

ART. XIV.—Additions to the Sessile-eyed Crustacea of New Zealand.

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Plates XVII.—XXI.

THIS paper is the result of the work I have been able to do on the subject during the year. The species are not arranged in any particular order, but are given as I found most convenient when working them out.

I desire to take this opportunity of thanking Mr. R. M. Laing, of Canterbury College, for having on many occasions brought me seaweed from Lyttelton harbour. From this I have taken many specimens which I should not otherwise have been able to obtain.

ISOPODA.

Genus *Aapseudes*, Leach.

(Bate's and Westwood's "British Sessile-eyed Crustacea," vol. ii., p. 144.)

Aapseudes latus, sp. nov. Pl. xvii., fig. 1, a to h.

Body broad, vertically compressed; pereion of same width throughout its whole length; pleon narrowing considerably posteriorly; sides of segments of pereion and pleon fringed with long sparsely plumose hairs. Head produced into a bluntly ended triangle between the antennæ. Upper antenna with the first joint of peduncle rather short, stout, especially at the centre where the width is about half the length, long hairs on outer edge and at inner distal angle; second joint not quite one-third the length of the first, fringed with hairs on both sides; third smaller; secondary flagellum rather more than half the length of the primary, which is slightly longer than the first joint of peduncle. Lower antenna small, about as long as peduncle of upper; of the joints that are visible the first two are short and stout, second bearing a small oval plate with four or five long hairs. First pair of gnathopoda small; carpus more than twice as long as broad; propodos stouter than carpus, produced into a stout fixed finger, which narrows abruptly to a sharp point, has the inner edge minutely crenulated, and is supplied towards the extremity with several setæ; dactylos with a stout tooth on the inner edge near the base, ending very acutely, supplied with short setæ on inner edge, and a few longer ones on the side. Second pair of legs with the carpus nearly quadrangular with two stout spines on posterior margin; propodos not expanded, longer than carpus but more slender, three or four stout spines on posterior margin, one slender one, nearly as long as the dactylos, at the end. Third and fourth pairs of legs similar to the second. Fifth having the ischios and meros both short and supplied with long setæ; carpus about as long as the propodos; a spine at its antero-distal angle; propodos expanded distally, extremity rounded and thickly fringed with

pectinated setæ, bearing also one spine above three-fourths as long as the dactylos. Sixth pair of legs with the meros longer than the ischios, nearly as long as the carpus, both bearing long setæ; propodos narrower than carpus, bearing at the extremity the dactylos and a spine about three-fourths as long as the dactylos, and on distal half of the posterior margin a row of about six or seven short stout setæ. Seventh pair similar in form to the sixth; meros rather longer than carpus, both thickly fringed on each side with long plumose hairs, propodos having the end and greater part of the posterior margin bordered with stout straight setæ. First five segments of pleon subequal in length, sixth not quite so long as the two preceding, last segment triangular, rounded posteriorly, and bearing three or four long setæ. Last pair pleopoda long, peduncle stout, reaching as far as the end of last segment of pleon, outer edge bearing long hairs; outer branch short, of three joints; inner branch nearly five times as long as the outer, having about thirteen joints rather irregular in size; both branches bearing numerous long setæ.

Colour, greyish. Length, about $\frac{1}{8}$ inch.

Hab. Lyttelton Harbour. A single specimen found creeping in mud at the root of some seaweed.

Genus *Janira*, Leach.

(Bate's and Westwood's "British Sessile-eyed Crustacea," vol. ii., p. 335.)

As this genus is new to New Zealand, I give here the generic characters.

"Pereion serrated along the lateral margins; pleon having all the segments coalesced into a single plate; covered in the female, beneath with a large flat membranous plate concealing the branchial feet; and furnished at the tip with a pair of elongated bifid uropoda. Outer antennæ as long as the animal. Dactyla biunguiculate."

Janira longicauda, sp. nov. Pl. xviii., fig. 2, *a* to *b*.

Eyes large. Head rectangular, rather more than twice as broad as long, produced into a rostrum rounded at the end reaching nearly to the end of the second joint of the peduncle of inner antennæ. Inner antennæ reaching nearly as far as the end of the fourth joint of peduncle of outer antennæ; first joint stout, second about half as long, and with three or four stout setæ at distal end; third about as long as second but more slender; flagellum slightly longer than peduncle, setæ few and delicate. Outer antennæ as long as body; first three joints of peduncle short, the second bearing on its outer edge a small articulated plate, tipped with a few stout setæ; fourth joint longer than the three basal joints together, a few setæ on each side; fifth slightly longer than the fourth, narrowed at the base. Segments of pereion with lateral margins indented and fringed with stout setæ. Body of about equal width throughout. Pleon nearly circular, much

narrower than the last segment of pereion, sides fringed with setæ, margins entire; terminal pleopoda longer than the pleon; peduncle short, expanding distally; inner branch nearly twice as long as peduncle, rather broad, narrow at base, margins serrated and supplied with tufts of long fine setæ; outer branch similar but somewhat shorter.

Colour, very light yellow, with numerous black dots scattered over body. Length of body, about $\frac{1}{8}$ inch.

Hab. Lyttelton Harbour. A single specimen.

Genus **Stenetrium**, Haswell.

(Proc. Linn. Soc. N.S.W., vol. v., p. 478.)

As this genus is new to New Zealand, I transcribe the generic characters:—

“Body dorso-ventrally compressed; abdomen short, 1-jointed. Head with a short rostrum. Antennæ inserted on the anterior margin of the head; internal pair very short, external pair very long; both with well-developed flagella. Mandibles provided with a palp. Maxillipedes expanded, operculiform. First pair of thoracic limbs with a large prehensile manus; following pairs ambulatory. First pair of abdominal appendages broad, operculiform. Caudal appendages biramous, inserted on the border of the shield-like abdomen near the extremity.”

Stenetrium fractum, sp. nov. Pl. xviii., fig. 3, *a* to *f*.

Inner antennæ reaching slightly beyond the end of third joint of outer antennæ; first joint of the peduncle large, as broad as long; second equal in length to the first, but more slender; third rather longer than the second, both bearing long setæ at their distal ends; flagellum about half as long again as the third joint of peduncle, consisting of about five joints, first joint the longest, being as long as the three following. Outer antennæ as long as the body; first joint of peduncle short, produced acutely at its extero-distal angle; second also short; third as long as the first and second together, produced acutely at its intero-distal angle, bearing on the outer edge an articulated appendage, which has the end rounded and supplied with a few long setæ; fourth and fifth joints very long, fifth slightly longer than the fourth, both with a few rather fine setæ; flagellum with the joints very short, almost linear at the proximal end, increasing gradually in length towards the distal end, the first few united into a single joint; fine setæ at intervals. First pair of gnathopoda with the meros and carpus subequal and supplied with numerous fine setæ; propodos large, expanding distally, both margins fringed with fine setæ, palm transverse, defined by a stout tooth, and armed with strong serrated setæ. Dactylos thick and strong, inner edge thickly fringed with strong denticulated setæ. Lateral margins of the abdomen irregularly serrate and with a few long

setæ, ending posteriorly in a sharp point followed by a small concave indentation; portion between the bases of the last pleopoda slightly convex. Last pleopoda with the peduncle short, broadest at distal end, inner ramus larger than the outer, both narrowing distally and supplied with tufts of long fine setæ. Length of body about $\frac{1}{8}$ inch.

Hab. Lyttelton Harbour.

I have only a single specimen, the body of which is unfortunately much crushed. I am therefore unable to describe the shape of the body, and I cannot determine whether the head is produced into a rostrum or not. Judging from the analogy of the Australian species described by Mr. Haswell, the specimen is probably a female.

AMPHIPODA.

Genus *Cyamus*, Lamarck.

(Bate's and Westwood's "British Sessile-eyed Crustacea," vol. ii., p. 80.)

The following is the generic character as given by Bate and Westwood:—

"Head and first segment of the body fused into a pear-shaped mass. Eyes small and vertical. Segments of the pereion with the sides horizontally dilated; the legs attached to the postero-lateral margins; five pairs of strongly cheliform legs, wanting in the third and fourth segments, which are furnished with two pairs of branchial appendages, long and filiform. Pleon rudimental."

Cyamus ceti, Martens, l.c., p. 85.

Specific description:—"Body depressed, elliptical, segments gaping at the sides (male narrower?). Third and fourth segments of the body with one long branchia on each side; armed at the base with two short appendages; second pair of hands armed beneath with two obtuse teeth; between which is a lunate incision. Length nearly half an inch."

I received three specimens of this species from Professor Julius von Haast. In answer to my question as to the name of the whale on which they were found, he writes:—"The parasitic Crustacea were found on *Euphysetes potsi*, which, as it appears now from careful examination of further specimens, is identical with *Viagia breviceps* of the northern hemisphere." With regard to its occurrence in European seas, Bate and Westwood say,—“We have no precise details of the locality and notice of capture of this species, beyond the general statement of its being found on the whale in British seas.”

Of the three specimens which Professor Haast kindly handed over to me, two appear to be males, one $\frac{17}{30}$ inch in length of body, the other $\frac{16}{30}$.

The third specimen is a female with a great many young in the pouch beneath the body. It is smaller than the others; body $\frac{1}{3}$ inch in length; it also has the body broader, and the segments do not gape so much at the sides.

I can find no important character by which these specimens can be distinguished from *Cyamus ceti*, as described and figured by Bate and Westwood. The penultimate joints of the last three pairs of legs are not quite so stout as shown in their figure, but this is evidently a character liable to variation according to age, etc. The young taken from the pouch of the female closely resemble those figured by Bate and Westwood on page 90.

Genus *Podocerus*, Leach.

(Cat. Amphip. Crust. Brit. Mus., p. 252.)

I have taken in Lyttelton Harbour several specimens of a species which I have no doubt is the same as *Wyvillea longimanus*, Haswell.

Mr. Haswell's genus will, I think, have to be abandoned, for it appears to have been founded on a misconception of portions of the animal in question. The two chief characters of his genus are the very large second gnathopoda and the structure of the terminal pleopoda. The large second gnathopoda are however only found in the male, the female has them quite small. This is frequently the case with *Podocerus*. It is rather strange that Mr. Haswell has not seen the female, for I have found it fully as abundantly as the male; possibly it was overlooked, for it is usually smaller than the male, and the small size of the second gnathopoda makes its appearance considerably different from that of the male.

The last pair of pleopoda are thus described by Mr. Haswell:—"posterior pleopoda with the outer ramus broad, lanceolate, armed on the borders with a few setæ, and terminating in two short strong setæ." The portion which he describes as the outer ramus is however really the peduncle, which is elongated, as frequently happens in species of *Podocerus*; and the "two short strong setæ" are really the two rami, which are quite small, as in several species of *Podocerus*. As described below one of them ends in three or more teeth; probably Mr. Haswell did not use a sufficiently high power to observe this. There can therefore, I think, be no doubt that the species really belongs to *Podocerus*; it comes very close to *P. cylindricus*, Say, but differs in points specified below sufficiently to warrant its being placed in a separate species for the present at any rate.

In the Transactions of the New Zealand Institute, vol. xi., p. 402, Mr. Kirk has referred three specimens found at Worsler Bay to *Podocerus cylindricus*, Say; this identification was however subsequently questioned by Mr. Miers.*

* Ann. and Mag. N.H., series v., vol. v. (1880), p. 125.

Thinking that Mr. Kirk's specimens might possibly belong to the same species as those I had taken at Lyttelton I wrote to him about them, and in reply he very kindly sent me the three specimens for comparison. I have examined these as carefully as possible, and though they differ in some respects from my Lyttelton specimens and from Mr. Haswell's description—approaching somewhat more nearly to *P. cylindricus*, Say—still I am convinced that they belong to the same species, and that although it is very near to *P. cylindricus*, Say, it is advisable to consider it as distinct until a comparison of actual specimens of the two can be made.

Mr. Kirk's three specimens were all very much larger than mine; the largest was .56 of an inch in length of body, while my largest specimen is only .12 inch; Mr. Haswell gives the length of his specimens as "about $\frac{1}{4}$ inch." The inferior antennæ, as in my specimens, and as shown in Mr. Haswell's figure, are about half the length of the body, not more; in *P. cylindricus* they are "more than half the length of the body." The length of the upper antenna compared with that of the lower varied somewhat. In the first specimen it reached to about the middle of the flagellum, in the second only to the end of the peduncle, in the third specimen the lower antennæ were broken off. In my specimens also this character varies, usually, however, the upper antenna reaches to the end of peduncle of lower; with regard to his specimens Mr. Haswell says:—"Inferior antennæ stout, subpediform, with the peduncle equal in length to the superior pair."

All three specimens had the flagellum of lower antenna as long, or very nearly as long, as the last joint of peduncle; in my specimens and in Mr. Haswell's it is as long, and thus differs from *P. cylindricus* where it is "scarcely half the length of last joint of peduncle."

In Mr. Kirk's specimens, as in mine and Mr. Haswell's, the spines found on the end of the lower antenna are only somewhat curved, not hooked, as in *P. cylindricus*. The inner margin of the finger of the first gnathopod was, as in *P. cylindricus*, "serrated, almost pectinated;" this is, to a less degree, also the case with my specimens of the male, in the female it is somewhat roughened only. The Wellington and Lyttelton specimens and Mr. Haswell's agree in having the propodos of the second gnathopod longer than in *P. cylindricus*; it is longer than the cephalon and first two segments of pereion. The finger in all has the inner margin smooth, in *P. cylindricus* it is "coarsely serrated." The finger has an enlargement on the inner margin near its base, in Mr. Kirk's specimens the apex of this enlargement is rounded, in mine it is more pointed, and the enlargement is nearer the base of the finger; it is not mentioned by Mr. Haswell. My specimens agree with Mr. Haswell's in having "a blunt tooth at the proximal and another at the distal end of the concave border" of the propodos of the

second gnathopod; both are wanting in *P. cylindricus*; in Mr. Kirk's specimens the one at the distal end is present, but the proximal end is simply rounded as in *P. cylindricus*. In Mr. Kirk's specimens, as in some of mine, the outer branch of the last pleopod terminates in more than three teeth, four, five, and even six are found. *P. cylindricus* is described as terminating "in three hooks." I do not, however, attach any importance to this, for it is evidently a character that varies with the size and age of the specimen.

The general description of this species will be as follows:—

Podocerus longimanus. Pl. xvii., fig. 2, a to e.

Podocerus cylindricus, Kirk. Trans. N.Z. Inst., vol. xi., p. 402. (Not Say.)

Wyvillea longimanus, Haswell. Proc. Linn. Soc. N.S.W., vol. iv., p. 336, pl. 22, fig. 7.

Male.—Eyes round. Superior antennæ about as long as the cephalon and first three segments of the pereion; first segment of the peduncle short, thick; second and third much slenderer, second slightly longer than the third; secondary appendage slender, 2-jointed, nearly one-fourth the length of flagellum; flagellum rather longer than last joint of peduncle. Inferior antenna about half the length of the body, stout, subpediform, peduncle equal in length to the superior antenna; flagellum as long as the last joint of peduncle, armed towards the end with stout curved spines. Both antennæ having the inferior margins fringed with long setæ.

First pair of gnathopoda small; carpus nearly as broad as propodos and about half as long; propodos ovoid with two stout setæ at the point where the dactylos impinges, palm with a few setæ; dactylos with concave margin more or less serrated, almost pectinated in large well-developed specimens. Second gnathopoda very large, carpus very short, propodos longer than the cephalon and first two segments of the pereion, cylindrical, sides parallel, curved, a blunt tooth at the distal end of concave margin, proximal end rounded or produced into blunt tooth; palm broad, more or less thickly fringed with fine setæ. Dactylos nearly as long as the propodos, concave border smooth, with an enlargement near the base. Posterior pleopoda with the peduncle elongated, narrowing slightly towards the end, upper margin with a few short setæ; rami very short, inner styliiform, outer ending in from 3 to 6 upturned teeth. Telson conical, blunt.

Female.—Differs from the above in having the concave margin of finger of first gnathopod only slightly roughened, not serrated. Second gnathopod not larger than the first, similar to it in shape, but with the carpus shorter, and propodos rather more narrowed distally. Dactylos with basal half of concave margin roughened, extremity smooth.

Colour, pale yellow, more or less thickly covered with black dots and markings.

Length of largest specimen .56 inch.

Hab. Lyttelton Harbour; Worsler Bay, Wellington (*T. W. Kirk*); Port Jackson (*W. A. Haswell*).

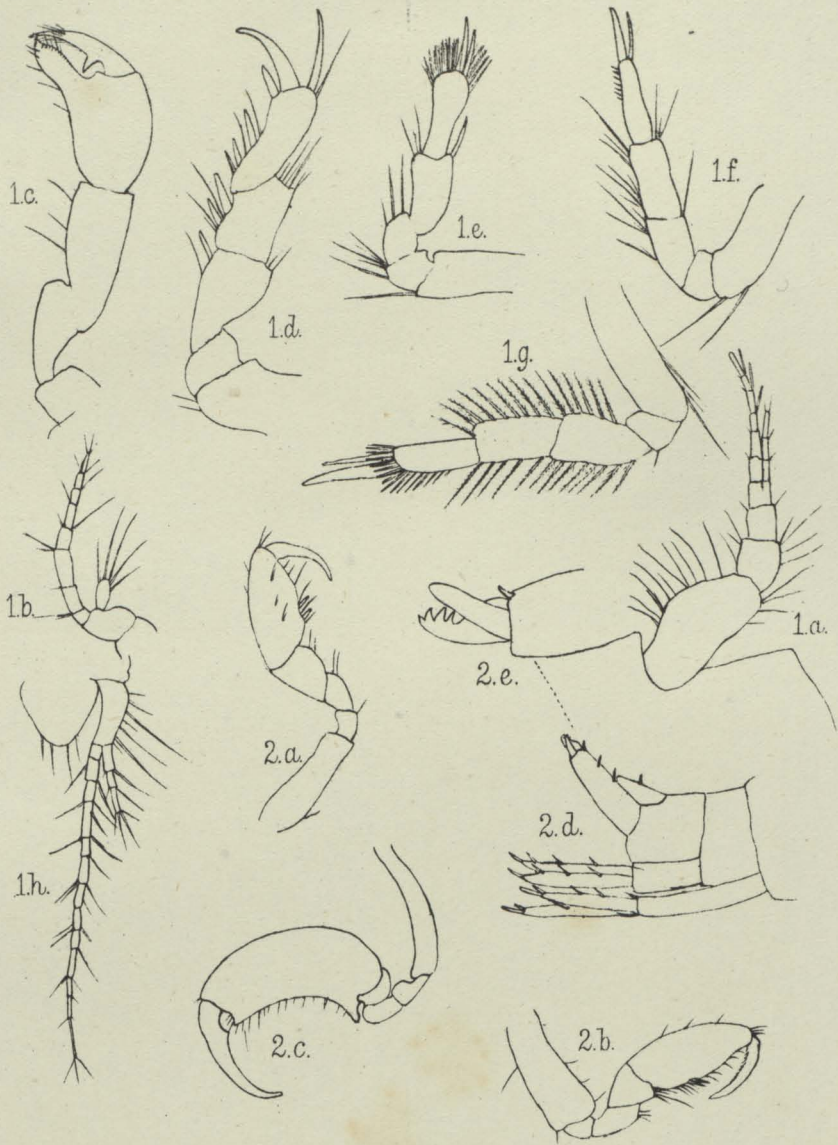
The differences between this species and *Podocerus cylindricus*, Say, have already been mentioned in the general comparison of specimens from the different localities; but for the sake of greater clearness I will recapitulate them.

Flagellum of lower antenna is as long, or very nearly as long, as the last joint of peduncle; the stout spines found on the end of it are not developed into hooks. The inner margin of dactylos of first gnathopod is only roughened in the female, and in the male the serrations, though sometimes as great as in *P. cylindricus*, vary. The second gnathopod is larger than in *P. cylindricus*, and is much larger in the male than in the female. In *P. cylindricus* the female differs from the male only in "the slightly smaller size of the propodos of second pair gnathopoda;" the second gnathopod of female also differs considerably in shape from that of the male. There is a blunt tooth at the distal end of the concave margin of propodos (of male); not found in *P. cylindricus*. The concave margin of the dactylos is smooth in the male, in female roughened on proximal part only.

These differences, though somewhat numerous, are none of them of very great importance; and, if *P. cylindricus* varies as much as *P. longimanus*, I dare say it would be difficult to find constant differences of any importance between the two species. In considering the question it must be remembered that there are other similar cases: *Paranthura costana*, *Philougria rosea*, *Lysianassa magellanica*, *Pinnotheres pisum*, etc.: this, however, is not the place to discuss the general question of the occurrence of the same species in both the northern and the southern seas.

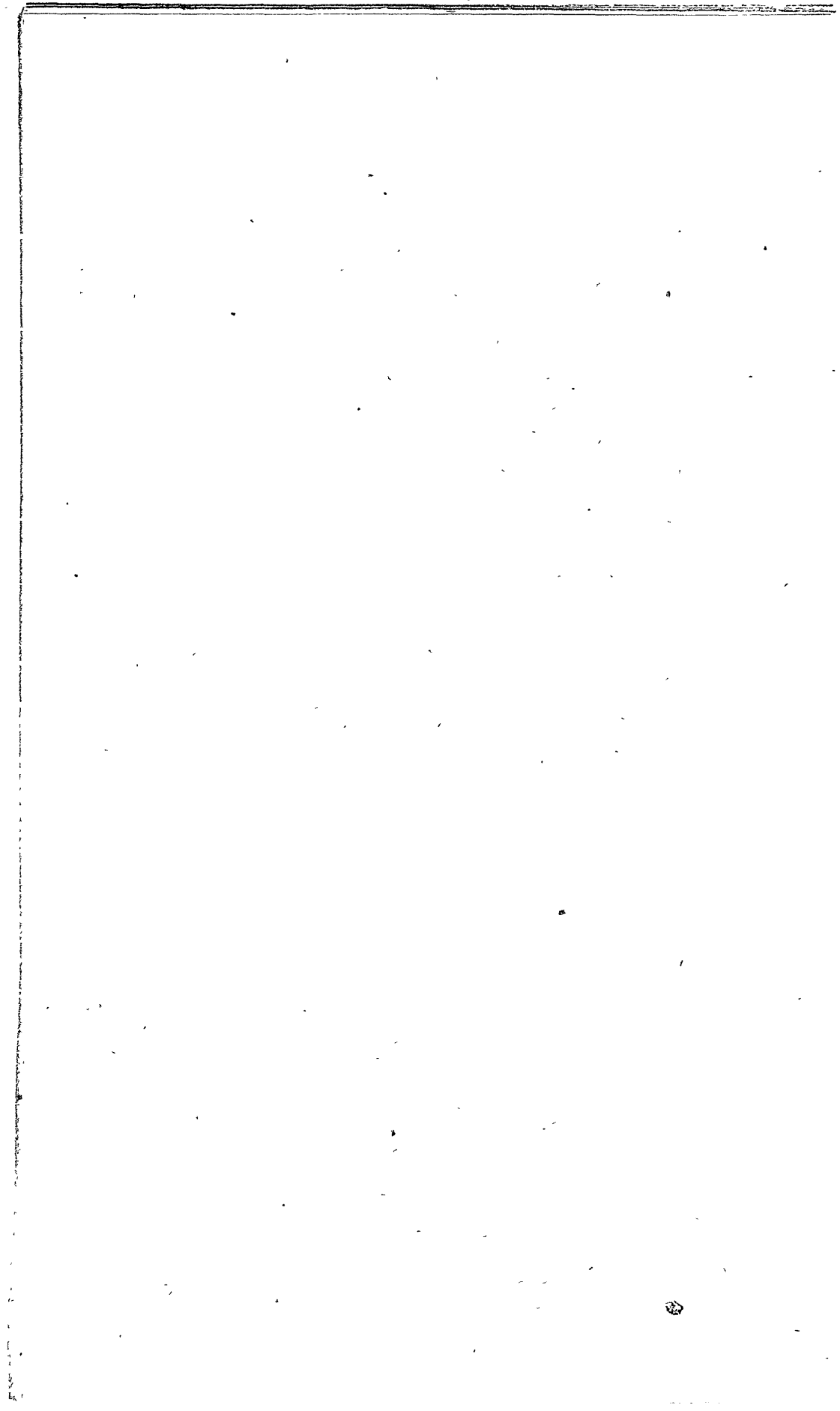
NOTE.—My reasons for considering the two animals described above as male and female of the same species are these:—(1) They resemble one another so closely in everything but the gnathopoda that they must be considered as belonging to the same species; (2) the form with the small gnathopoda is certainly a female, for I have frequently seen specimens carrying eggs; (3) the form with the large gnathopoda I have never seen bearing eggs.

The large gnathopoda of the male are only possessed by fully-grown specimens. In very young animals they are more like those of the female, having the palm extending only about half way along the inferior edge of the propodos and defined by two or three stout setæ. In slightly older specimens the palm is longer, until it extends along the whole length of the margin of the propodos, and finally the setæ are cast off and the gnathopod assumes the form already described.



C. Chilton, del.

N. Z. CRUSTACEA.



Genus *Teraticum*, novum.

Body small. Eyes two. Coxæ of first four segments as deep as their respective segments. Antennæ with short flagella; upper antenna with a small secondary appendage. Mandible with an appendage. First gnathopod larger than the second, subchelate; second slender, chelate. Posterior pair of pleopoda uniramous. Telson single, undivided.

I have been obliged to make a new genus for the reception of the following species. In some respects it appears to resemble *Kroyera*, Spence Bate; but it is very distinct in others:—

Teraticum typicum, sp. nov. Pl. xviii., fig. 1, *a* to *g*.

Antennæ subequal, first joint of upper antenna equal in length to the second, but stouter; third about half as long as the second; flagellum of about four joints, only slightly longer than the second joint of peduncle; appendage very small and slender, of one long slender joint followed by a very small short one. Peduncle of lower antenna with the second last joint considerably longer than the last; flagellum not so long as last joint of peduncle. Peduncles of both antennæ quite free from setæ; flagella with a few short setæ. First gnathopod large, carpus triangular, nearly as broad at distal end as the propodos, propodos subquadrangular with an oblique row of short setæ near the centre of posterior margin, palm transverse, the part near the base of dactylos crenated, hollowed in centre with a small rounded projection in the centre of hollow; dactylos strong, curved. Second gnathopod slender, ischios long and slender, rather more than four times as long as broad; meros short; carpus about two-thirds as long as ischios, subtriangular; propodos considerably longer than carpus, subrectangular, produced into a fixed finger against which the dactylos impinges; dactylos as long as fixed finger, and about one-third the length of the whole propodos. First two pair of pereopoda subequal, last three increasing in size posteriorly, basa broad, that of fifth pair having the posterior margin serrate, meros produced distally and posteriorly; setæ on pereopoda few and short.

Fourth pleopod with rami longer than peduncle, inner slightly larger than the outer, falciform; fifth with peduncle longer than rami; sixth with peduncle short, the single ramus as broad as peduncle at first, but narrowing distally. All the last three pairs of pleopoda without setæ. Telson triangular, end rounded, margin entire, a very small seta on each side near the end.

Length about $\frac{1}{2}$ inch.

Hab. Lyttelton Harbour. Three specimens only.

Of the three specimens which I have seen, two had the first gnathopoda as described and as drawn (pl. xviii., fig. 1, *b* and *c*); the third had the propodos projecting distally, so that the gnathopod might almost be called

chelate, palm even (fig. 1, *d*). In other respects the animal was exactly like the other two specimens; whether the difference in the gnathopoda indicates a difference of sex or not I cannot say.

Genus *Podocerus*.

Podocerus latipes, sp. nov. Pl. xix., fig. 2, *a* to *d*.

Male.—Second gnathopoda stout, propodos produced inferiorly into a stout broad process defining the palm, which is deeply indented; dactylos strong, inner edge serrated proximally, but with distal part smooth. Fourth pereopoda with all the joints much expanded, all except the propodos being as broad as long. Other pereopoda normal. In all other respects closely resembling *Podocerus frequens*.

Female.—Differs in having the second gnathopoda not produced as in male, palm concave and defined by two stout setæ.

Colour, yellowish-white. Length about $\frac{1}{3}$ inch.

Hab. Lyttelton Harbour.

This species may prove to be only a variety of *P. frequens*. I should without hesitation have considered it as such had it not differed in the second gnathopoda as well as in the fourth pereopoda. The peculiar expansion of the fourth pereopoda appears to be subject to considerable variation, probably it increases with the age of the animal. I am quite ignorant of the function of these expanded pereopoda.

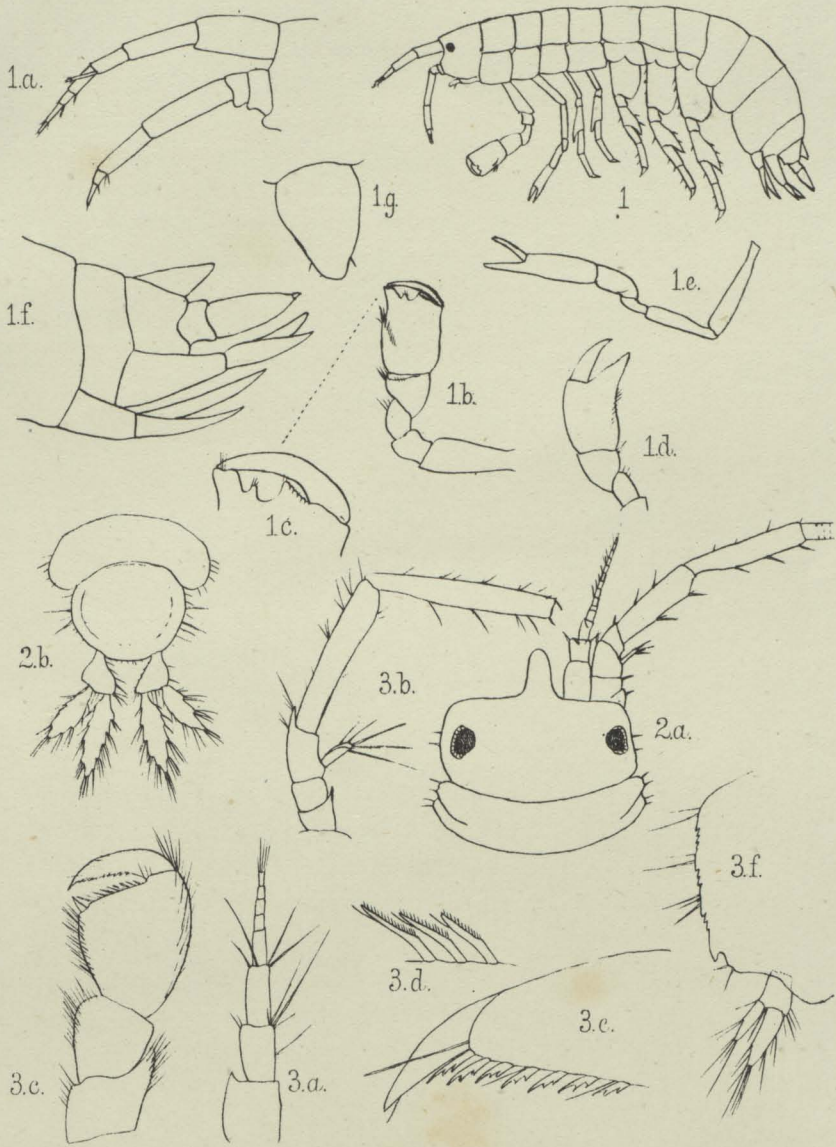
Genus *Paranænia*, novum.

Antennæ subequal, superior with a secondary appendage, both with multiarticulate flagella. Appendage of mandible of three broad setose joints, as in *Podocerus*. Maxillipedes with well developed plates on ischios and meros. Gnathopoda sub-chelate, first small in both sexes, second small in female, very large in male. Last pair of pleopoda biramous, rami styliform. Telson single, ending posteriorly in two conical projections.

I have made this genus to include three species found in Lyttelton Harbour—namely, *P. typica*, sp. nov., *P. longimanus*, sp. nov., and *P. dentifera*=*Moera dentifera*, Haswell. It appears to bear a close resemblance to *Nania*, Spence Bate, but differs in possessing a secondary appendage on the upper antenna, and in the form of the telson.

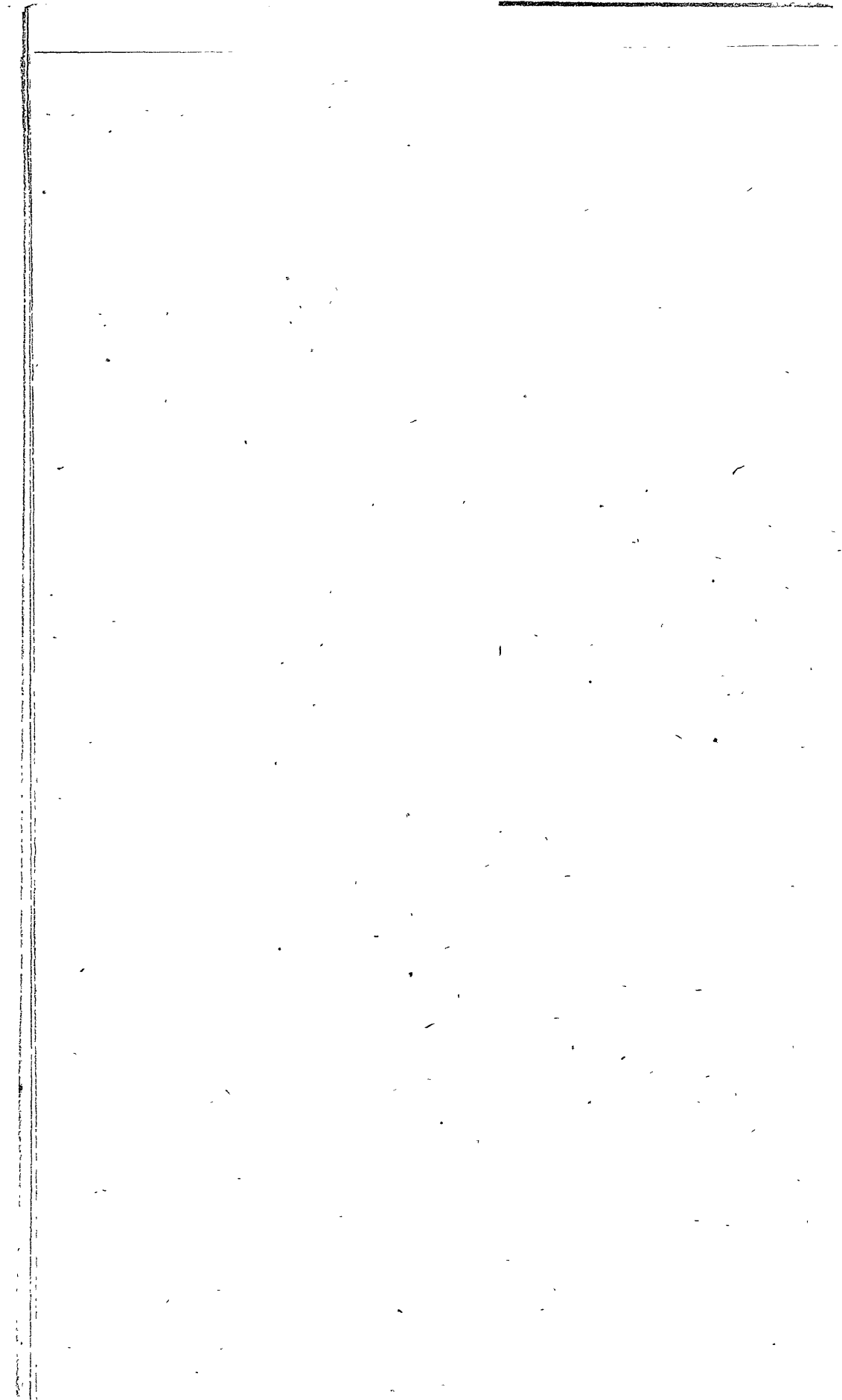
In *P. typica* and *P. dentifera* the coxæ of the third segment of the pereion is large, and produced along the inferior edge of the coxæ of the second segment in the male, while the coxæ of the female are normal. *P. longimanus* has the coxæ normal both in the male and in the female.

In the description of *P. dentifera* I have embodied Mr. Haswell's description, but have added to and altered it where I thought necessary.



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Paranania typica, sp. nov. Pl. xix., fig. 1, a to h.

Male.—Eyes rather large, situated on a pointed projection between the bases of the antennæ. Upper antenna with basal joint of peduncle stout, and about two-thirds the length of the second, third joint as long as the first, flagellum about as long as the last two joints of the peduncle, secondary appendage nearly half as long as the primary. Peduncle of lower antenna very slightly longer than that of the upper, last two joints equal in length, flagellum half as long again as the last joint of peduncle. Both antennæ fringed below with numerous long hairs. First gnathopod with carpus as long as propodos and nearly as broad, inferior edge fringed with numerous setæ arranged in about four transverse rows, propodos ovate, both margins with numerous setæ, one or two stouter ones at the point where the end of dactylos impinges. Second gnathopoda with meros somewhat sharply pointed at its distal end; carpus very short, subtriangular; propodos very large, as long as the cephalon and first two segments of pereion, subrectangular, produced on inferior edge into a stout short spine defining the palm, distal portion of the palm nearly transverse, distinctly marked off from the inferior portion by a stout spine, followed by a narrow indentation, between which and the base of the dactylos is a low protuberance with the margin minutely crenate, palm thickly supplied with setæ variously arranged in tufts; dactylos curved, with a low protuberance on the inner margin near the distal end. Coxæ of first pereiopoda (third segment of pereion) deeper than the others, produced as far as the anterior end of the coxæ of the second gnathopoda and ending there in an acute point, margin ornamented with small circular markings at intervals. Fourth pair of pleopoda with the rami equal and as long as the peduncle, slender, with setæ on both sides and two or three longer ones at the ends, peduncle with three or four setæ on the upper margins and with a stout one at the end between the two rami. Fifth pleopoda with the outer ramus as long as the peduncle, inner one slightly longer, supplied with setæ as in the fourth pleopoda. Sixth pleopoda extending beyond the others, inner ramus slightly longer than the outer, both longer than the peduncle and broader (when viewed from above) than the rami of the two preceding pairs of pleopoda, setose on both margins, and ending acutely without setæ; peduncle stout, with a strong seta on the upper margin at the distal end. Telson single, ending in two conical projections each bearing a stout seta.

Female.—Differs from the above in having the coxæ normal; second gnathopoda only slightly larger than the first which it resembles in shape, but has the carpus shorter and subtriangular.

Length about $\frac{1}{3}$ inch.

Hab. Lyttelton Harbour.

I have been much puzzled by this and the next two species, and it is only with considerable hesitation that I advance *Paranania* as a new genus. In order to clear up their affinities as much as possible I give here a few more facts about them which I have not put into the description already given. The inferior antennæ arise considerably behind the anterior antennæ (fig. 1a). The mandibles are shown in fig. 1b, pl. xix. The appendage consists of three broad joints, the first short and without setæ, the second the longest and fringed on one side with long setæ, the third is narrow at the base, but widens greatly distally, and is rounded at the end and is fringed with about a dozen setæ, each about as long as the joint; on the side of the last joint is an oblique row of about four or five setæ. The maxillipedes present nothing very remarkable, both the basos and the ischios bear well-developed plates, that of the basos is rectangular and has only a few setæ at the end, that of the ischios is rounded at the end and has the inner margin supplied with numerous stout broad spines which increase in size distally, and with several setæ, the other joints except the meros are plentifully supplied with setæ, the dactylos ends in a long slender claw distinct from the basal portion.

The gnathopoda have been already described, the pereiopoda closely resemble those of *Podocerus* but are rather longer and more slender than is usual in that genus. The coxa of the third pereiopod consists of two lobes as in *Podocerus*, the anterior lobe is much larger and deeper than the posterior; in the next coxa the anterior lobe is much smaller in comparison with the posterior; the coxa of the fifth pereiopod is not divided into lobes—these facts *re coxæ* of third, fourth and fifth pereiopoda refer to the male only; I have not yet been able to verify them in the female; the bodies are so delicate and transparent that it is often very difficult to distinguish the coxæ. The telson has one or two very minute teeth at the end of each conical projection, these are very small but may be important as a help to deciding the proper place of this species among the other Amphipoda.

My reasons for considering the two animals I have described above as male and female of the same genus are the same as those already given in the case of *Podocerus longimanus*.

The length of the palm of the second gnathopod of the male increases with age, in well-developed specimens the tooth defining it is near the base of the propodos, but in younger specimens it is often much nearer the distal end.

Paranania dentifera. Pl. xxi., fig. 2, a to c.

Moera dentifera, Haswell, Proc. Linn. Soc. N.S.W., vol. iv., p. 332, pl. xx., fig. 4.

Superior antennæ equal in length to the cephalon and first four segments of the pereion; third segment of the peduncle two-thirds the length of the second; flagellum about as long as the last two segments of peduncle, of about ten articuli, each ornamented like the peduncle with several longish

hairs. Inferior antennæ slightly longer than the superior; fourth and fifth segments of the peduncle sub-equal; flagellum half as long again as the last segment of peduncle, of about twelve articuli; both peduncle and flagellum armed with slender hairs, which are longer on the former. Anterior gnathopoda small, carpus slightly longer than propodos, thickly fringed on inferior edge with serrated setæ, propodos ovate, setose on both margins, one or two stout setæ at point of impingement of the end of dactylos. Posterior gnathopoda very large; meros with a pointed process at its infero-distal angle; carpus short, sub-triangular; propodos about six times the length of carpus, broad at the base, narrowing distally; palm two-thirds of the length of propodos, concave, with a low protuberance at its distal end, armed with fasciuli of long hairs, defined by a spine-like tooth; dactylos nearly as long as the propodos, with an enlargement on its inner edge near the base. Coxæ of third segment of pereion extending anteriorly slightly beyond the middle of coxa of second segment, antero-inferior angle rounded, margin ornamented with small circular or elliptical markings at intervals. Rami of posterior pleopoda scarcely larger than the others, lanceolate, armed with a few bristles. Telson small, ending in two conical projections, each bearing a stout seta. Colour, light olive with minute black dots. Length $\frac{1}{5}$ inch.

Hab. Lyttelton Harbour. Also "Clark Island, Port Jackson; amongst seaweed" (*Haswell*).

This species so closely resembles the preceding one in everything but the second gnathopoda that it must be placed in the same genus. It has a certain puzzling resemblance to *Moera*, to which it was referred by Mr. Haswell, but differs in the broad setose appendage of the mandible, and in the strong fringe of setæ on the antennæ (wherein it approaches *Podocerus* and other allied genera), and in the telson.

I do not know the female of this species as such. It probably would be almost indistinguishable from that of *Paranania typica*.

The mandibles and maxillipedes are almost exactly the same as those figured for *Paranania typica*. When dissecting out the mouth-parts I came across the part figured in pl. xxi., fig. 2 a. It evidently corresponds with and closely resembles the "epistoma" of *Cerapus abditus*, figured by Bate and Westwood in vol. i., p. 455, of the "British Sessile-eyed Crustacea." It consists of a transversely elliptical portion, with short setæ pointing inwards on the posterior margin, and, springing from this, a long pointed process.

Paranania longimanus, sp. nov. Pl. xx., fig. 2, a to c.

Male.—First gnathopoda with the meros ending distally in an acute point; carpus considerably longer than the propodos; inferior margin thickly fringed with setæ, chiefly arranged in short transverse rows;

propodos not broader than the carpus, tufts of setæ on both sides; dactylos long, slightly curved, and acutely pointed, much longer than the palm, which is slightly concave and defined by a short stout seta. Second gnathopoda with the meros acutely produced at the distal end; carpus triangular, more than half as long as the propodos, and as wide distally as the propodos; propodos rectangular, with tufts of setæ arranged in three longitudinal rows, end transverse, dactylos short, curved, and impinging against the side of the joint, instead of along the margin. Fifth pleopoda with the rami unequal; sixth with the rami smaller than in the two preceding species, not reaching beyond the extremity of the fifth pleopoda, and only slightly longer than the peduncle; setæ on the upper margin and at the end.

Female.—Differs from the male in having the palm of the first gnathopod slightly convex, and not defined. Second gnathopod smaller than that of the male, resembling that of the female of *Paranania typica*, but with the palm slightly concave. Length $\frac{1}{5}$ inch.

Hab. Lyttelton Harbour.

Genus *Corophium*, Latr.

(Cat. Amphip. Brit. Mus., p. 279.)

Corophium lendenfeldi, sp. nov. Pl. xx., fig. 1, *a* to *e*.

Eye rather large, elliptical, placed on a rounded lobe between the bases of the antennæ. Antennæ subequal; upper with basal joint large, stout, about twice as long as broad, second about two-thirds as long as the first and half as broad, third about two-thirds as long as the second and more slender, flagellum of about nine joints, nearly as long as the last two joints of the peduncle, a secondary appendage of two or three joints is also present; setæ very few and delicate. Inferior antennæ with the second joint short, produced inferiorly and anteriorly into a sharp point, third joint nearly as broad as long, fourth longer and stouter than the fifth; flagellum nearly as long as the last joint of peduncle, bearing below numerous stout setæ which become stouter and more curved towards the end. First gnathopod rather short and stout, ischios and meros short, the latter with a tuft of setæ towards distal end, carpus broader than the propodos and about two-thirds as long, thickly fringed with plumose setæ on inferior margin; propodos narrowing slightly distally, fringed on both sides with plumose setæ, dactylos long curved and acutely pointed, not impinging against the propodos. Second gnathopoda similar in form to the first, but longer and more slender, carpus considerably broader than the propodos and of the same length, bearing two longitudinal rows of sparsely plumose setæ which are as long as the joint itself; propodos narrow, tapering distally, fringed on both margins with long setæ, dactylos slender, not impinging against

the propodos. Third, fourth, and fifth pereopoda similar in form, increasing somewhat in size posteriorly, basa much expanded. Lower portions of the sides of the second and third segments of pleon supplied with numerous setæ. Pleopoda short, all reaching to about the same point. Fourth pair with peduncle stout, produced into a sharp point between the rami, upper margin with strong setæ, rami equal, with strong setæ on upper margins and at the extremities, fifth pair similar but with rami unequal, peduncle of sixth pair stout, outer ramus nearly as long as peduncle, with thick tuft of setæ about as long as the ramus at the end; inner ramus rudimentary with one or two small setæ, telson narrowing greatly towards the end, posterior margin sinuous, convex in centre, concave on each side, on the upper part of the telson towards the end is a rather long seta on each side, and between this and the postero-lateral angle are two sharp teeth pointing upwards. Colour greyish.

Length $\frac{1}{5}$ inch.

Hab. Lyttelton Harbour.

This species appears to differ from other species of the same genus in the presence of a secondary appendage to the upper antenna, and in having the first gnathopoda simple, not subchelate; the plumose character of the gnathopoda is however, I think, sufficient evidence of its near relationship.

I take pleasure in naming this species after Dr. R. von Lendenfeld, by means of whose scraper I obtained several specimens off one of the buoys in Lyttelton Harbour.

Genus *Panoplæa*, G. M. Thomson.

(Ann. and Mag. N.H., ser. v., vol. vi., p. 2.)

Panoplæa translucens, sp. nov. Pl. xxi., fig. 3, a to c.

Closely related to *Panoplæa debilis*, but larger and lighter in colour and differing in the following points. None of the segments produced posteriorly into spines. The two pairs of gnathopoda similar in shape and equal in size, much stouter than in *P. debilis*, basos with longish setæ on both sides, carpus nearly as long as propodos, propodos rectangular, slightly more than twice as long as broad, palm oblique extending about one-third along the inferior margin of the propodos, one stout seta on each side of the point where the dactylos impinges, numerous tufts of stout short setæ along inferior margin of propodos. Three last pairs of pleopoda very slender, fourth pair with peduncle considerably longer than the rami, concave above, upper margins with short stout setæ, outer ramus longer than the inner, both with setæ on the upper margin and at the end; fifth pair similar, but with outer ramus shorter than peduncle, and the inner one longer than the peduncle; sixth with peduncle stout, naked, rami equal, longer than peduncle, broad when seen from above, both margins with

setæ. Telson slightly concave above, narrowing towards the end, near which are two very small setæ on each side. Colour, whitish, semi-transparent. Length $\frac{11}{10}$ inch.

Hab. Lyttelton Harbour. Three specimens taken in company with numerous specimens of *P. debilis*.

Genus **Bircenna**, novum.

Body broad, coxæ very shallow. Antennæ sub-equal, upper without a secondary appendage. Mandibles without an appendage. Maxillipedes with well-developed plates on both basos and ischios. Gnathopoda equal, not subchelate. Last segment of pleon and its appendages rudimentary. Telson simple, not divided.

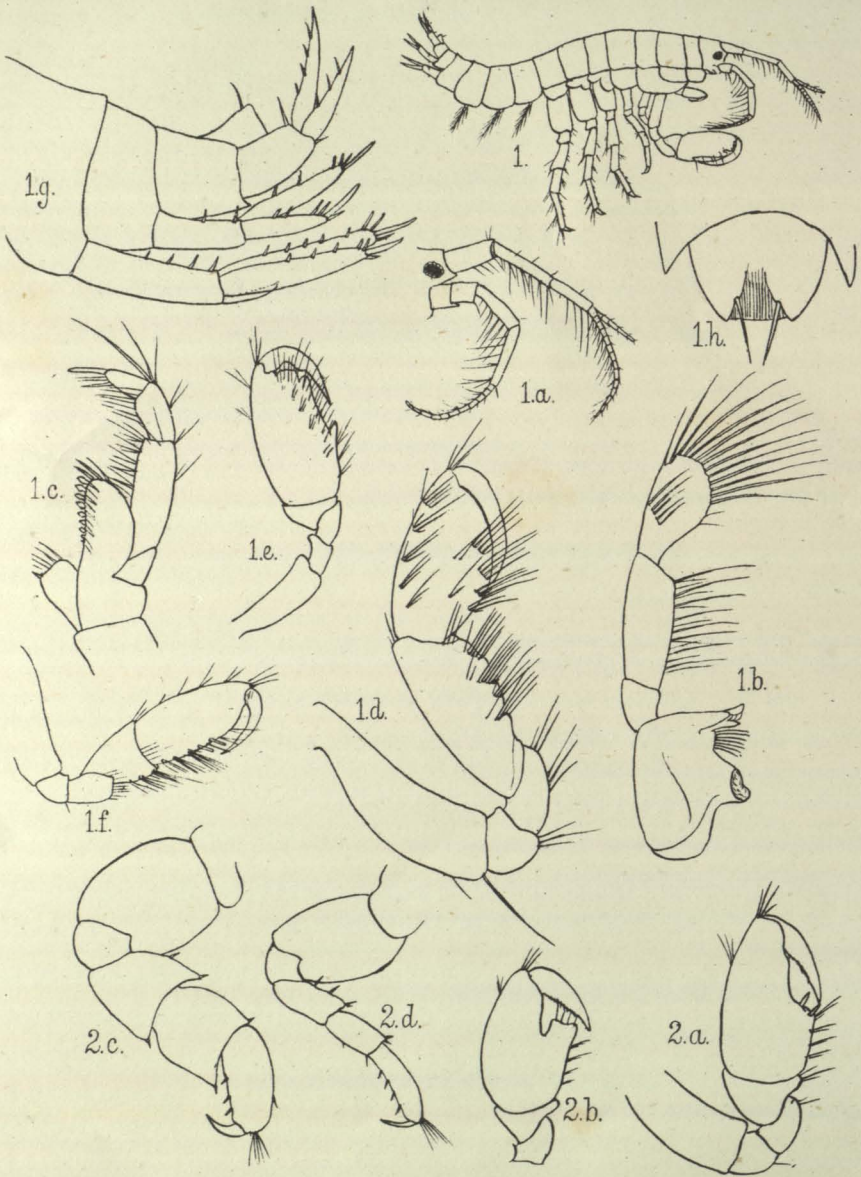
Bircenna fulvus, sp. nov. Pl. xxi., fig. 1, *a* to *e*.

Head broad, depressed in front, antennæ short, not longer than the head; both pairs of same length, slender. Peduncle of upper not distinguishable from the flagellum, first joint about as long as the second, but stouter, third shorter than the second, flagellum of about six joints, each bearing some simple auditory cilia. Peduncle of lower antennæ with four joints distinguishable, the last as long as the two preceding, flagellum of about four joints. Both antennæ with a few small setæ. Maxillipedes short, the plates on the basos and ischios reaching to the same point and nearly to the end of the maxillipede itself. Gnathopoda equal and similar, ischios as long as meros which is rounded at the end, carpus slightly longer than the meros, expanded slightly distally, propodos slightly longer than the carpus, of same width throughout, produced very slightly at its infero-distal angle, a few small setæ on inferior margin, dactylos stout, with a tooth on inner margin, not bent back upon the propodos.

First and second pereopoda short, meros produced at antero-distal angle. Three last pairs of pereopoda increasing in size posteriorly, basos of each much expanded. Coxæ very shallow, broader than deep. Fourth pleopoda with rami both longer than peduncle, acutely pointed, curving upwards, one nearly twice as long as the other, fifth similar but stouter, fifth segment of pleon very short, sixth apparently absent, sixth pleopoda represented by a single joint bifid at end, outer piece rounded, inner ending in a sharp point and bearing on inner margin four or five longish setæ. Telson short, triangular, with a seta on each side near the end. Length $\frac{1}{2}$ inch. Colour, yellow.

Hab. Lyttelton Harbour.

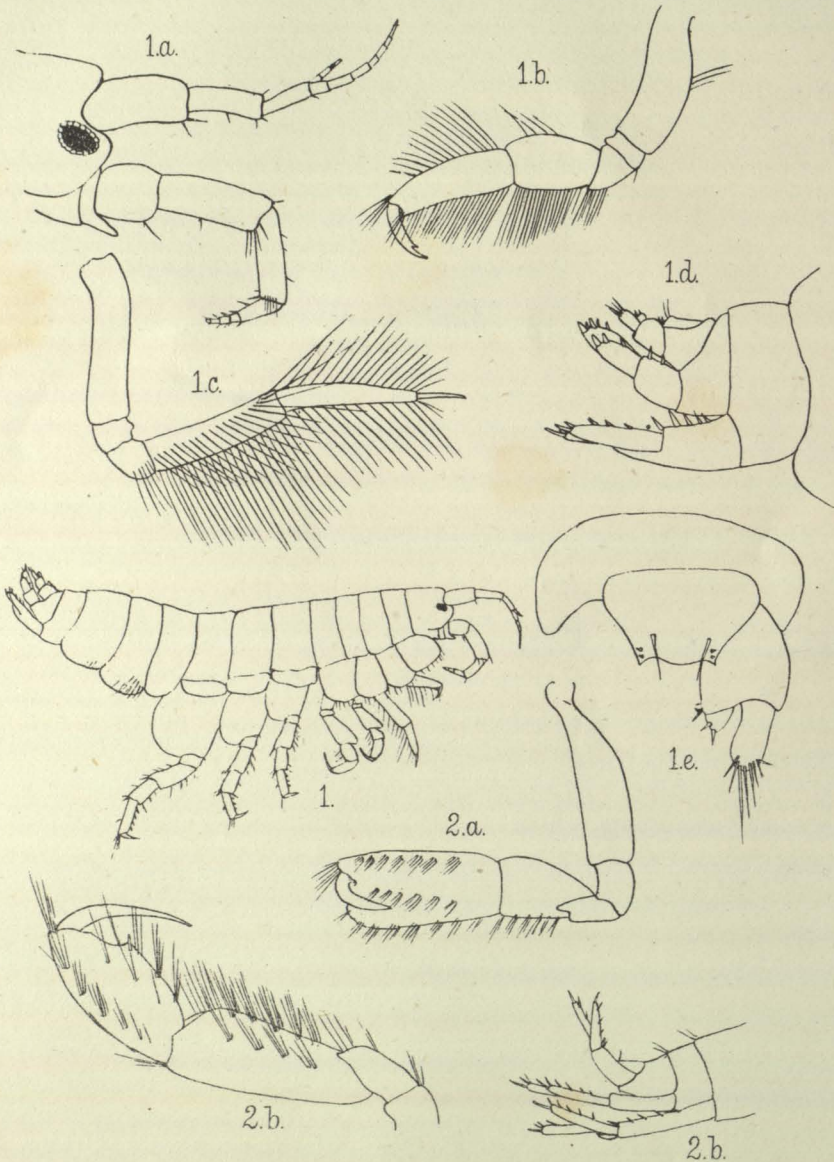
I do not know where to place this peculiar-looking little Amphipod; it may come near to *Phlias*, but the species of that genus given in the Catalogue of the Amphipoda in the British Museum are not described in sufficient detail to warrant one in forming any definite conclusion as to their relationship. I have only a very few specimens.



N. Z. CRUSTACEA.

C. Chilton, del.

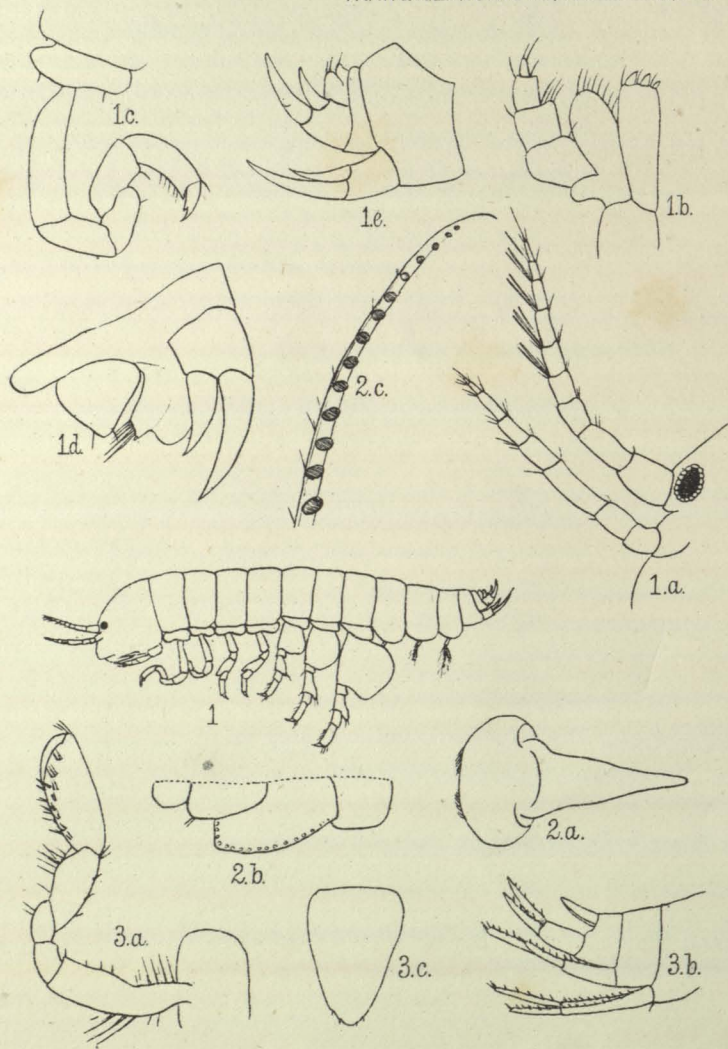




C. Chilton, del.

N. Z. CRUSTACEA.





N. Z. CRUSTACEA.

C. Chilton.



EXPLANATION OF PLATES XVII.—XXI.

PLATE XVII.

- Fig. 1. *Apeudes latus* (details). *a*, upper antenna $\times 70$; *b*, lower antenna $\times 120$; *c*, first thoracic leg $\times 70$; *d*, second thoracic leg $\times 70$; *e*, fifth thoracic leg $\times 70$; *f*, sixth thoracic leg $\times 70$; *g*, seventh thoracic leg $\times 70$; *h*, end of pleon and last pleopod $\times 47$.
- Fig. 2. *Podocerus longimanus* (details from Lyttelton specimens). *a*, first gnathopod of female $\times 70$; *b*, second gnathopod of female $\times 70$; *c*, second gnathopod of male $\times 30$; *d*, end of abdomen $\times 70$; *e*, extremity of last pleopod $\times 244$.

PLATE XVIII.

- Fig. 1. *Teraticum typicum* $\times 30$. *a*, antennæ $\times 120$; *b*, first gnathopod $\times 56$; *c*, palm of same $\times 120$; *d*, another form of first gnathopod $\times 60$; *e*, second gnathopod $\times 56$; *f*, end of pleon $\times 120$; *g*, telson $\times 120$.
- Fig. 2. *Janira longicauda* (details). *a*, head and antennæ $\times 24$; *b*, last segment of thorax, abdomen, and last pair of pleopoda $\times 15$.
- Fig. 3. *Stenetrium fractum* (details). *a*, inner antenna $\times 60$; *b*, outer antenna $\times 30$; *c*, first gnathopod $\times 35$; *d*, setæ from palm of same $\times 244$; *e*, extremity of dactylos of same $\times 244$; *f*, abdomen and last pleopod $\times 30$.

PLATE XIX.

- Fig. 1. *Paranania typica* (male) $\times 15$. *a*, antennæ $\times 24$; *b*, mandible $\times 120$; *c*, maxillipedes $\times 81$; *d*, first gnathopod of male $\times 120$; *e*, second gnathopod of male $\times 30$; *f*, second gnathopod of female $\times 70$; *g*, end of abdomen $\times 70$; *h*, telson from above $\times 120$.
- Fig. 2. *Podocerus latipes* (details). *a*, second gnathopod of mature female $\times 70$; *b*, second gnathopod of male $\times 38$; *c*, fourth pereopod $\times 38$; *d*, fifth pereopod (for comparison) $\times 38$.

PLATE XX.

- Fig. 1. *Corophium lendenfeldi* $\times 13$. *a*, antennæ $\times 30$; *b*, first gnathopod $\times 30$; *c*, second gnathopod $\times 30$; *d*, end of abdomen $\times 30$; *e*, telson and last pleopod (from above) $\times 70$.
- Fig. 2. *Paranania longimanus* (details). *a*, second gnathopod of male $\times 24$; *b*, first gnathopod of male $\times 120$; *c*, end of abdomen $\times 30$.

PLATE XXI.

- Fig. 1. *Bircenna fulva* $\times 20$. *a*, antennæ $\times 70$; *b*, maxillipede $\times 150$; *c*, first gnathopod $\times 70$; *d*, telson and last two pairs of pleopoda (from above, compressed) $\times 120$; *e*, end of pleon (side view) $\times 70$.
- Fig. 2. *Paranania dentifera* (details from a Lyttelton specimen). *a*, "epistoma" highly magnified; *b*, coxæ of first four segments of pereion $\times 30$; *c*, margin of coxa of third segment of pereion $\times 120$.
- Fig. 3. *Panoplaea translucens* (details). *a*, first gnathopod $\times 30$; *b*, end of pleon $\times 15$; *c*, telson $\times 38$.