

SOME RECENT ADDITIONS to the COPEPODA of
LIVERPOOL BAY.

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With Plate VIII.

[Read November 10th, 1899.]

THE collection and examination of tow-net and dredged material, which is carried on more or less continuously at Port Erin, Isle of Man, and in the vicinity of Piel, Lancashire, still proves a means of adding fresh names to the extensive list of species from the district, which was published in connection with the meeting of the British Association in Liverpool in 1896. That list represents all the species of marine animals and plants recorded by the workers of the L.M.B.C. during the first ten years of its history, and practically brings us down to the end of 1896. We now wish to place on record the various additions to the list of Copepoda that have come under our notice during the three years that have passed since the complete list was published.

The present report represents an addition of fifteen species new to the district, including one new to science, *Leptosyllus herdmani* (Pl. VIII.), and five species of Copepod fish parasites. Of these, two are open sea free-swimmers, the other (non-parasitic) species have either been obtained from dredged material or by digging holes in the shore between tide marks, the water being allowed to collect, and then bailed out, pouring it out through a fine sieve.

1. *Candacia pectinata*, Brady, Copepoda of the British Islands, vol. I., p. 49, Pl. VIII. and X., 1878.

This species was taken in the open sea near Port Erin in January last, and on several occasions during June and

July, 1899, both at or near the surface, as well as at a depth of 33 fathoms. It appears to be generally, but very sparingly, distributed about the British Isles, and throughout the Atlantic, Pacific, and Indian Oceans.

It and the other species of the genus *Candacia* are easily distinguishable by their dark-coloured antennules, spines and plumes, and the terminal spines of the swimming feet.

2. *Corycæus anglicus*, Lubbock, On Eight New Species of Entomostraca found at Weymouth, Ann. and Mag. of Nat. Hist., 2nd Ser., vol. XX., Pl. XI., 1857.

A single specimen of this species was taken by tow-net off Port Erin on November 26th, 1898, and a shoal of it was captured there on May 29th, 1899. It is a fairly common species about the south and south-west coasts of England and Ireland, and Mr. Thomas Scott has reported it from the Forth, and more recently, we understand, he took it in the Clyde, but it is entirely new to the L.M.B.C. district.

3. *Ameira exilis*, T. and A. Scott, Ann. and Mag. Nat. Hist., Ser. 6, vol. XIII., Feb., 1894. Length 1·5 mm.

This slender and characteristic species was taken amongst material collected from holes dug in the soft mud near the remains of the old steamboat pier, Piel; not uncommon. March, 1899.

4. *Stenhelia intermedia*, T. Scott, 15th Ann. Rept. Scot. Fish. Board, part 3, p. 169. Length ·7 mm.

In the same locality as the last. Aug., 1898; rare.

5. *Delavalia mimica*, T. Scott, 15th Ann. Rept. S.F.B., part 3, p. 150. Length ·65 mm.

This peculiar little species occurred sparingly in material dredged from a depth of 33 faths. off the Isle of Man. Jan. 29, 1899.

6. *Laophonte denticornis*, T. Scott, 12th Ann. Rept. S.F.B., part 3, p. 246. Length .85 mm.

A slender species, not unlike *L. serrata* at first sight, but on closer examination, is seen to be quite distinct. From the same gathering as the last, which contained 31 species of Copepoda.

7. *Leptosyllus intermedius*, T. and A. Scott, Ann. and Mag. Nat. Hist., Ser. 6, vol. XV., 1895. Length .57 mm.

This little species belongs to a curious genus, the members of which, from the structure of their appendages, appear to live entirely amongst the mud and sand, and have not apparently so far been obtained at any depth. In material collected from holes dug in the sand in front of the Laboratory at Port Erin; common. Jan., 1897.

Leptosyllus herdmani, n. sp., Pl. VIII., figs. 1—9.

Description of the female:—Length, exclusive of caudal setæ, .65 mm. ($\frac{1}{4\frac{1}{2}}$ of an inch). Body, seen from above, elongate and moderately robust. Antennules short and stout, composed of eight joints, of which the sixth and seventh are the shortest, as shown by the following formula—

Proportional length of									
the joints	34	. 22	. 18	. 14	. 10	. 8	. 7	. 15	
Number of joints	1	2	3	4	5	6	7	8	

Antennæ and mouth organs (figs. 1—4) nearly similar to those of *L. robertsoni*, T. and A. Scott. Both branches of the first pair of swimming feet (fig. 5) composed of two joints, the basal joint of the inner branch reaches considerably beyond the end of the outer branch; second joint very short, being only about one-sixth the length of the basal joint, and having at its apex one short and one moderately long seta. The second joint of the outer branch is furnished with four moderately long setæ, all

placed on the apex. Second (fig. 6) and third pairs of swimming feet nearly alike, the outer branches being composed of three joints, and the inner of one only, which has a slight constriction on its outer margin near the apex. In the fourth pair (fig. 7) the outer branch is also composed of three joints, but the inner branch is distinctly two-jointed, there being a small apical joint carrying one seta, and a moderately long basal joint. The fifth pair of feet (fig. 8) consists of one broad lamelliform shield, due to the complete coalescence of the basal joint of each pair. The end of the coalesced basal joints is rounded, with a slight concavity in the middle, on either side of which are two short setæ. The length of the plate is equal to nearly two-thirds of the breadth at the widest part; outer branches very small, longer than broad, and bearing one marginal and two terminal setæ. Abdomen composed of four segments, the first or genital segment being the largest, the second or third segments are nearly of equal length, the fourth segment is very small, being about half the length of the second or third. Caudal stylets (fig. 9) short and stout, the breadth being equal to about two-thirds of the length. There are three setæ on the extremity of the inner angle, and one on the outer angle, with an intervening space. There is also one small seta on the outer margin near the base. The male is yet unknown. In the same gathering as the last; not common.

This new member of the genus *Leptopsyllus* is easily distinguished from previously described species by the elongate joint of the inner branch of the first pair of swimming feet, and by the structure of the fifth pair.*

We have much pleasure in naming this species after Professor Herdman.

* This species has recently been taken in the Clyde, off Millport, by T. Scott.

9. *Lichomolgus hirsutipes*, T. Scott, 11th Ann. Rept. S.F.B., part 3, p. 206. Length 1.4 mm.

This well-marked species was obtained from collections made in the *Zostera* beds near Piel. July, 1899.

10. *Hersiliodes littoralis* (T. Scott), 10th Ann. Rept. S.F.B., part 3, p. 260. Length 1.1 mm.

This species, which is readily recognised by the structure of the fifth pair, occurred sparingly in gatherings made on the mud flats near Piel. June and August, 1899.

11. *Caligus diaphanus*, Nordmann, Microgr. Beitr., 11, 26. A parasitic Copepod on the Cod. April 19th, 1897.

12. *Caligus gurnardi*, Kr., Bidrag til Kundskab om Snyltekrebsene, p. 150, Pl. II., fig. 3, *a—g*.

One specimen was taken in the dredge, at 26 faths., off Port Erin Bay. Nov. 4th, 1898.

13. *Trebius caudatus*, Kr., Tidsskrift., II.; 30, t. I., fig. 4.

A parasitic Copepod on the Hake. April 19th, 1897. This species and *Caligus diaphanus* have already been referred to in the 11th Ann. Rept. of the Marine Biological Station, Port Erin, p. 11.

14. *Chondracanthus radiatus*, (see Bidrag Kundskab om Snyltekrebsene of Kroyer).

Found on the fins of a Codfish. Dec. 6th, 1897.

Nicothæ astaci, Aud. & M. Edw., Ann. Sc. Nat., Ser. I., vol. IX., Pl. XLIX.

This peculiar parasitic Copepod, which has all its appendages fully developed, is found occasionally in considerable numbers on the branchiæ of the common lobster, caught on our coasts. We have noted its occurrence on lobsters from Holyhead, Port Erin, and Piel. The wing-like projections of the fourth thoracic segment give it an unusual appearance.

Although this species does not appear to have been taken apart from its host, yet it looks quite capable of leading a free existence.

EXPLANATION OF THE PLATE.

Leptopsyllus herdmani, n. sp.

Fig. 1.	Female seen from above.	× 106.
Fig. 2.	Antennule of female.	× 500.
Fig. 3.	Antenna.	× 500.
Fig. 4.	Posterior foot-jaw.	× 500.
Fig. 5.	First pair of swimming feet.	× 500.
Fig. 6.	Second ,, ,,	× 500.
Fig. 7.	Fourth ,, ,,	× 500.
Fig. 8.	Fifth ,, ,,	× 500.
Fig. 9.	Last two segments of abdomen and caudal stylets.	× 260.

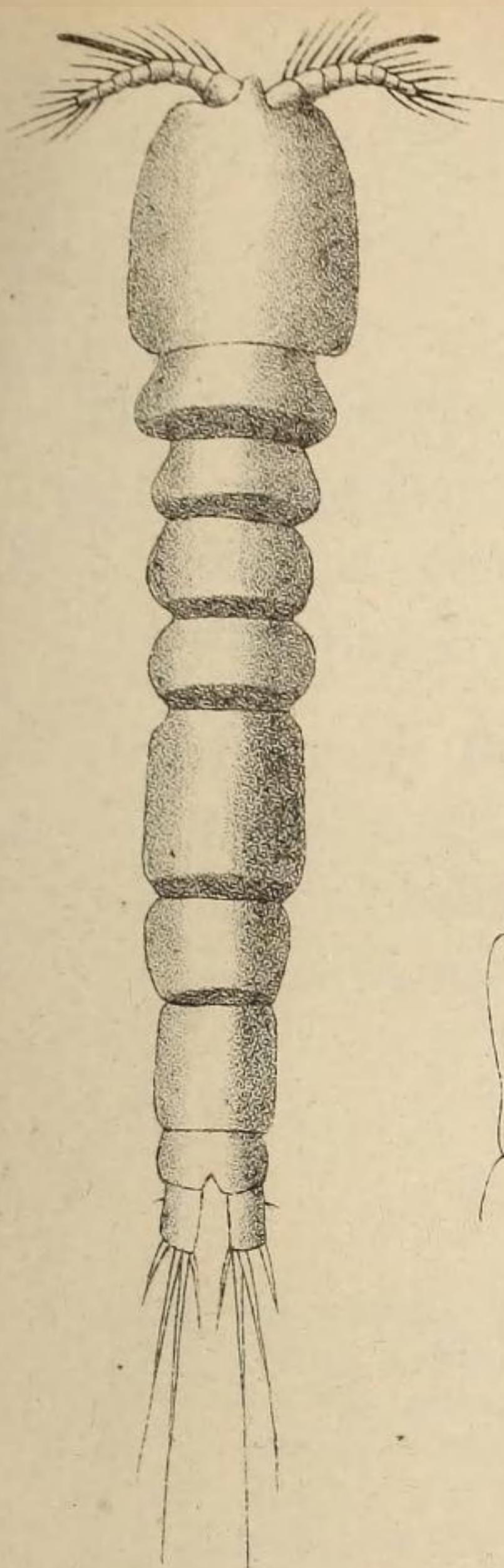


Fig. 1.

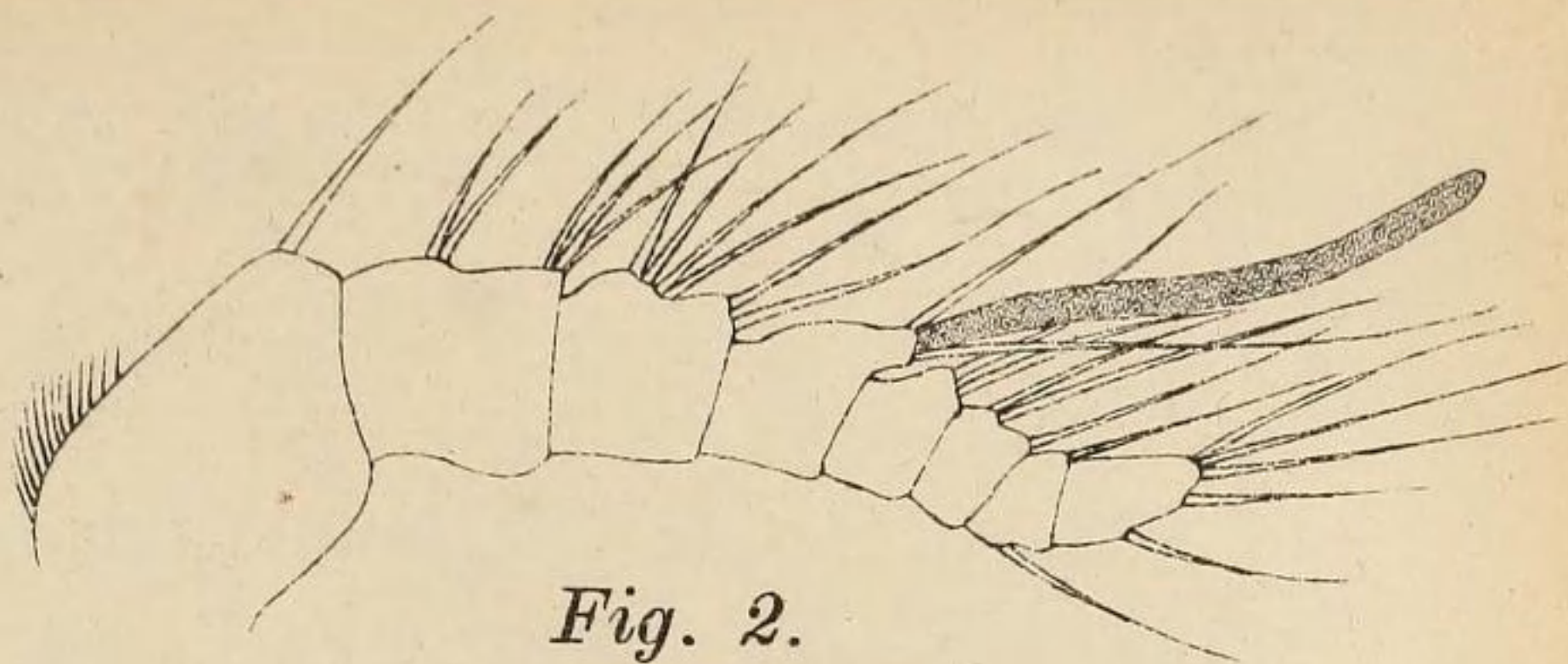


Fig. 2.

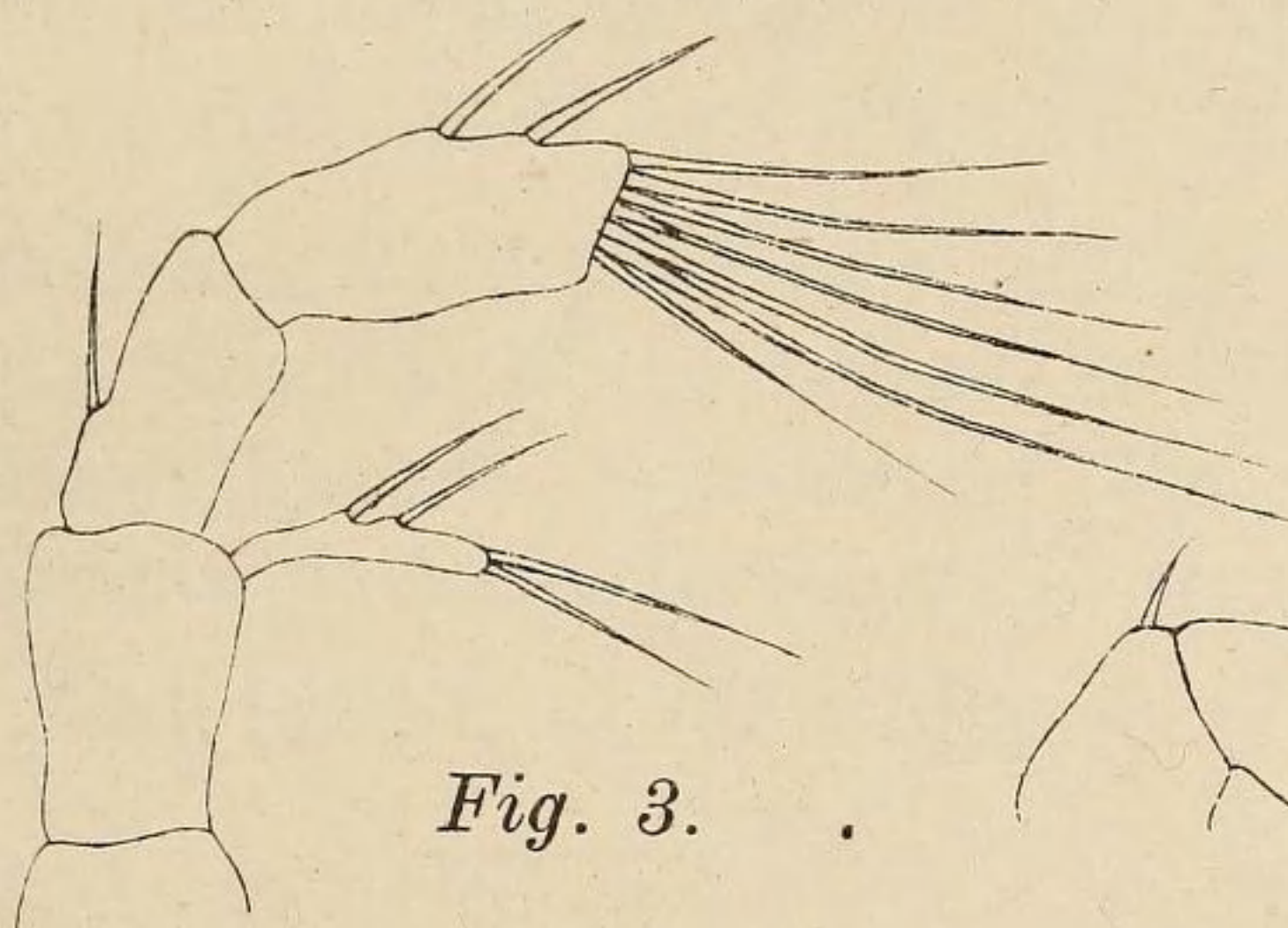


Fig. 3.

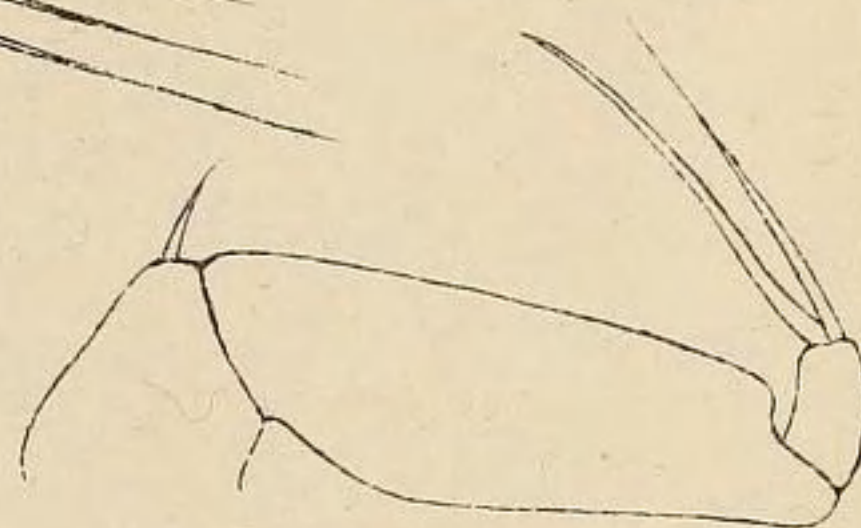


Fig. 4.

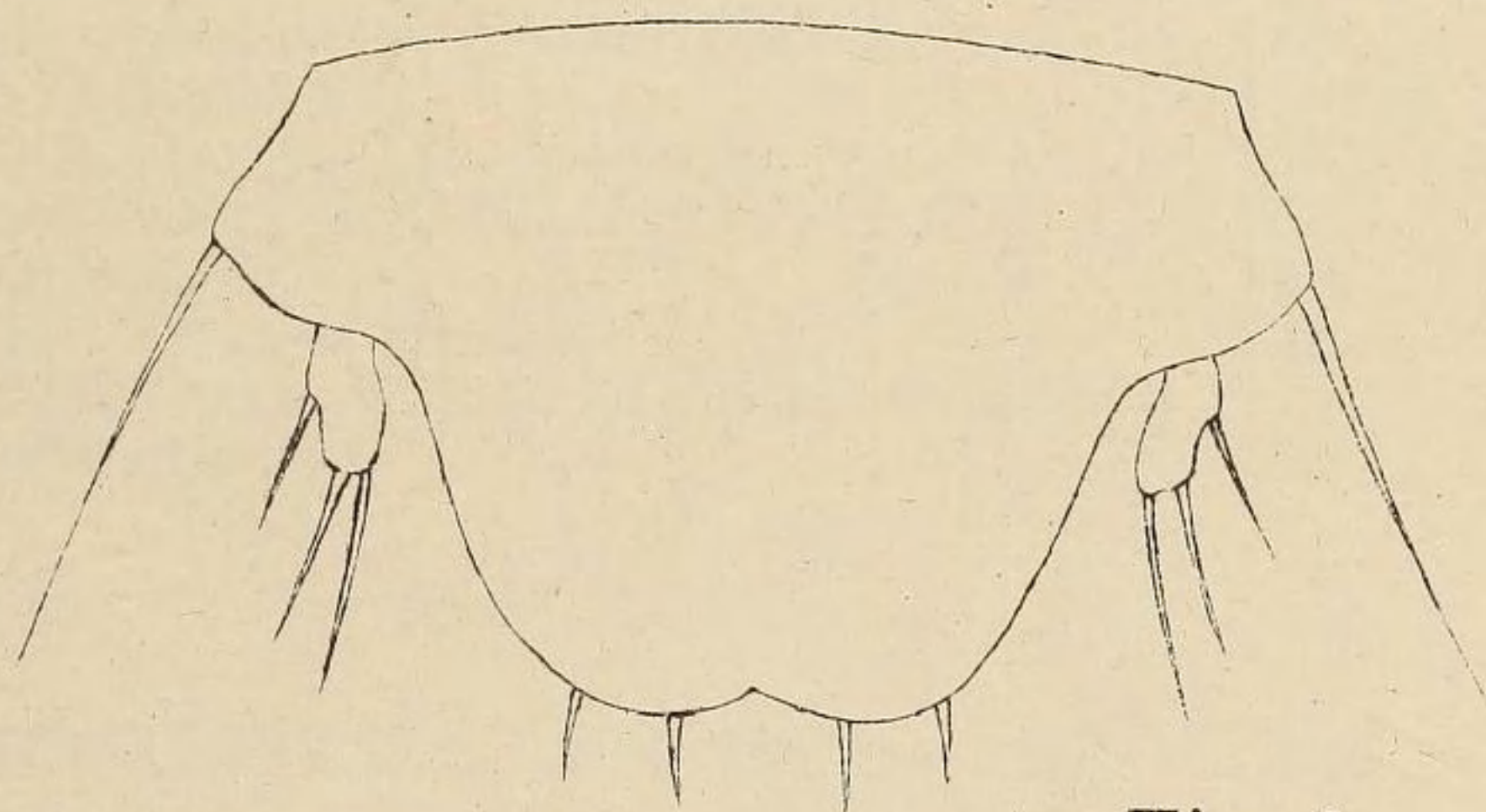


Fig. 8.

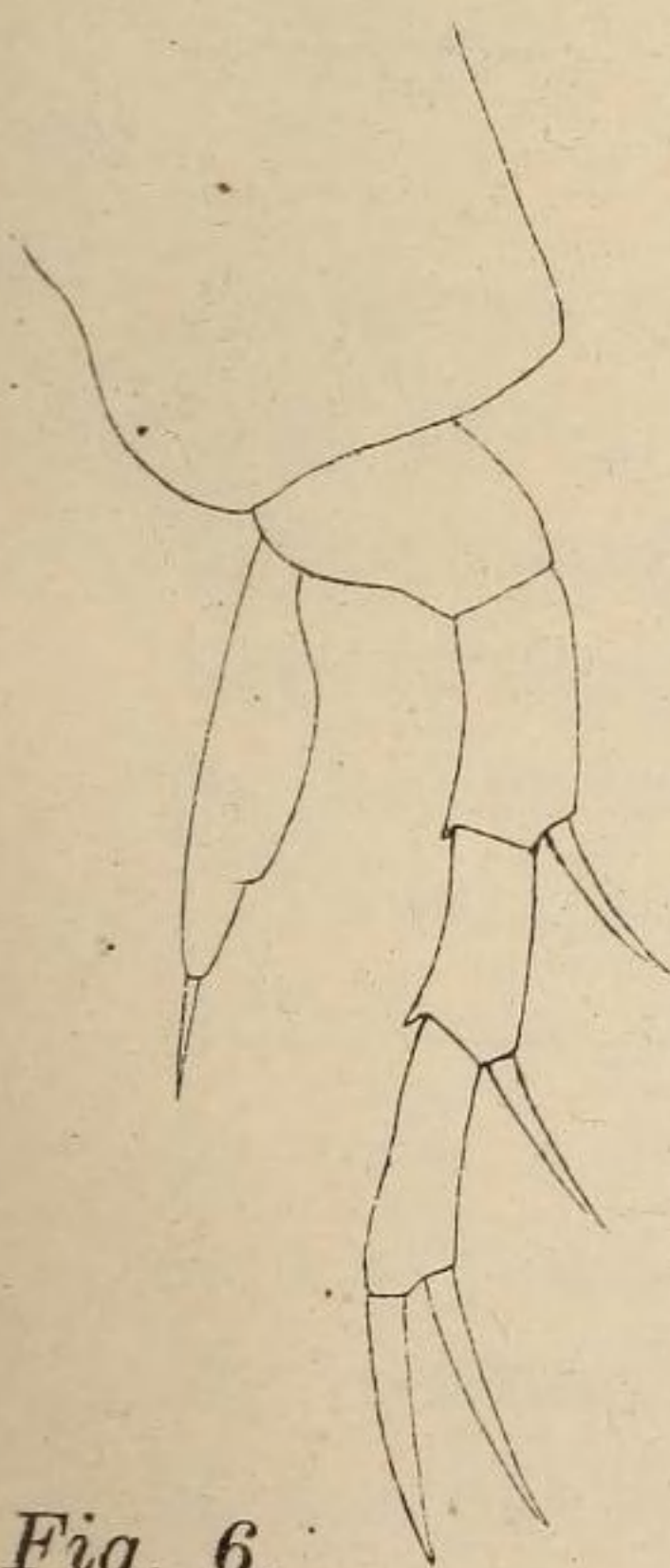


Fig. 6.

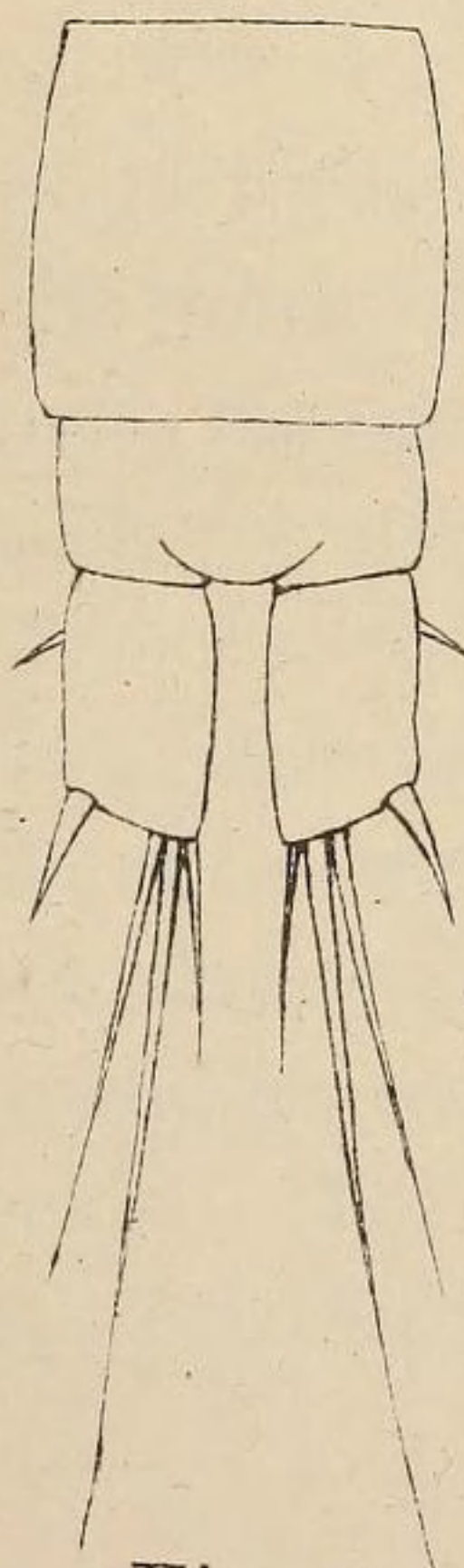


Fig. 9.

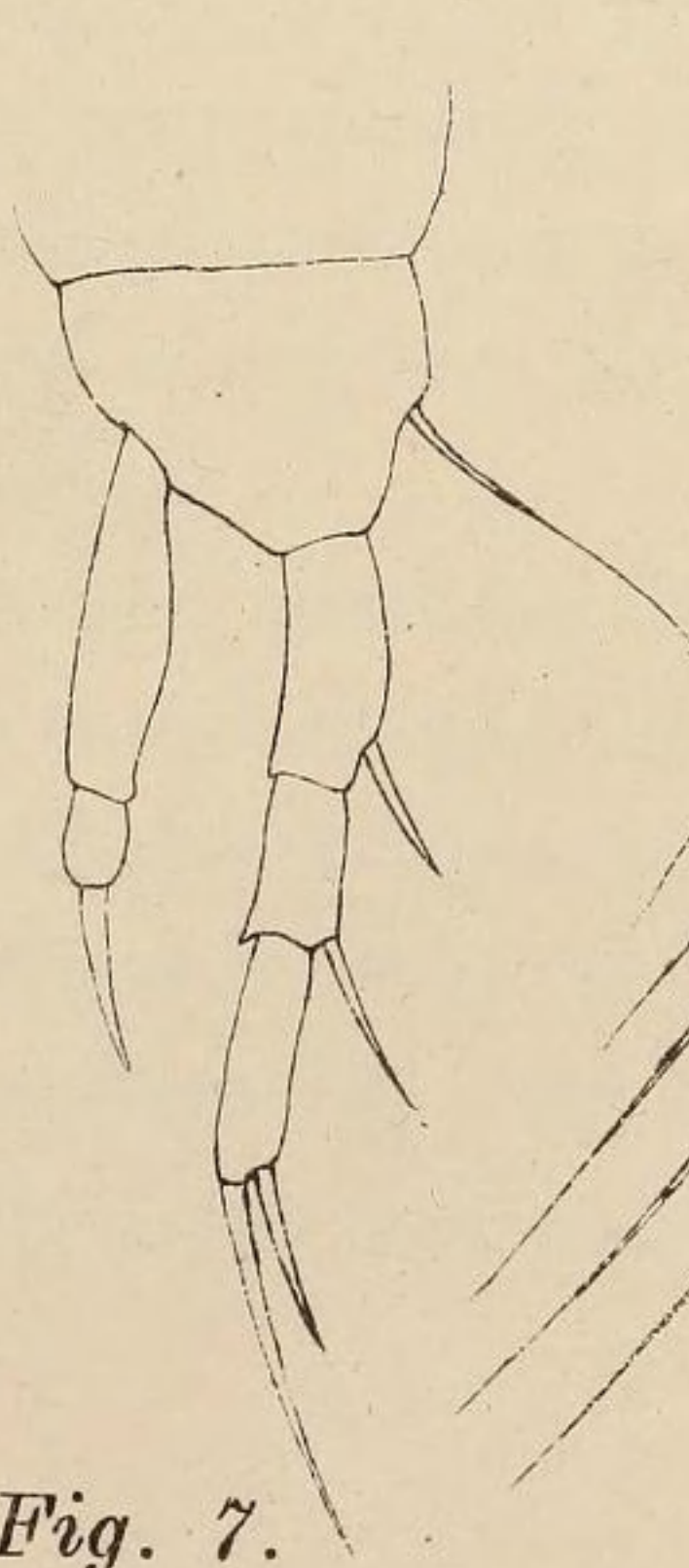


Fig. 7.

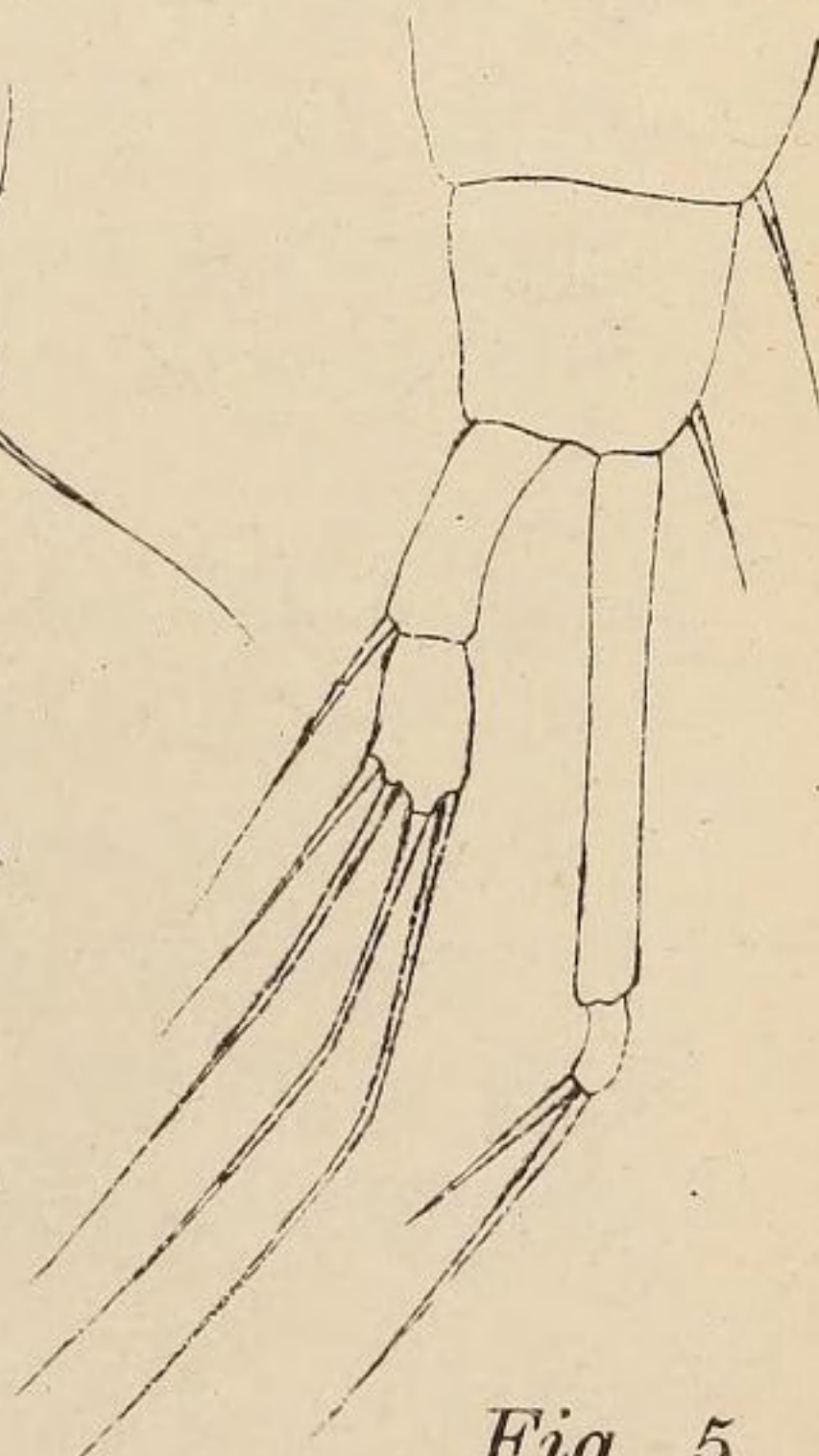


Fig. 5.

A. SCOTT, del.

LEPTOPSYLLUS HERDMANI, n.sp.

