

NOTES ON COPEPODA FROM THE FIRTH OF
FORTH: *LONGIPEDIA CORONATA*, CLAUS;
AND A PRELIMINARY DESCRIPTION OF AN
APPARENTLY NEW GENUS AND SPECIES.

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PLATE II.¹

Longipedia coronata, Claus, is one of the most beautiful as well as one of the most common of the Copepoda in the British Seas, and has long been familiar to us.

It belongs to the *Harpacticidæ*, a family not only very extensive, but which also includes many interesting and curious species. As regards distribution, *Longipedia coronata* is to be obtained in a great variety of places, and at very various depths; it usually lives on or near the bottom, and is thus much more frequently obtained in materials collected by means of the dredge than in tow-net gatherings. Its favourite habitat seems to be among the zoophytes and weeds of the littoral and coralline zones.

Though many hundreds of specimens have passed through our hands, especially during the last few years, so that its appearance has become familiar to us, we have nevertheless had our suspicions occasionally aroused as to whether there were not really two species mixed up together under the name *Longipedia coronata* as understood by British Carcinologists. On several occasions during the past few years a partial investigation has been made by us for the purpose of ascertaining whether there were really two species or not; but from want of time, or from some other cause, no satisfactory solution was arrived at. On referring to some of the literature dealing with the Copepoda, it was ascertained that a certain amount of dissatisfaction had been expressed by various authors with the diagnosis of *Longipedia coronata* as given in "Die freilebenden Copepoden" and in the "British

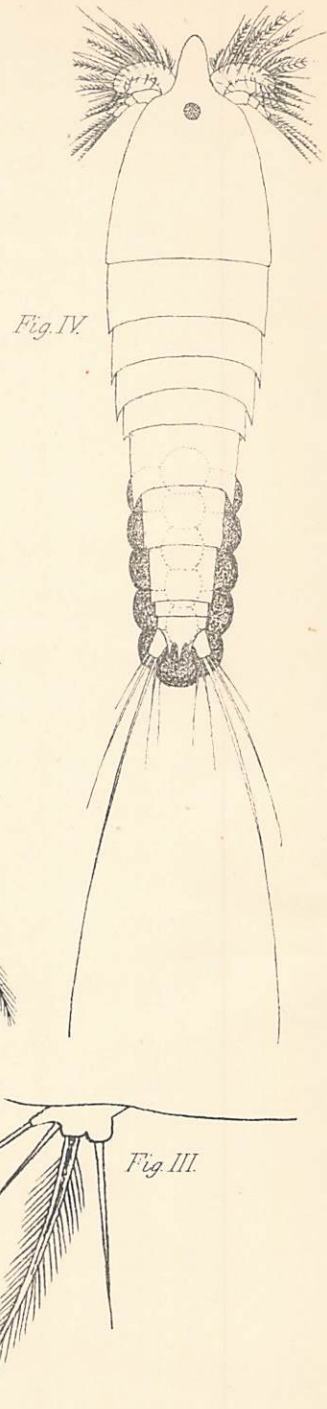
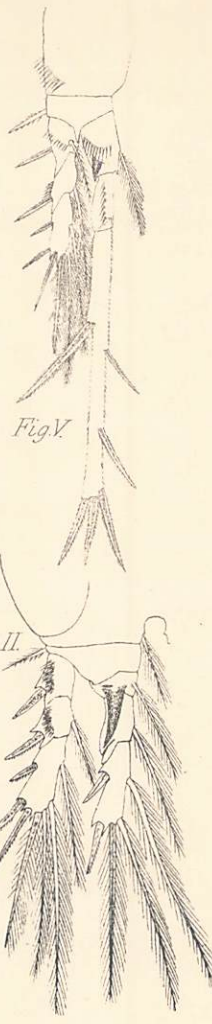
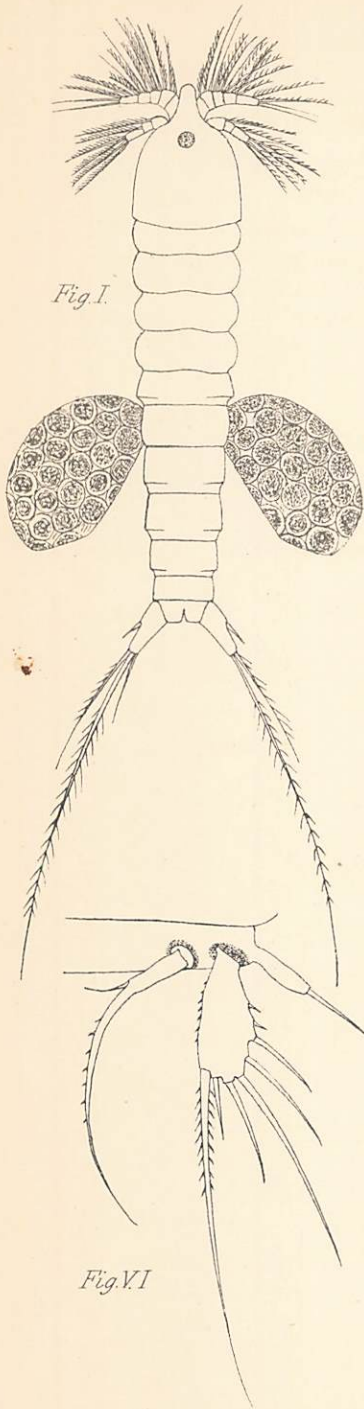
¹ This plate will be issued with the July number.

Copepoda.” Geisbrecht¹ in 1882 pointed out some of the doubtful characters in the description of this species in both the works named, but he apparently failed to realise the important significance of the characters he had called in question. In a capital work by Dr. Eugene Canu lately published, entitled “Les Copepodes du Boulonnais,” that author again calls in question the accuracy of the description of *Longipedia coronata* in these same two monographs, but ascribes the error, in the one case to a young male having been described for an adult, and in the other case to a misunderstanding as to the sexes. The following are Dr. Canu's remarks: “Formes jeunes très fréquentes et peut-être plus nombreuses dans une même pêche que les adultes; ce que pourrait expliquer les méprises faites par Claus (jeune ♂ décrit pour l'adulte) et Brady (confusion entre les deux sexes ♀ immatures) et relevées par Geisbrecht.”² Dr. Canu has thus evidently missed the true explanation of the difference between the so called “male” and “female” forms; at least so far as regards the description of *Longipedia* in “British Copepoda.”

A short time ago one of the writers of the present remarks (Andrew Scott), while examining a quantity of material dredged in Largo Bay, Firth of Forth, in 1891, observed as usual both forms of *Longipedia coronata*—i.e. “males” and “females”; he also observed that some of the “males” carried one ovisac! and one or two of the “females” two ovisacs! This discovery naturally led to further inquiry being made, with the result that two distinct species of Copepoda were found to have been mixed up under the one name, the so-called “male” being the true “female” of the *Longipedia*, while the so-called “female” was found to be the female of a new and distinct species, for which we have had to provisionally institute a new genus. Both males and females of this new species have now been obtained. A preliminary description of the true *Longipedia coronata* and of the new species is given below. Full descriptions (with drawings) are being prepared for the Annual Report of the Fishery Board for Scotland, to be published during the summer.

¹ “Die freilebenden Copepoden der Kieler Fördrde.”

² “Les Copepodes du Boulonnais” (1892), p. 146.



Figs I.-III. CANUELLA PERPLEXA Sp. n. Figs IV.-VI. LONGIPEDIA CORONATA. Claus

LONGIPEDIA, Claus.

Longipedia coronata, Claus, Plate II., Figs. 4-6.

1863. *Longipedia coronata*, Claus, "Die freilebenden Copepoden," p. 110, t. xiv.

1880. *Longipedia coronata*, Brady (in part), "Mon. Brit. Copep.," vol. ii. p. 6, Plates XXXIV and XXXV.

Female.—Secondary branch of posterior antennæ nearly as long as the primary branch, six-jointed, all the joints rather longer than broad. Inner branches of second pair of swimming-feet in both sexes conspicuously elongate, being much longer than the outer branches, or fully two and a half times longer. Fifth pair of feet foliaceous: those of the female consist of a moderately long inner segment, obovate in outline, bearing three setæ of moderate length and two very small ones on the outer distal margin, and one long and two short terminal setæ; a long stout and curved seta with a minute hair, arising from its inner aspect and near the proximal end, springs from the inner part of the basal joint; this spine-like seta is distinctly articulated to the basal joint. The rounded posterior dorsal margin of the last abdominal segment bears three spiniform processes, the central one large and easily observed, the lateral ones smaller. The postero-lateral angles of the cephalo-thoracic and abdominal segments acutely angular. Caudal stylets short, slightly divaricate. Length, 1.5 mm. ($\frac{1}{7}$ th of an inch). One ovisac.

One of the most prominent characters of this species, and one by which it is readily distinguished, is the very long inner branches of the second pair of swimming-feet.

Longipedia coronata is common all over the Forth, and especially so off Musselburgh.

CANUELLA,¹ gen. nov., provisional name.

LONGIPEDIA, Brady (in part).

Anterior antennæ less robust and less plumose than those of *Longipedia coronata*, five-jointed, first and second

¹ So named by us in compliment to Dr. Eugène Canu, author of "Les Copepodes du Boulonnais."

joints large. Posterior antennæ somewhat similar to those of *Longipedia*, but the secondary branch is shorter, the width of the joints being greater than the length. Mouth organs similar to those of *Longipedia*. Both branches of each of the first four pairs of swimming-feet of about equal length, and, with the exception of the second pair, somewhat like those of *Longipedia*; the first joint of the inner branches of the second pair very short, and armed with a stout conical spine about equal in length to the second joint (Fig. 2). Fifth, in both sexes rudimentary, consisting of a small basal joint, bearing in the female four setæ, one of which is rather longer than the others, and densely plumose (Fig. 3). The first and fourth segments of the abdomen without spinous armature. Caudal stylets about equal in length to the two last abdominal segments, and considerably divergent. The animal is more slender than *Longipedia coronata*, and the postero-lateral angles of the cephalo-thoracic and abdominal segments are rounded (Fig. 1). Ovisacs two, large.

One of the most conspicuous differences between *Canuella* and *Longipedia* is in the structure of the second pair of swimming feet. In *Longipedia* the inner branches of the second pair are greatly elongated in both sexes, and form one of the distinctive characters of the genus, the name of which has also reference to this character. In *Canuella*, on the other hand, both branches are of about equal length in both male and female, and the fifth feet are rudimentary. Therefore, notwithstanding the number of important points in which the two forms agree, the differences described clearly separate the one from the other; and, moreover, while *Longipedia* has only one, *Canuella* has two ovisacs.

Canuella perplexa, sp. n. (provisional name) Plate II. Figs. 1-3.

1880. *Longipedia coronata*, Brady (fem.), "Brit. Copep." vol. ii. p. 6, Plate XXXIV. Figs. 3, 9; Plate XXXV. Figs. 1, 3, 9.

The characters of the genus are applicable to the species, and therefore need not be repeated, this species being the only one known. Length, 1.4 mm. ($\frac{1}{8}$ th of an inch).

Additional Notes.—(a) Males and females of a small (?)

variety of *Longipedia* were observed after the above Notes had been prepared. This variety agrees in size and with the detailed figures and description of *Longipedia coronata* in Dr. Geisbrecht's work on the free-living Copepoda of Kiel Förhde, but differs from the description and figures of the "male" in "British Copepoda," and from *Longipedia coronata*, partially described and figured in the present Notes, in the following particulars, viz :

(1st) In the armature of the first pair of swimming-feet being more slender ; (2nd) in the outer branches of the second pair being proportionally longer. The two first joints of the outer branch are about equal in length to the two first joints of the inner one, and the large spiniform seta on the outer edge of the long third joint of the inner branch has a position nearly intermediate between the two smaller setæ on the inner edge ; and (3rd) the middle lamellæ of the fifth pair of feet in the female are much narrower and more elongate. These differences, so far as we can make out, appear to be constant. For the purpose of provisionally distinguishing this variety, we propose to call it variety *minor*. Length of variety, .85 mm. ($\frac{1}{29}$ th of an inch). On the other hand, the form partially described here as *Longipedia coronata* (type) agrees practically in size and in structure with the so-called "male" of *Longipedia* described in "British Copepoda" and in "Die freilebenden Copepoden," while that described here as *Canuella perplexa* agrees in structure with the so-called "female" of *Longipedia* in "British Copepoda." We have not seen Boeck's description, and are unable to say which of the forms now referred to agrees with that described by him.

(b) In 1867 M. Hesse recorded¹ a new Copepod (*Sunarietes paguri*) living as a commensal in the same shell with *Pagurus* (a kind of hermit-crab), and which in some respects agrees with the form described by us here as *Canuella perplexa*, but differs from it in the following important points. The first abdominal segment in the female is "aussi long que les quatre autres ; il est séparé du thorax par un espace assez écarté et arrondi qui facilite les mouvements du corps," and each of the two ovisacs "forment un ovale très-allongé et

¹ "Ann. Sc. Nat. (Zool.)," 5th series, vol. vii. p. 205, Plate IV. Figs. 11-25 ; also *op. cit.* p. 211.

sont presque pointus des deux bouts. Ils sont attachés, par leur extrémité supérieure et par un pédicule, au bord inférieur du dernier anneau thoracique, et leur longueur égale celle de l'abdomen." There also appear to be important differences in the structure of the mouth appendages and swimming-feet in both sexes. *Sunaristes* is also much longer than our species, being "5 millimètres de long" (? including tail setæ). The habitat is quite different, for the *Sunaristes* "sont les compagnons intimes des *Pagures*, et c'est avec la plus grande peine qu'on peut les en séparer, non qu'ils soient fixés sur eux comme le sont leurs parasites, mais par leur adresse à se cacher dans l'intérieur, ou en dessous des coquilles que ceux-ci habitent."

In 1884 Dr. Wilh. Müller described¹ a large Copepod (*Longipedia paguri*) that he had discovered living with *Pagurus bernhardus*. This is considered by Dr. Canu to be the same as the *Sunaristes* of M. Hesse; it also resembles, even more closely than *Sunaristes*, the form now described by us.

After a careful study of the descriptions and figures of *Sunaristes* and *Longipedia* we find that, if both authors are correct, the difference in their descriptions and figures are scarcely reconcilable, and appear to refer to different species; and further, the difference both in respect of structure and habitat between both of these and the species described by us is apparently so considerable that we prefer for the present to consider the Forth species as distinct from both. *Canuella perplexa* is, so far as we know, a free-living Copepod, and is not associated in any way whatever, as commensal or parasite, with any other animal.

EXPLANATION OF PLATE.

Canuella perplexa, gen. et sp. n.

Fig. 1.	Adult female	. . . . .	× 46·6
" 2.	Foot of second pair	. . . . .	× 126·5
" 3.	Foot of fifth pair	. . . . .	× 760

Longipedia coronata, Claus.

Fig. 4.	Adult female	. . . . .	× 46·6
" 5.	Foot of second pair	. . . . .	× 84·0
" 6.	Foot of fifth pair, female	. . . . .	× 190

¹ "Archiv für Naturgesch." Jahrgang 50, Erste Band, p. 19, Plate III.

