Commander G. H. Burrage, U. S. N., commanding. XI. Published by permission of the U. S. Commissioner of Fisheries.

[2] 'Deuxième expédition antarctique française (1908–1910).'

true but at least Sars's description was sufficient to show that his genus could not be grouped with the others above named.

The genus about to be described seems also to belong here and yet differs enough from the other genera to make its establishment valid. The number and structure of the swimming legs and the number of joints composing the first antennæ vary considerably in the genera of this family, but in none of them do we find the combination which exists here of six-jointed antennæ with only three pairs of swimming legs.

PHERMA,[1] new genus

Body spindle-shaped with segmentation distinctly indicated by transverse grooves or lateral invaginations. Cephalon fused with the first thorax segment, but with a distinct groove between the two on the dorsal surface. Fourth thoracic segment strongly narrowed posteriorly; genital segment with projecting convex sides; abdomen made up of a single segment. Egg strings slender, eggs multiseriate and very numerous. Two pairs of filiform antennæ; one pair of stout, uncinate maxillipeds; three pairs of swimming legs, each biramose, the exopod 2-jointed, the endopod 1-jointed.

Type of the genus *Pherma curticaudatum*, new species. Monotypic.

Pherma curticaudatum,[2] new species

Figures 1 to 9

HABITAT AND RECORD OF SPECIMENS.—Three adult females, one of which bore egg strings, were taken from the parapodia of an unnamed annelid dredged from a depth of 645 fathoms by the Bureau of Fisheries steamer 'Albatross' off the coast of Lower California in April, 1911. These specimens are deposited in the Department of Lower Invertebrates of The American Museum of Natural History (Cat. No. 4617), where they become the types of the new genus and species.

SPECIFIC CHARACTERS OF THE FEMALE.—In addition to what has been given under the genus diagnosis we may append the following. General body form cylindrical, considerably swollen, widest across the third thoracic segment. Body segmentation somewhat indistinct but well indicated by lateral invaginations. Head fused with the first thoracic segment, but with the separation of the two marked by a dorsal groove. Head semielliptical and regularly rounded, one-half narrower than the first thoracic segment. Antennæ attached to the frontal margin on the dorsal surface and turned backward along the lateral margins. First thoracic segment barrel-shaped, one-half longer than the head; second and third segments increasing in length and width; fourth segment longer than the third but not as wide, considerably narrowed posteriorly. Fifth segment only one-third the width and one-seventh the length of the fourth segment, forming a slender waist in front of the genital segment. The latter one-third wider than the fifth segment with strongly convex sides, to the center of which are attached the egg strings. Abdomen made up of a single short

[1] φερμα, "a burden."
[2] *Curticaudatum*, "short tail."

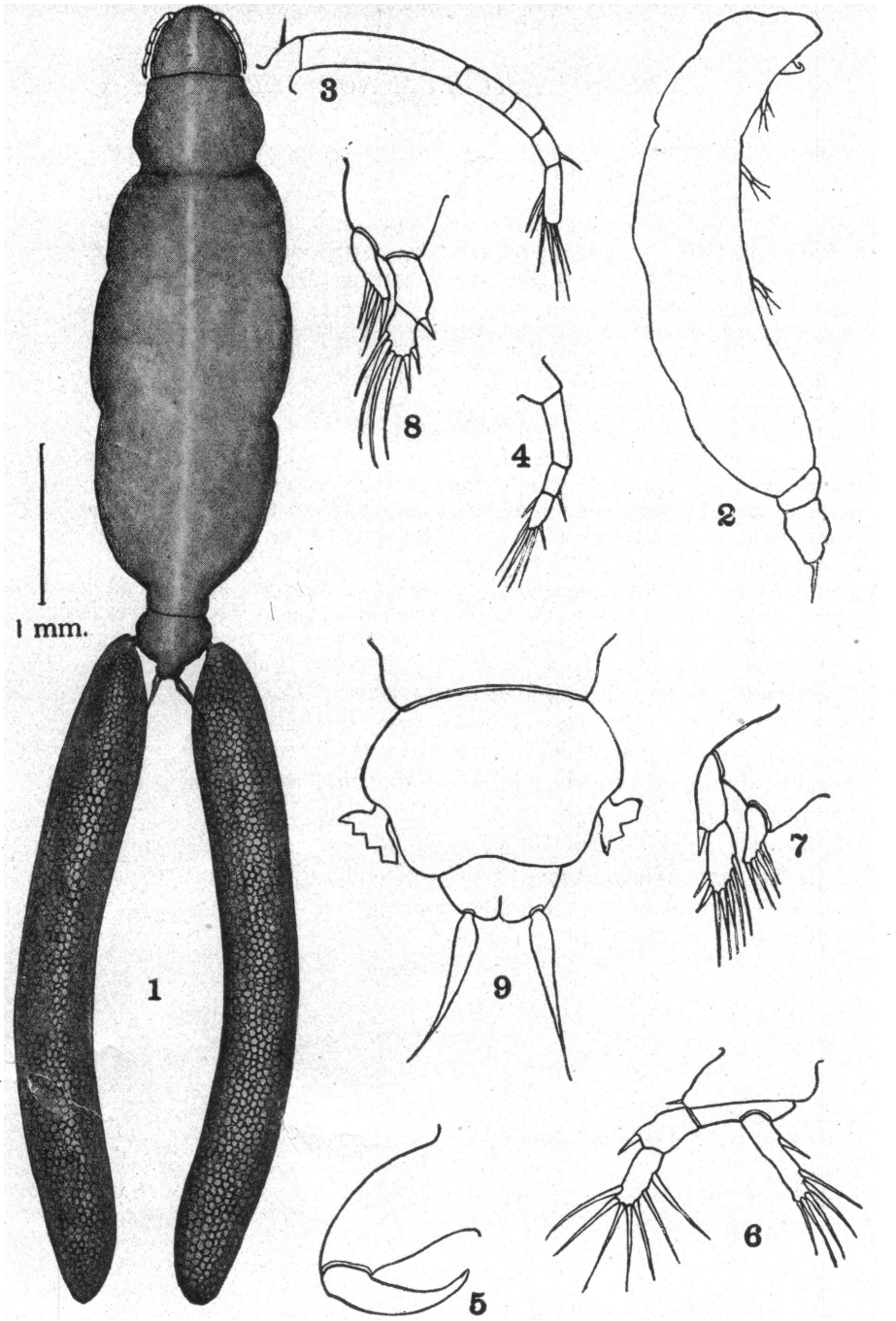

Fig. 1. Dorsal view of female. Fig. 2 Side view of another specimen without egg strings. Fig. 3. First antenna. Fig. 4. Second antenna. Fig. 5. Maxilliped. Figs. 6 to 8. First, second, and third swimming legs. Fig. 9. Ventral view of posterior body enlarged, showing abdomen and anal laminæ.

segment, one-third the width of the genital segment. Anal laminæ elongate-lanceolate, acuminate at the tips and destitute of setæ.

Egg strings cylindrical, slightly curved like parenthesis marks, tapered at both ends and about as long as the entire body. Eggs minute, irregularly arranged in about 25 rows, 75 to 80 eggs in each row. This is an unusually large number of eggs and indicates that the dangers encountered during development by this species are also unusually severe.

First antennæ 6-jointed, filiform and but slightly tapered; the relative lengths of the six joints may be expressed by the numbers 7, 33, 12, 8, 8, 12. The basal joint has a short seta near the center of its anterior margin, and the terminal joint has a tuft of setæ at the tip and several on its posterior margin. The second antennæ are immediately behind the first pair and are 4-jointed, the basal joint the shortest, the second joint as long as the third and fourth together. The third joint carries a small seta on its anterior margin at the distal corner; the terminal joint is tipped with a tuft of long setæ. The form of the mandibles and maxillæ could not be definitely ascertained from any of the three specimens. The maxillipeds are situated some distance behind the mouth and their basal joints are so large that they cover much of the ventral surface of the head. Each is composed of this basal joint and a curved terminal claw; they are evidently the organs of prehension. Color (preserved material), a uniform yellowish-brown without markings; egg strings light orange-yellow.

Length, 4.40 mm. Width of third thoracic segment, 1.25 mm. Egg strings, 4.35 mm. long, 0.50 mm. wide.

The points of particular interest about this new parasite are the very considerable depth at which it was found and the exceptionally large number of eggs in its egg strings. The way in which the parasite and host come together would be of great interest, and this in connection with the development stages of the copepod will form one of the most instructive problems for future development.