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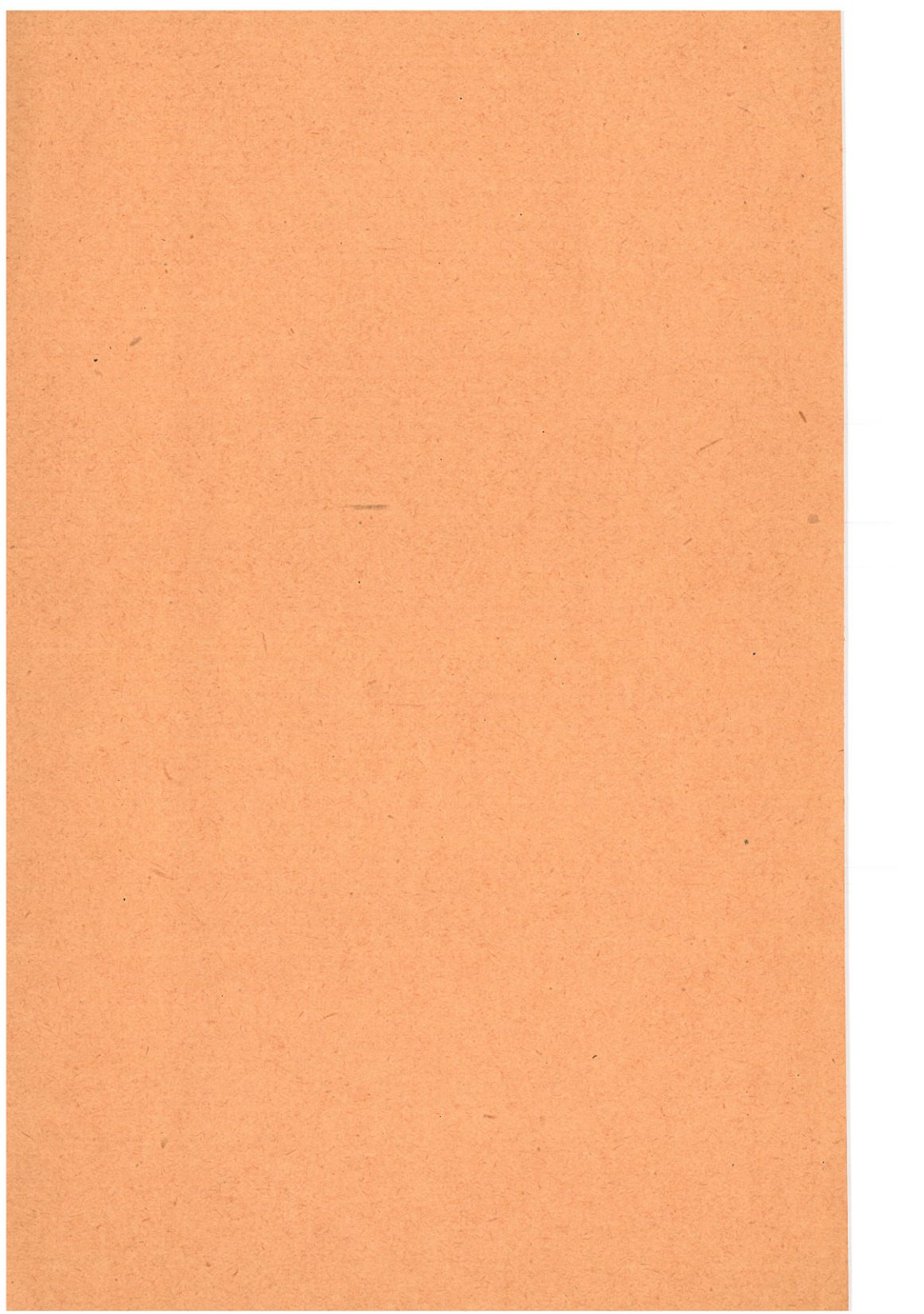
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*Some Species of Leptocheirus, a Genus of Amphipoda.*

By Canon A. M. NORMAN, M.A., D.C.L., LL.D., F.R.S.

[Plates XII. & XIII.]

IN a work published in 1906 on the Crustacea of Devon and Cornwall\* the four species then known as denizens of the eastern side of the North Atlantic were described, and three of them were figured. Since that time two other undescribed species have come into my hands, one of which has been found in brackish water in Norfolk by Mr. Robert Gurney, who has placed it in my hands for description, and a single specimen of the other has been found by me among material which I dredged in 1880 in the Fosse de Cap Breton, in the Bay of Biscay. These two species I now describe, and notice the seventh species known on the western side of the Atlantic, namely *Leptocheirus pinguis* of Stimpson.

*Leptocheirus subsalsus*, sp. n. (Pl. XII. figs. 1-6.)

The first segment of the urosome has its hinder margin smooth. The secondary appendage of the antennule (fig. 1) consists of only a single joint, which is not longer than the first joint of the filament, which latter is 13-jointed. The first gnathopod (fig. 2) has the coxa (epimera) of nearly oblong shape, the extremity broad and very obtusely rounded; the propodos is much shorter than the carpus; widening from its base to its wide transverse extremity. The finger of equal length with the palm. Second gnathopod (fig. 3) has the basal joint very long, equalling in length the whole of the rest of the limb; the setæ on the hinder margin of the

\* 'The Crustacea of Devon and Cornwall,' by Canon A. M. Norman, F.R.S. &c., and Thomas Scott, LL.D., F.L.S. 1906. William Wesley & Co.



wrist and hand are short and stiff, the finger in form of a nail, about one third as long as the hand. The first peræpod (fig. 4) has the meros unusually expanded for the genus, the carpus short, not exceeding half the length of the preceding joint, itself nearly as broad as long, the propodos is somewhat longer, the nail rather more than half as long as the propodos. The propodos of the last peræpods (fig. 5) is much narrower than the preceding joint and has a few short setæ both on the front and hinder margins. The uropods (fig. 6) are furnished with only a few spines, and those of small size.

Length 5 mm.

This species has been found by Mr. Robert Gurney in brackish water in some of the rivers connected with the Broads.

*Leptocheirus bispinosus*, sp. n.

(Pl. XII. figs. 7-9; Pl. XIII. figs. 1-3.)

The first segment of the urosome has a strong and acute angular backward projection on each side (Pl. XIII. fig. 3), but no central spine-process. The antennules have their secondary appendage (Pl. XII. fig. 7) five-jointed and equal in length to three joints of the flagellum. The first gnathopod (Pl. XIII. fig. 1) has the coxa widening from the base and distally very widely rounded; the basal joint is stout, the carpal and propodal joints subequal in length, the former being only very slightly longer than the latter, which is subovate, widest in the middle; the palm rounded off and not distinctly defined; the finger is longer than the extremity of the propodos, it has its inner face serrulated and minutely ciliated. The second gnathopod (Pl. XIII. fig. 2) has the coxa unusually small for the genus, not reaching to as much as half the length of the basos; this last joint is very long, nearly equalling the whole of the rest of the limb; the propodos is not quite as long as the carpus; the finger is nail-formed and scarcely curved, in length it is about equal to one third of the propodos. The first peræpod (Pl. XII. fig. 8) has the meros of equal breadth throughout, and it is as long as the basal joint; the carpus is rather more than half the length of the meros; the propodos and finger gradually attenuate from the base of the former to the acute extremity of the latter. The last peræpod (Pl. XII. fig. 9) has the propodos produced, half as long again as the carpus; remarkably parallel-sided, with scarcely any spines or setæ except at the base of the nail. Uropods (Pl. XIII. fig. 3) with numerous spines of considerable size, those of second pair stronger than in any other species known to me except *L. pilosus* (Zaddach) = *L. hirsutimanus*, Bate.

Length 10 mm.

A single specimen was procured by me in 1880 (July 9), when dredging with my late friends Dr. Jeffreys and the Marquis de Folin in the Fosse de Cap Breton, Bay of Biscay, in 35–60 fathoms.

The chief characteristics of this species are the long secondary appendage of the antennules, the form and size of the coxa of the first and second gnathopods, the spine-formed process on the side of the first segment of the urosome, and the strongly formed spines of the second uropods.

*Leptocheirus pinguis* (Stimpson).  
(Pl. XIII. figs. 4–8.)

1853. *Ptilocheirus pinguis*, Stimpson, Invert. Grand Manan, p. 56.  
1862. *Protomedeia pinguis*, Bate, Cat. Amphip. Crust. p. 170 pl. xxxi. fig. 2.  
1862. *Protomedeia fimbriata*, Bate, l. c. p. 169, pl. xxxi. fig. 1.  
1873. *Ptilocheirus pinguis*, Verrill, U.S. Comm. Fish and Fisheries, p. 561.  
1893. *Leptocheirus pinguis*, Della Valle, Gammarini del Golfo di Napoli, p. 432, pl. lvii. figs. 1–3.  
1906. *Leptocheirus pinguis*, Stebbing, Das Tierreich, Amphipoda, I. Gammaridea, p. 627.

The cephalon is about equal in length to the first two segments of the mesosome; the first and second segments of the urosome have each a spine-point situated on both sides of the centre of the dorsum, and those of the second segment are accompanied by a cluster of short stiff setæ. The telson is subtriangular, the apex forming a very obtuse angle, the breadth greatly exceeding the length; near the lateral margins are groups of short stiff setæ similar in character to those of the second segment of the urosome; all the segments of the urosome are short and closely crowded together. The accessory appendage of the antennules (Pl. XIII. fig. 4) consists of six to eight joints, and equals in length the first three joints of the flagellum. The coxæ (or epimera) of the gnathopods and following peræopods have their hinder margin beset with well-developed spines (see figures): that of the first gnathopod is small, linguiform, narrowed, rounded at the extremity; that of the second gnathopod is very large, its length not much exceeding its breadth. The first gnathopod (fig. 5) has the propodos subequal in length to the carpus and slightly widening from the base to the extremity, where the palm is directly transverse; the finger is finely denticulated and exactly fits the slightly convex shape and the length of the palm. In the second gnathopods (fig. 6) the basal joint has a length equal to the following joints to the middle of the



propodos; the propodos is one third shorter than the carpus; the nail only slightly bent, equal in length to one third of the propodos. The first peræopods (fig. 7) have the meros about one third longer than the carpus and equal in length to the gradually tapering propodos; the nail is long and slender and is as long as two thirds of the propodos. The last peræopods (fig. 8) have the propodos strong, with setæ on both sides, and only slightly longer than the preceding joint. The uropods are furnished with spines of moderate size.

The male differs considerably from the female in the anterior part of the body. The first segment of the mesosome is as long as the head and about twice as long as the following segment. The first gnathopods have the coxa of much larger size and quite different shape, it being rhomboidal in outline; the gnathopod itself is much more developed than in the female, larger and longer; and the palm of the propodos is slightly concave instead of very slightly convex, and is furnished with a short, stumpy, strong spine at its commencement. The coxa of the second gnathopods is largely developed and extends downwards beyond those of adjoining limbs.

Length 15 mm.

I am indebted to Prof. S. I. Smith for specimens of this species from Long Island and also from Vineyard Sound. As regards distribution he writes (*l. c.*):—"Common on the whole coast of New England upon muddy bottoms, and north to Labrador. In depths it extends down to 150 fathoms, and probably much farther."

The following diagnostic characters of the North-Atlantic species of *Leptocheirus* may be useful:—

Coxæ (epimera) of gnathopods and following segments having their hinder margin furnished with spines . . .	<i>pinguis.</i>
Coxæ without such spines . . . . .	2.
2. Finger of second gnathopods unguiform . . . . .	3.
Finger of second gnathopods stiliform, tipped with setæ . . . . .	6.
3. First segment of urosome with spine-processes on hinder margin . . . . .	4.
First segment of urosome without spine-processes . . .	5.
4. A central and two lateral spine-processes . . . . .	<i>guttatus.</i>
No central, but two lateral spine-processes . . . . .	<i>bispinosus.</i>
5. Nail of posterior gnathopods cleft . . . . .	<i>pilosus.</i>
Nail of posterior gnathopods simple, not cleft . . . . .	<i>subsalsus.</i>
6. Coxa of first gnathopods very small, terminating in a fine point . . . . .	<i>della vallei*.</i>
Coxa of first gnathopods quadrate, front corner scarcely produced . . . . .	<i>pectinatus.</i>

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\* *della vallei*, Stebbing, = *Protomedea fasciata* Costa (nec Kröyer).

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No central, but two lateral spine-processes . . . . .	<i>bispinosus</i> .
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Nail of posterior gnathopods simple, not cleft . . . . .	<i>subsalsus</i> .
6. Coxa of first gnathopods very small, terminating in a fine point . . . . .	<i>della vallei</i> *.
Coxa of first gnathopods quadrate, front corner scarcely produced . . . . .	<i>pectinatus</i> .

\* *della vallei*, Stebbing, = *Protomedea fasciata* Costa (nec Kröyer).



EXPLANATION OF THE PLATES.

PLATE XII.

- |         |   |                                   |
|---------|---|-----------------------------------|
| Fig. 1. | <i>Leptocheirus subsalsus</i> , sp. n.  | Antennules and antennæ.           |
| Fig. 2. | " "                                     | First gnathopod.                  |
| Fig. 3. | " "                                     | Second gnathopod.                 |
| Fig. 4. | " "                                     | First peræopod.                   |
| Fig. 5. | " "                                     | Last peræopod, terminal joints.   |
| Fig. 6. | " "                                     | Urosome.                          |
| Fig. 7. | <i>Leptocheirus bispinosus</i> , sp. n. | Secondary appendage of antennule. |
| Fig. 8. | " "                                     | First peræopod.                   |
| Fig. 9. | " "                                     | Last peræopod, terminal joints.   |

PLATE XIII.

- |         |   |                                   |
|---------|---|-----------------------------------|
| Fig. 1. | <i>Leptocheirus bispinosus</i> , sp. n. | First gnathopod.                  |
| Fig. 2. | " "                                     | Second gnathopod.                 |
| Fig. 3. | " "                                     | Urosome.                          |
| Fig. 4. | <i>Leptocheirus pinguis</i> , Stimpson. | Secondary appendage of antennule. |
| Fig. 5. | " "                                     | First gnathopod.                  |
| Fig. 6. | " "                                     | Second gnathopod.                 |
| Fig. 7. | " "                                     | First peræopod.                   |
| Fig. 8. | " "                                     | Last peræopod, terminal joints.   |





