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## CRUSTACEA.

### III.—AMPHIPODA.

By A. O. WALKER, F.L.S.

(13 Plates.)

THE collection of Amphipoda consists of fifty-three species, of which eighteen are new to science, belonging to forty-three genera, of which four are new. This may not appear a very large number considering the length of time the 'Discovery' was in the Antarctic Seas, yet as (with the exception of the pelagic Hyperiid taken on the voyage) all but some nine species were collected from holes in the ice at the Winter Quarters, and, therefore, from a very limited area, it appears to me to reflect great credit on the energy and perseverance of Mr. Hodgson under unusual climatic conditions. The long sojourn of the 'Discovery' in one spot enables us to observe the seasons at which different species visit shallow water, generally for the purpose of depositing their ova or young. In the case of the most abundant species, *Orchomenopsis rossi*, A. O. W., of which Mr. Hodgson says that "It was quite the usual thing to take ten to thirty thousand at a haul," I only observed one male with fully developed lower antennæ and no females with ova, though some measured as much as 25mm. The young had probably been born at a considerable depth, and had at once made their way to comparatively shallow water, the parents remaining in deep water. Again, the almost equally abundant *Eusirus propinquus* (G. O. Sars) only exceeded 25mm. in four specimens, three females with ova or young measuring 48mm., and one male measuring 50mm. This species resembles in this respect *Gammarellus* [*Amathilla*] *homari* (Fabr.), which I have observed to visit the north coast of Wales in the early spring, when alone the large adult females, and more rarely males, measuring nearly 1in. in length, can be taken between tide-marks; in the summer months every tidal pool swarms with young specimens.

As in the Arctic Amphipoda, the Lysianassidæ greatly preponderate in the number of genera, species, and individuals. The typical Gammaridæ, as restricted by Mr. Stebbing in establishing the families Melphidippidæ and Lilljeborgidæ, are unrepresented. In Professor G. O. Sars' Amphipoda of Norway there are nine genera with twenty-one species; and in Professor Herdman's Ceylon collection seven genera with fifteen species.

Among the Gammaridæ several species are remarkable for their wide distribution: *Ampelisca macrocephala* (Lilljeborg) is an abundant Arctic species, though found also in

temperate seas; *Eusirus propinquus* (G. O. Sars) and *Melphidippa macrura* (G. O. Sars) have only been recorded before from the more northern waters of Norway; *Leucothoë spinicarpa* (Abildgaard) appears to be ubiquitous, and I am unable to see any difference between those taken from the ice-holes of the Winter Quarters and those from our own seas and the tropical seas of Ceylon and the Maldives. This is an ascidiicolous species, and probably owes its wide distribution to the drifting of its host by currents and winds. The same may be said of the two spongiicolous species, *Polycheria antarctica* (Stebbing) and *Colomastix pusilla* (Grube), of which the former has also been taken in Ceylon, but not further north; while the latter has been found in the British Isles, the Mediterranean, and Ceylon, but is not recorded from Norway or Arctic seas. These species must have a great capacity of adaptation to extremes of heat and cold. On the other hand, *Orchomenopsis rossi* appears to be able to exist only in water just above the freezing point.\*

As species remarkable for peculiarity of structure may be mentioned the following: *Hyperiopsis australis*, of anomalous structure, and belonging to a genus so rare that previous to the capture of the single specimen in this collection only two individuals of another, but nearly allied species, *H. Voeringii* G. O. Sars, had been taken off the coast of Norway; *Thaumateson herdmanni* is the only known Amphipod which has its telson set on in a vertical plane; in the rest of the Stenothoidæ it is horizontal and generally spoon-shaped, with the concave side uppermost. *Epimeria macrodonta* is characterised by the long curved and sharp teeth on the body segments; while *Iphimedia hodgsoni* has these so densely clothed with fine spines directed backwards as to have a shaggy appearance. All the four species of *Iphimedia* in the collection are of very large size compared to the northern species, measuring from 20 to 45mm. in length. Lastly, the remarkable development of the meral joints of the last three pairs of peræopods in the adult males of *Seba antarctica*, may be mentioned.

#### CLASSIFIED LIST OF 'DISCOVERY' AMPHIPODA.

##### HYPERIIDÆ.†

FAM. VIBILIIDÆ, CLAUS.  
GENUS VIBILIA, H. Milne Edwards.

*V. propinqua*, Stebbing.

FAM. CYLLOPIDÆ, BOVALLIUS.  
GENUS CYLLOPUS, Dana.

*C. magellanicus*, Dana.

FAM. HYPERIIDÆ, DANA.  
GENUS HYPERIA, Latreille.

*H. gaudichaudi*, Milne Edwards.  
*H. macronyx*, A. O. Walker (1906).

\* 'Southern Cross' Paper, Journ. Linn. Soc., XXIX., p. 45 (1903).

† For references to and descriptions of the Hyperiidæ, see "Bovallius, Monograph of the Amphipoda Hyperiidæ" (Kongl. Svenska Vetenskaps-Akademiens Handlingar, Band 21 and 22, 1887 and 1889).

#### AMPHIPODA.

GENUS HYPEROCHE, Bovallius.

*H. littlenides*, A. O. Walker (1906).

GENUS HYPERIELLA, Bovallius.

*H. dilatata*, Stebbing.

GENUS EUTHEMISTO, Bovallius.

*E. gaudichaudi*, Guérin.

FAM. ANCHYLOMERIDÆ, BOVALLIUS.  
GENUS EUPRIMNO, Bovallius.

*E. macropa*, Guérin.

#### GAMMARIDEA.

FAM. HYPERIOPSIDÆ, BOVALLIUS.  
GENUS HYPERIOPSIS, G. O. Sars.

*H. australis*, A. O. Walker (1906).

FAM. LYSIANASSIDÆ, G. O. Sars.  
GENUS CHEIRIMEDON, Stebbing.

*C. fougneri*, A. O. Walker.  
*C. hansonii*, A. O. Walker.

GENUS WALDECKIA, Chevreux (1906).

*W. obesa*, Chevreux, Expn. Antarctique Française, p. 13.

GENUS ARISTIAS, Boeck.

*A. antarcticus*, A. O. Walker (1906).

GENUS ORCHOMENE, Boeck.

*O. goniops*, A. O. Walker (1906).

GENUS ORCHOMENELLA, G. O. Sars.

*O. pinguides*, A. O. Walker.  
*O. franklini*, A. O. Walker.  
*O. chelipes*, A. O. Walker (1906).

GENUS ORCHOMENOPSIS, G. O. Sars.

*O. rossi*, A. O. Walker.

GENUS TRYPHOSA, Boeck.

*T. murrayi*, A. O. Walker.  
*T. kergueleni*, Miers.

GENUS URISTES, Dana.

*U. gigas*, Dana.

GENUS PODOPRIONIDES, A. O. WALKER (1906).

*P. incerta*, A. O. Walker (1906).

FAM. PHOXOCEPHALIDÆ, G. O. Sars.  
GENUS HARPINIA, Boeck.

*H. obtusifrons*, Stebbing.

FAM. AMPELISCIDÆ, G. O. SARS.  
GENUS AMPELISCA, Kröyer.

*A. macrocephala*, Lilljeborg.

FAM. STEGOCEPHALIDÆ, G. O. SARS.  
GENUS EUANDANIA, Stebbing.

*E. gigantea*, Stebbing.

FAM. LEUCOTHOIDÆ, G. O. SARS.  
GENUS LEUCOTHOE, Leach.

*L. spinicarpa*, Abildgaard.

FAM. STENOTHOIDÆ, G. O. SARS.  
GENUS PROBOLOIDES, Della Valle.

*P. antarcticus*, A. O. Walker (1906).

GENUS PROBOLIELLA, A. O. Walker (1906).

*P. typica*, A. O. Walker (1906).

GENUS THAUMATELSON, A. O. Walker (1906).

*T. herdmanni*, A. O. Walker (1906).

FAM. OEDICERIDÆ, G. O. SARS.  
GENUS OEDICEROIDES, Stebbing.

*Oe. newnesi*, A. O. Walker.

*Oe. calmani*, A. O. Walker (1906).

FAM. EPIMERIIDÆ, G. O. SARS.  
GENUS EPIMERIA, Costa.

*E. inermis*, A. O. Walker.

*E. macrodonta*, A. O. Walker (1906).

GENUS EPIMERIELLA, A. O. Walker (1906).

*E. macronyx*, A. O. Walker (1906).

FAM. IPHIMEDIIDÆ, STEBBING.  
GENUS IPHIMEDIA, Rathke.

*I. pacifica*, Stebbing.

*I. echinata*, A. O. Walker (1906).

*I. longipes*, A. O. Walker (1906).

*I. hodgsoni*, A. O. Walker (1906).

FAM. EUSIRIDÆ, G. O. SARS (1895).  
GENUS EUSIRUS, Kröyer.

*E. propinquus*, G. O. Sars.

*E. microps*, A. O. Walker (1906).

FAM. CALLIOPIIDÆ, G. O. SARS (1895).  
GENUS ORADOREA, A. O. Walker.

*O. longimana*, A. O. Walker.

GENUS ATYLOIDES, Stebbing.

*A. serraticauda*, Stebbing.

GENUS STEBBINGIA, Pfeffer.

*S. gregaria*, Pfeffer.

GENUS PONGOGENEIA, Boeck.

*P. magellanica*, Stebbing.

FAM. ATYLIDÆ, G. O. SARS (1895).  
GENUS ATYLUS, Leach.

*A. walkeri*, Stebbing (1906).

FAM. DEXAMINIDÆ, STEBBING.  
GENUS POLYCHERIA, Haswell.

*P. antarctica*, Stebbing.

FAM. MELPHIDIPPIDÆ, STEBBING.  
GENUS MELPHIDIPPA, Boeck.

*M. macrura*, G. O. Sars.

FAM. LILLJEBORGIIDÆ, STEBBING.  
GENUS LILLJEBORGIA, Sp. Bate.

*L. dubia*, Haswell.

FAM. PHOTIDÆ, G. O. SARS (part).  
GENUS HAPLOCHEIRA, Haswell.

*H. barbimana*, G. M. Thomson.

GENUS EURYSTHEUS, Bate.

*E. longicornis*, A. O. Walker (1906).

FAM. SEBIDÆ, A. O. WALKER (1906).  
GENUS SEBA, Stebbing.

*Seba antarctica*, A. O. Walker (1906).

FAM. ISCHYROCERIDÆ, STEBBING.  
GENUS HEMIJASSA, n.

*H. goniamera*, A. O. Walker.

FAM. COLOMASTIGIDÆ, STEBBING.  
GENUS COLOMASTIX, Grube.

*C. pusilla*, Grube.

#### DESCRIPTION OF THE SPECIES.

UNLESS otherwise stated, the references to Professor G. O. Sars are to his "Crustacea of Norway," Vol. I., Amphipoda, 1895; those to Mr. Stebbing (Rev. T. R. R.) are to his 'Challenger' Report; and to A. O. Walker, to the Amphipoda of the 'Southern Cross' Antarctic Expedition, Journ. Linn. Soc., London, Zoology, Vol. XXIX. (1903), pp. 38-64.

The classification of the species is, as far as possible, in accordance with that of Professor G. O. Sars, in the "Amphipoda of Norway." After the completion of this memoir (on October 30, 1906) I received, through the kindness of the author, the Rev. T. R. R. Stebbing, F.R.S., a copy of his invaluable work on the Amphipoda Gammaridea, written for "Das Tierreich." As this will be indispensable to all systematic workers on the Amphipoda, and as it contains full references to all species described and published

up to May, 1906, I refer my readers to it where my references are insufficient. The nomenclature of the genera and species has been corrected to correspond with it.

I have not thought it advisable to give synonymic lists of the older species, as I have often found these to be sources of error, owing to mistaken identifications.

The following terms are used in the descriptions :—

“Pleon” = metasome, G. O. Sars ; the first three abdominal segments.

“Urus” = urosome, G. O. Sars ; the last three abdominal segments.

“Ocular lobe” = lateral angle of the head.

“Appendage” = secondary or accessory appendage of the upper antennæ.

In the peduncle of the antennæ, the “first joint” is the antepenultimate ; in the limbs it is the basipodite. The measurements are from the tips of the uropods to the base of the antennæ, when the amphipod is straightened.

#### FAM. VIBILIIDÆ, CLAUS.

##### VIBILIA PROPINQUA.

*Vibilia propinqua*, Stebbing.

From lat. 54° 01' S., long. 170° 49' E. (27 Dec., 1901) to lat. 69° S., long. 174° E. (7 Jan., 1902); many specimens. The ‘Challenger’ specimens were taken in lat. 25° 30' N., long. 130° E. It has recently been recorded by Mr. Stebbing from the Bay of Biscay.\*

The genus *Vibilia* has been partly revised by Herr Vosseler,† but his paper does not include the following species :—

- |       |    |  |
|-------|----|--|
| 1892. | 1. | <i>V. erratica</i> , Chevreux, Bull. Soc. Zool. de France, 17 <sup>me</sup> année, pp. 32–35.                                |
| 1896. | 2. | <i>V. bovallii</i> , Bonnier, Camp. du Caudan dans le Golfe de Gascogne, Ann. Université de Lyon, p. 612, Pl. XXXV., fig. 3. |
| 1900. | 3. | } Chevreux, Camp. scient. de l'Hirondelle (1885–8), Fasc. XVI.<br>Amphipodes, pp. 125–134, Pls. XV., XVI.                    |
|       | 4. |  |
|       | 5. |  |

Of these No. 1 is distinguished by the wrist of the second gnathopods being without the usual process. Nos. 3 and 4 belong to Bovallius' division, in which the lateral angles of the last urus segment are not produced backwards. No. 3 is said to be very near to *V. viatrix*, Bov., but distinguished by the presence of a rostrum (which, according to Vosseler, occurs also occasionally in *V. viatrix*), the rounded form of the epimeral plates of the first and second pleon segments, the partial coalescence of the two last urus segments, and the great length of the carpal process of the second gnathopods. No. 4 is characterised chiefly by the large size of the teeth on the palmar margin of the first gnathopod. No. 5 has the angles of the last urus segment produced in “deux petits prolongements latéraux, larges et arrondis.” In the present collection

\* Trans. Linn. Soc. Zool., 2nd Ser., Vol. X., p. 81.

† Amphipoden d. Plankton Expn. 1 Teil. Hyperidea, Mitt. Königlich. Nat. Kabinet, Stuttgart, 1901.

is a female *V. propinqua*, of 12mm., with seven or eight young, 3–5mm., which agree with *V. antarctica*, Stebbing, thus confirming Vosseler's opinion (*op. cit.*, pp. 118 and 120, note). These were taken in the steamship ‘Morning,’ lat. 67° 5' S., long. 179° 30' E.

#### FAM. CYLLOPIDÆ, BOVALLIUS.

##### CYLLOPUS MAGELLANICUS.

*Cylopus magellanicus*, Dana.

From lat. 51° 58' S., long. 170° 03' E. (26 Dec., 1901) to “past Cape Adare” (11 Jan., 1902); several specimens; length 12–14mm.

#### FAM. HYPERIIDÆ, DANA.

##### HYPERIA GAUDICHAUDI.

*Hyperia gaudichaudi*, M. Edw.

W.Q.,\* 25 Dec., 1902, 6 fm., one young; W.Q., 6 and 7 May, 1903, one female, 25mm., one male almost as large, and an immature male, 16mm.; W.Q., 16 June, 1903, 15 fm., one female, 10mm.; W.Q., 5 May, 1904, 10 fm., one immature female and two young.

##### HYPERIA MACRONYX.†

(Plate 1, fig. 1.)

*Hyperia macronyx*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 452.

S.E. of Coulman I., 22 Feb., 1904, six specimens, immature, length of largest 10mm. W.Q., 16 April, 1903, 5 fm., one specimen. W.Q., 18 May, 1903, 10fm.; W.Q., 1 Aug., 1903, 10 fm., eight specimens.

*Head* shorter than the first two segments. *Eyes* occupying the entire head. *Segments all free*; the three pleon-segments with a tooth on the hind epimeral angle. *Carpal process of the first gnathopods reaching the middle of the hind margin of the hand, which is ovate, less than twice as long as wide, the hind margin convex and finely serrate.* Carpal process of the second pair reaching considerably beyond the middle of the hand; the limb otherwise as in the first; branchiæ of first pair oblong, wider below; of second pair, pyriform.

*First and second peræopods* longer than the gnathopods: first joint a little wider than the fourth, which is twice as wide and about two-thirds as long as the fifth, with five long equidistant spines on the hind margin; the fourth and fifth joints have their hind margins finely serrate. *Dactyli* slightly curved, slender, about half as long as the fifth joint.

*Third peræopods*: First joint subequal to the fifth, about twice as long as wide,

\* W.Q. = Winter Quarters.

† From the long dactyli of the peræopods.

widening near the middle; fifth joint half as long again and half as wide as the fourth, its front margin finely serrate. Dactyli as in preceding pairs.

*Fourth and fifth peræopods*: First joint narrower than in the third pair, and the front margin of the fifth smooth. *The fourth pair are subequal to the third and about one-fifth longer than the fifth.* Dactyli as in preceding pairs.

*First uropods* reaching to the end of the third, second a little shorter.

*Third uropods*: Peduncles broad, one-third longer than the rami, which are subequal, wide at the base, and acutely pointed; the outer edge of the outer ramus smooth the rest unequally serrate.

*Telson* equilaterally triangular, barely reaching the middle of the peduncle of the third uropods.

This species in the length of the peræopods and the relative proportions of the last three pairs approaches *Parathemisto*, with which it also agrees in the mouth-organs, but the widely expanded and produced wrist of the first gnathopods does not agree with either G. O. Sars' or Bovallius's\* definition of that genus.

Length 10mm.

#### HYPEROCHE LUETKENIDES.

(Plate 1, fig. 2.)

*Hyperoche lütkenides*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 453.

Lat. 57° 25' 30" S., long. 151° 43' E.; one male, length 12 mm.

Like *Hyperoche lütkeni*, Bovallius,† except in the following respects:—In the second pair of peræopods (fourth pair of Bovallius) the hind margins of the fourth and fifth joints are *not serrate*. In the third pair the fifth joint is *curved*.

The telson is *triangular, with rounded apex, rather longer than the width at the base, and reaching to the middle of the peduncles of the third uropods.*

The mandibular palp has the third joint almost as long as the first and second united as figured by Bovallius for *H. lütkeni*. In this respect both species differ from G. O. Sars' figure of *H. krøyeri*, Bov. [*H. tauriformis* (Sp. Bate and Westwood‡)], in which the third joint is shorter than the second.§

In the first pair of peræopods the hind margin of the fourth joint is prolonged in the form of a strong serrate tooth; in the second pair the tooth is smaller and not serrate, but the curved portion of the end of the joint between the tooth and the base of the fifth joint is so.

#### HYPERIELLA DILATATA.

*Hyperiella dilatata*, Stebbing.

Young specimens, abundant at W.Q. from Nov. to July, length 8–9mm.

\* Bovallius, Amphipoda Hyperiidea, Part 2 (1889), p. 129.

† Bovallius, Amphipoda Hyperiidea, Part 2 (1889), p. 97, Pl. VII.

‡ British Sessile-eyed Crustacea, Vol. 2, App., p. 519.

§ Mr. W. M. Tattersall, who has kindly examined specimens of *H. tauriformis* from the W. of Ireland for me, informs me that the palp in the male resembles Bovallius's figure of *H. lütkeni*, while that of the female agrees with Sars' figure.

#### EUTHEMISTO GAUDICHAUDI.

*Euthemisto gaudichaudi*, Guérin.

Abundant from lat. 54° 01' S., long. 170° 49' E. to lat. 63° 04' S., long. 175° 43' E., mostly young—a female with ova measured 15mm.

#### FAM. ANCHYLOMERIDÆ, BOVALLIUS.

##### EUPRIMNO MACROPA.

*Euprimno macropa*, Guérin.

One specimen, length 16mm., 26 Feb., 1904.

#### FAM. HYPERIOPSISIDÆ, BOVALLIUS.

##### HYPERIOPSIS AUSTRALIS. (Pl. 4, fig. 3.)

*Hyperiopsis australis*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 454.

W.Q., 16 June, 1903, 15 fm.; one.

Differs from *H. Vöringii*, G. O. Sars (Norweg. N. Atlantic Expn., p. 231), in the following points:—

The lower margin of the head is *oblique*.

The first segment of the urosome has a deep dorsal depression; the second segment is the longest of the three.

The third joint of the first and second peræopods is not quite twice as long as the next two united, and is about the same width, *i.e.*, the margins are parallel, the distal three-fourths of its length.

In the last peræopods the jointing is indistinct, the very long third (or fourth) joint is finely serrate and spinulose.

*The first and second uropods are biramous.* In his definition of the genus Sars says that they are "simple, two-jointed," but as the rami cling closely together this might easily be an oversight.

The single specimen was not dissected (nor, probably, was Sars'), but the maxillipeds are evidently of the Gammarid type. Bovallius (Amphipoda Synopidea) has placed the genus in his tribe of Synopidea under the family Hyperiopsidæ.

#### FAM. LYSIANASSIDÆ, G. O. SARS.

##### CHEIRIMEDON FOUIGNERI.

*Cheirimedon fouigneri*, A. O. Walker.

W.Q., 8 Aug., 1902; No. 2 D., 4 fm.; one. W.Q., 1 Dec., 1902; Hut Point (123), one young.

##### CHEIRIMEDON HANSONI.

*Cheirimedon hansonii*, A. O. Walker.

Cape Adare, 24 Feb., 1904; Laminaria roots, 13–20 fm.; one, 4 mm. long.

## WALDECKIA OBESA. (Pl. 2, fig. 4.)

*Waldeckia obesa*, Chevreux. Expn. Antarctique Française (1906), p. 13.

*Charcotia obesa*, Chevreux, Bull. Soc. Zool. de France, Vol. XXX. (1906), p. 163.

W.Q., 17 May, 1902, two; 4 Oct., 1902, off Castle Rock (107), 3; 27 Aug., 1902, two (one adult male); 5 March, 1903 (159), one large, one young; 10 March, 1903 (160), one large.

Female, length 18 mm.

*Body* tumid: First four side plates at least twice as deep as the segments, the fourth wider at the lower margin than deep, and greatly extended behind to the hind margin of the side plate of the third peræopod; this is large, convex, and subquadrate, widest below, angles rounded. The posterior angle of the first pleon segment is rounded; that of the second acute; the third has the hind margin elevated dorsally in a blunt tooth, the posterior angle upturned and sub-acute, the hind margin of the epimere hollowed out just above it, and thence convex. The first segment of the urus is carinate, the hind margin dorsally elevated in a recurved point.

*Head* scarcely produced in front, a little longer than the first segment, speckled with red; ocular lobe produced to an acute point reaching to the end of the first joint of the upper antennæ. *Eyes* large, dark, elongate-reniform.

*Upper antennæ* a little longer than the head, reaching the middle of the flagellum of the lower; first joint as long as the flagellum, second very short, third almost covered by the second; flagellum twelve-jointed, the first joint longer than the next two, setose; appendage seven-jointed, reaching beyond the middle of the flagellum.

*Lower antennæ*: The first joint the shortest, the second the longest, curved and widening distally, the second and third together subequal to the twelve-jointed flagellum. In the male this reaches to the urus.

*Mandibles*: Palp robust; first joint about half as long as the second, which is rather longer than the third, the anterior margin of which is convex for one-third its length, then straight and fringed with setæ.

*First maxillæ* as in *Socarnes vahlii* (Krøyer), except the inner plate, which has four or five unequal plumose setæ.

*Epistome* with both lobes rounded.

*Maxillipeds* with the inner plates squarely truncate, with rather long setæ on the ends and inner margins.

*First gnathopods*: Side plates more than twice as deep as wide, oblong, with the front margin obtusely angulated near the insertion of the first joint, angles rounded. First joint wide, and as long as the remainder; wrist shorter than the hand and wider than its base. The hand is simple (not subchelate), tapering to the base of the strong curved dactylus, and setose on the hind and distal half of the front margins.

*Second gnathopods*: First joint fully as long as the remaining joints together; wrist longer and rather narrower than the hand, the hind margin of which is a little produced; dactylus distinct.

*First peræopods*: Side plates narrow, widening distally, curved. Coxopodite distinct, about one-third the length of the side plate. First joint subequal to the next two, widening distally; third joint rather wider at the distal end than the first at the same point; second, third, and fourth setose, fifth spinous on the hind margin.

*Second peræopods*: Like the first, except the side plates (see back).

*Third peræopods*: Side plates as deep as the leg is long, widening below, the hind margin angulate below, the front rounded. First joint wider than long, with the hind margin excavate and setose above and obscurely crenate below; hind margin of the third joint produced to the middle of the next and terminating in a spinous point; the front margin of all the joints except the first is armed with short spines.

*Fourth peræopods*: First joint subovate, very obscurely crenate behind.

*Fifth peræopods*: First joint much wider than that of the fourth pair, the hind margin distinctly crenate in the middle.

*First and second uropods*: The peduncles as long as the outer rami, the inner rather shorter.

*Third uropods*: Rami rather longer than the peduncles, the outer rather the longer, with spines on the outer and long setæ on the inner margin.

*Telson* cleft nearly to its base, reaching to the middle of the rami of the third uropods.

## ARISTIAS ANTARCTICUS. (Pl. 3, fig. 5.)

*Aristias antarcticus*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 454.

W.Q., 28 Feb., 1902, Millurdo Bay, 20 fm., one, length 15 mm.; D., 5 June, 1902, one smaller.

*Body* moderately compressed, without carinæ or teeth.

*Head* shorter than the first segment; ocular lobe produced to the end of the first joint of the upper antennæ, rounded at the apex. *Eyes* large, dark, expanded below.

*Body-segments* increasing in length backwards. First four side-plates about as deep as the segments, the first concealed by the second; the fourth moderately produced behind; the fifth much wider than deep. Posterior angle of the third pleon segment produced backwards, acute. First urus segment depressed in front; second and third almost concealed by the first, and perhaps coalesced.

Upper and lower antennæ subequal, scarcely reaching the end of the third segment.

*Upper antennæ*: First joint rather longer than the second and third, the lower margin projecting distally; second twice as long as the third, lower margin projecting. Flagellum ten-jointed, the first joint setose, as long as the next three joints, which are distally setose. Appendage five-jointed, the first the longest, the rest subequal.

*Lower antennæ*: First joint twice as wide as long; second and third subequal, about three times as long as the first; flagellum ten-jointed.

*Mandibles* as in *A. neglectus*, Hansen,\* but the projection from the molar tubercle, which appears to be membranaceous, is less prominent. The third joint of the palp is straight.

*First and second maxillæ* as in *A. neglectus*.

*Maxillipeds* as in *A. neglectus*.

*First gnathopods*: Side plates small, rather wider than deep. First joint as long as all the rest, four times as long as wide. Wrist longer and wider than the hand, unequally setose on the hind margin. Hand not subchelate, narrowing distally, the front margin convex, the hind slightly concave, spinulose along its entire length, with four spines at unequal intervals.

*Second gnathopods*: Side plates semi-oval, extending to about one-third of the first joint. First joint subequal to the next three united, widening to about one-fourth of its length from the distal end, then narrowing. Wrist longer and wider than the hand, the hind margin densely setose; hand with subparallel margins, both setose. Dactylus well developed.

*First and second peræopods*: Side plates rounded below, those of the second pair obtusely angulated about the middle of the hind margin. The fourth joint is about half as long and twice as wide at the distal end as the fifth; the hind margin of the latter terminates in an acute angle.

The remaining *peræopods* are subequal in length and structure, robust, the third joint expanded, the fourth with both margins produced downwards; the hind margins of the first joints in the third and fourth pairs are smooth, except the lower part, which is obscurely crenate; in the fifth pair the whole margin is serrate.

*First and second uropods*: Peduncles subequal to the outer rami, inner rather longer; all parts sparsely spinous. The first pair extend beyond the second and these beyond the third.

*Third uropods*: Inner rami lanceolate, as long as the peduncle, and reaching to the end of the first joint of the outer; margins finely spinulose.

*Telson* about as wide at the base as long, cleft about two-thirds of its length, divisions dehiscent, rounded.

Both specimens had the third and fourth peræopods turned up over the back.

#### ORCHOMENE GONIOPS.† (Plate 3, fig. 6.)

*Orchomene goniops*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 455.

W.Q., 21 Aug., 1903; two specimens, probably immature; length 5 mm.

*Body-segments* increasing in length backwards. *First four side-plates* deeper than the segments, narrow. *Third pleon-segment* with a small postero-dorsal carina and hind and lower margins straight, the former crenate, the posterior angle rather less than 90°.

\* Vidensk. Meddel. 1887 (1888), p. 67.

† γωνία, angle; ὄψ, face.

*Head* shorter than the first segment; *ocular lobe* broadly triangular, produced beyond the end of the peduncle of the upper antennæ. *Eye* moderately large, oval, dark.

*Upper antennæ*: First joint three times as long as the next two united, naked. Flagellum 13-14-jointed, the first joint as long as the next three, sparsely setose on the upper side. Appendage 5-jointed, the first joint the longest, the third the shortest.

*Lower antennæ* rather longer than the upper; peduncle reaching the end of the third joint of the flagellum of the upper; first joint the longest, second the shortest. *First gnathopods*: Side plates narrowed and rounded below; wrist two-thirds of the length of the hand, which is about twice as long as wide, with parallel margins, setose; palm rather oblique, convex, crenulate, defined by a spine. *Second gnathopods* as in *Orchomene humilis* (Costa) [= *O. batei*, Sars]. *Third peræopods*: Side-plates wider than the depth in front, with the usual posterior lobe; first joint about half as large as the side-plate, deeper than wide; hind margin convex, serrate, produced down to the middle of the third joint; this is much produced behind and downwards. *The fifth peræopods* have the first joint nearly twice as deep as wide, and longer than the rest of the joints, including the dactylus, together, otherwise like the third pair; the dactyli of all the peræopods are very short.

*The first uropods* are subequal in extent to the second, exceeding the third; the peduncle is one-fourth longer than the subequal rami, all the parts very spinous on the upper margins. *Second pair* less spinous. Peduncle in the *third pair* rather longer than the outer ramus: inner ramus not nearly reaching the end of the first joint of the outer, its inner margin minutely serrate. *Telson* entire, deeply concave above, the end truncate with two setules: it extends beyond the end of the inner rami of the third uropods.

The difference between the telson of this species and that of the female *O. humilis* is only one of degree, as the truncate margin is slightly concave.

#### ORCHOMENELLA PINGUIDES.

*Orchomenella pinguides*, A. O. Walker.

W.Q., March to October, 1902; ten, 14½ fm.; length 10 mm.

#### O. FRANKLINI.

*O. franklini*, A. O. Walker.

W.Q., 15 June, 1902; D net, nine, various sizes, length of largest 6.5 mm.

#### O. CHELIPES. (Pl. 4, fig. 7.)

*O. chelipes*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 456.

W.Q., 28 Feb., 1902; eight, 10 fm.

*Body* moderately compressed; first and second segments subequal to the head and each other, remaining mesosome segments rather longer and subequal. First four side-

plates but little deeper than the segments. Hind margin of the epimere of the third pleon segment forming a rounded right angle with the straight lower margin. First urus segment as long as the remaining two, carinate; second shorter than third.

*Head*: The ocular lobe reaching the end of the first joint of the lower antennæ, rounded at its apex. *Eyes* large, wide-oval, dark red in spirit.

*Upper antennæ*: First joint about three times as long as the next two, naked; third shorter than the second. Flagellum in the female 11-jointed, the first as long as the next two, with a few long setæ below. Appendage 4-jointed, the first twice as long as the second, which is subequal to the third, the fourth minute, the whole very sparsely setose.

*Lower antennæ* slightly longer than the upper; flagellum 12-jointed, subequal to the peduncle.

Mouth organs as in *O. nana* (Kr.). The mandibular palp strong, with the second joint twice as long as the third.

*First gnathopods*: Side plates widening downwards, rounded in front, straight behind. First joint almost as long as the rest united; front margin of the wrist rather shorter than that of the hand; hand rather narrower than the wrist, slightly curved, the hind margin produced distally so as to form an imperfect chela with the dactylus; the oblique palm is finely pectinate and defined by two spines; the hind margins of the third, fourth, and fifth joints are densely fringed with short setæ.

*Second gnathopods* rather stout; side plates oblong, widening below. First joint about twice as long as the second, which is longer than the third; this has the hind margin densely pilose; wrist tumid, much longer and wider than the hand, the hind margin convex, scabrous; front margin straight, densely setose; hand densely setose, with a few strong curved and serrate spines over the insertion of the dactylus.

*Second peræopods*: Side plates moderately produced and angulate behind.

*Third, fourth, and fifth peræopods* of similar structure, increasing in size successively; the side plates of the third pair are wider than deep, and much larger than the first joints. The first joints in the three pairs are wide and obscurely crenate behind.

*First uropods* extending a little beyond the second, and these beyond the third; inner ramus of the third not reaching the last joint of the outer.

*Telson* barely reaching the end of the peduncle of the third uropods, deeply notched.

Recognisable by the peculiar form of the first gnathopods.

#### ORCHOMENOPSIS ROSSI.

*Orchomenopsis rossi*, A. O. Walker.

This species was taken in enormous quantity throughout the year, and is doubtless the one to which Mr. Hodgson refers in his "Preliminary Report," p. 398, as being "commonly taken 10,000 to 30,000 at a haul." It is noteworthy that it has not been

taken either by the 'Discovery' or 'Southern Cross' north of lat. 77° 50'. Male specimens with the lower antennæ developed in the manner supposed to indicate sexual maturity are very scarce, yet in a gathering from Castle Rock Seal Hole, W.Q., 14½ fm. (no date), there are a number which, though only 15 mm. long, have the flagella with 36 joints well furnished with calceoli; and from Hole 6, W.Q., 23 Feb., 1903, 130 fm. (153), there is a probably adult male of 25 mm., which appears to be the maximum size. There is some variability in the form of the third pleon segment, the hinder angle of which is less rounded in some specimens, especially the largest, than in others. Mr. Hodgson writes as follows:—

"This species was not regarded with favour when we were in Winter Quarters, and it is a matter of considerable regret that its seasonal development was not looked for; its migration it was impossible to follow. It occurred first in considerable numbers on the 17th May, 1902, when the winter was well advanced. On that occasion the trap was hauled from 56 fathoms about 4.0 p.m. and then it was so dark that I was obliged to return to the ship for a lantern. The trap contained about 10,000 of these amphipods. A thousand individuals were counted, the volume ascertained, and this formed the basis for the present estimate of number and for future occasions. Four fish were in the trap, one of them had been reduced to an absolute skeleton; on another the amphipods hung by their 'teeth' in a compact mass, completely concealing their victim. Its skin had disappeared, and I judged also about a millimetre of flesh, but the animal was still alive; the other two fish were presumably waiting their turn.

"From that date until 25th October, 1902, this species was taken generally in numbers varying between 10,000 and 30,000 at a haul, and this at all depths to 125 fm., which was our practical limit for ordinary work. Two or three times a trap was used in 173 fm., in July and August 1902, but not many amphipods were obtained—100 or so at a time. These animals swarmed over the bait to such an extent as to make it obvious they kept other animals away; otherwise the number of other animals captured was unaccountably small. Under these circumstances the presence of this amphipod was regarded as a nuisance, and as a large stock had been preserved, further captures were generally left on the ice at the mouth of the hole. My experience at the holes soon made it perfectly clear that there was no small mortality among the seals through their not being able to get to a breathing-hole in time during their wanderings, and thus affording a substantial food supply for predaceous crustacea. I came to the conclusion that these amphipods travel about the sea bottom in vast hordes in search of food, a conclusion further accentuated by the fact that from 25th October to 27th December, 1902, they completely disappeared from all the traps; stationary traps were not used during the same period of 1903. From October to January is the seals' breeding season, and at this time they remain, for the most part, close inshore. The place nearest the ship where they congregated most was among the pressure ridges at Pram Point. These ridges are formed by the 'Barrier' ice intruding into the Sound between White Island and Cape Mackay and pressing against the land at Pram Point. As the ice did

not go out during the season of 1902-3, the principal ridge became more than a mile long, the ice being pressed up to a height of twenty or thirty feet at the point of greatest pressure. Considering that the mortality among the seals would be much increased during the breeding season, it occurred to me that the amphipods might have migrated close inshore, more especially to Pram Point, as an area where a super-abundant supply of food might be obtained. I went to investigate this matter, but the seals had made their holes among the irregular blocks of ice piled up in a confused manner. I found that the hole from the surface usually led on to a platform some two or three feet below; the hole which completed the passage through the ice had no relation to the one above, and was generally at some distance from it, and quite invisible from my point of view. As it turned out, I could not get a trap down any of the holes, so that the presence of these amphipods on the breeding-grounds of the seals is uncertain, and no explanation of their desertion of the traps in deeper water is forthcoming."

## TRYPHOSA MURRAYI.

*Tryphosa murrayi*, A. O. Walker.

*T. adareii*, A. O. Walker.

This is another abundant species, though not nearly so much so as *O. rossi*. The largest female measured 30 mm. It appears to occur from Cape Adare to lat. 77° 50', and was taken at the Winter Quarters throughout the year.

The examination of a large number of specimens has convinced me that the characters relied upon for the separation of *T. murrayi* and *T. adareii*, viz., the form of the hind margin of the third pleon segment and the carina on the first urus segment are very variable, and I have therefore united them.

## TRYPHOSA KERGUENI.

*Lysianassa kergueleni*, Miers.

*Hippomedon kergueleni* (Miers), Stebbing.

*Hoplonyx kergueleni* (Miers), A. O. Walker.

Cape Wadsworth, 8-15 fm., 15 Jan., 1902, one, small; W.Q., 15 June, 1902, one, length 13 mm.; W.Q., 20 Sept., 1902, Castle Rock, 14½ fm., three.

## URISTES GIGAS.

*Uristes gigas*, Dana.

*Tryphosa antennipotens*, Stebbing.

Past Cape Adare, 11 Jan., 1902, one specimen.

## PODOPRIONIDES.

*Podoprionides*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 457.

Resembles *Podoprionella*, G. O. Sars, in the chelate first gnathopods and the deeply serrate first joints of the last three peræopods, but differs in the less compact

body, the structure of the mandibular palp and of the outer ramus of the third uropods. From *Podoprion*, Chevreux,\* it differs in having the first joint of the fourth and fifth peræopods serrate like the third.

## PODOPRIONIDES INCERTA. (Pl. 5, fig. 8.)

*Podoprionides incerta*, A. O. Walker, Ann. and Mag. Nat. Hist. XVII. (1906), p. 457.

W.Q., 29 Aug., 1902, Hole 12, D net, one specimen; length 2 mm.

*Body not very compact*; the anterior side plates small.

*Upper antennæ reaching a little beyond the peduncle of the lower*; appendage 2-jointed, the first twice as long as the second, which has a tuft of very long setæ at the extremity.

*Lower antennæ*: Peduncle stout, margins of third joint produced. *Mandibular palp with the third joint more than half as long as the second, narrow, pectinate.*

*First gnathopods*: Side plates less than half the length of the first joint, rounded in front, straight behind, with a notch and a spine above the angle. First joint rather longer than the remaining five, widening distally; second and third joints subequal; wrist subequal to the hand; *the hind margin of the hand is short, convex and prolonged in a spine-like process, which is slightly curved inwards to meet the point of the curved dactylus, forming a completely chelate joint; palm very oblique, smooth.*

*Second gnathopods*: Side plates oblong, about twice as deep as wide, angles rounded. First joint hardly as long as the next three; second longer and wider than the third; wrist about twice as long as the hand, which is oblong, setose on both margins, palm transverse. The last three pairs of *peræopods* have the first joints broadly ovate, the hind margins deeply serrate, as in *Podoprion*, Chevreux, and *Podoprionella*, Sars.

*Uropods*: First and second subequal in extent and scarcely exceeding the third pair; *the outer ramus in this pair has two subequal joints* and is but little longer than the inner. The telson could not be made out.

The single specimen was not dissected; the mouth-parts therefore could not be described.

## FAM. PHOXOCEPHALIDÆ, G. O. SARS.

## HARPINIA OBTUSIFRONS.

*Harpinia obtusifrons*, Stebbing.

W.Q., Oct.-Nov., 1902, Hut Point; three, length of largest 6 mm. W.Q., 15 June, 1902, D net, twelve young.

\* Mémoires de la Société Zool. de France, Tome IV. (1891), p. 6, Pl. I.

## FAM. AMPELISCIDÆ, G. O. SARS.

## AMPELISCA MACROCEPHALA.

*Ampelisca macrocephala*, Lilljeborg.

Coulman Island, 13 Jan., 1902, 100 fm.; two males, length 18 mm.

In these specimens the upper and lower antennæ appear to be subequal, and reach to the urus. They (especially the upper) are therefore considerably longer than in the northern form as figured by G. O. Sars. The lower margin of the first joint of the fifth pair of peræopods is more truncate than in the female specimen in the 'Southern Cross' collection.

## FAM. STEGOCEPHALIDÆ, G. O. SARS.

## EUANDANIA GIGANTEA ?

*Euandania gigantea*? Stebbing.

W.Q., 20 Aug., 1903, Hole 12, D net; one specimen, length 9 mm.

Probably a young specimen; not dissected.

## FAM. LEUCOTHOIDÆ, G. O. SARS.

## LEUCOTHOË SPINICARPA.

*Leucothoë spinicarpa*, Abildgaard.

W.Q., 13 Sept., 1902, two; 5 Nov., 1902, one; 11 Nov., 1902, one; 28 Nov., 1902, one; 8 Sept., 1903, two; 30 Sept., 1903, one.

I am unable to see any difference between these specimens and the European and Ceylon forms. The largest measured 15 mm.

## FAM. STENOTHOIDÆ, G. O. SARS.

## PROBOLOIDES ANTARCTICUS. (Pl. 5, fig. 9.)

*Proboloides\* antarcticus*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 13.

W.Q., from Feb. to Dec., 1902, sponges, Hut Point, etc.

*Female*: Epimeres of the third pleon segment with straight hind and lower margins, forming a rounded subrectangular posterior angle. Ocular lobe not very prominent, subrectangular. *Eye* round, colourless in spirit.

\* There can be little doubt that Dr. Della Valle is right in holding that *Probolium polyprion*, Costa, was a true *Stenothoë*. The very nearly allied *Stenothoë gallensis*, A. O. Walker, certainly is so, the mandibles having no palp and the lobes of the maxillipeds being separate. In *Proboloides antarcticus* the expansion inwards and distal prolongation of the joint which corresponds to the outer lobe of the maxilliped are sufficiently developed to form a rudimentary lobe. A similar form is shown by Stebbing in his figures of *Metopa* on Pls. XL. to XLVI., and as all these species have mandibular palps, and the inner or basal lobes of the maxillipeds distinct, they should now be included in *Proboloides*, Della Valle, with the exception of *M. ovata*, which, from its two-jointed mandibular palp, might be referred to *Proboliella* but for the narrow first joints of the peræopods.

*Antennæ* subequal, as in *P. (Probolium) gregarium* (G. O. Sars); no appendage.

*Mouth organs* as in *P. gregarium*.

*Maxillipeds* with the inner lobes very small and separate, the outer (masticatory) represented by a dilation and distal prolongation of the inner margin of the joint.

*First gnathopods*: Wrist subequal in length to, but wider than, the hand; the hind margins of both convex and setose, otherwise as in *P. gregarium*.

*Second gnathopods*: Side-plates with the front and lower margins forming a continuous curve, hind margins almost straight. First joint as long as the next four; third joint rather acutely produced behind; wrist with a rounded process; margins of the hand subparallel; hind margin subequal to the palm, which is defined by a small tooth and two spines.

*First and second peræopods* resembling those of *P. gregarium*, the second being stouter and more spinous than the first, but the side-plates are more rounded in front.

*Third peræopods*: The posterior lobe of the side-plate is suboval and considerably produced downwards. The concave hind margin of the narrow first joint is prolonged almost to the end of the second, terminating in a divided lobe.

Remaining *peræopods* as in *P. gregarium*.

*The second uropods* are subequal in extent to the third, the peduncle subequal to the inner ramus, which is almost twice as long as the outer; this has two spines, the inner and peduncle several.

*Third uropods*: The peduncle is shorter than the ramus and has five spines; the first joint of the ramus is subequal to the second and has three spines.

The *telson* reaches the end of the peduncle of the third uropods and has three spines on each margin.

Length, 3.5 mm.

The male is considerably larger than the female. Upper antennæ reaching to the middle of the flagellum of the lower. Peduncle of the lower twice as wide as that of the upper, the second joint as long as the flagellum, which is 12-jointed, the first joint as long as the next three.

*First gnathopods*: Wrist considerably longer and but slightly wider than the hand.

*Second gnathopods*: Side-plates rounded in front, hind margin concave, the posterior part of the lower margin irregularly serrate. First joint rather longer than the next three; second with a prominence on the front; wrist produced behind. Hand as long as the three preceding joints, subtriangular, hind margin shorter than the front and ending in a sharp tooth; palm deeply excavate, with a central tooth and a denticulate ridge near the base of the dactylus.

In a younger male the palm is less deeply excavate, the central tooth wider, blunter, and denticulate, and the ridge as wide as the excavation.

Associated with this species were two or three females characterized by the concave lower margins of the side-plates of the second peræopods.

There are other slight differences, such as the greater relative width of the first joint of the upper antennæ; more slender gnathopods; the third joints of the fourth and fifth peræopods more acutely produced, etc. It is possible that it might prove to be a distinct species if the males were known.

## PROBOLIELLA.

*Proboliella*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 13.

*Mandibles* with a two-jointed palp.

*First maxillæ* with a two-jointed palp.

*Maxillipeds* with the inner plates divided to the base; the outer more or less developed.

*Second peræopods* not stronger than the first; *third peræopods* with a narrow first joint; *fourth* and *fifth* with an expanded first joint.

## P. TYPICA. (Pl. 6, fig. 10.)

*P. typica*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906) p. 14.

W.Q., Hut Point, 11 Nov., 1902, one; 13 Oct., 1902, one; 18 Feb., 1904, one. All females.

*Female*—

*Body* tumid. Posterior angle of the third pleon segment produced and rounded.

*Eye* small, round, colourless in spirit.

*Upper antennæ* without an appendage, reaching to the middle of the flagellum of the lower; the third joint half as long as the second; flagellum seven-jointed, as long as the two last joints of the peduncle.

*Mandibles* bent downwards from the base of the palp and narrowed towards the coarsely toothed cutting edge; the palp more than half the length of the mandible; the first joint less than one-fourth as long as the second.

*Maxillipeds*: Inner plates divided; outer distinct, though narrow; first and second joints of the palp subequal, the third longer.

*First gnathopods*: Wrist shorter and narrower than the hand; palm very oblique, about as long as the rest of the hind margin, spinulose, and defined by two or three long spines.

*Second gnathopods*: Side-plates oblong, convex in front, straight behind, the angles rounded with a small tooth. First joint strong, as long and more than half as wide as the hand, fringed with setæ before and behind; third joint produced behind to a very acute point, which extends a little beyond the carpal process. Hand subelliptical, the palm longer than the rest of the hind margin, convex, spinulose, and defined by a strong tooth, beyond which is a smaller tooth and a group of spines.

*First peræopods*: Side-plates oblong, angles rounded, margins parallel; first

joint curved, oblong, almost as long and three times as wide as the next three; third and fifth subequal, fourth rather shorter; dactylus slender, two-thirds of the length of the preceding joint.

*Second peræopods*: Side-plates subtriangular, front margin straight, lower and hind margins convex. The legs as in the first pair.

*Third peræopods*: First joint narrow, oblong, straight.

*Fourth and fifth peræopods* alike; first joint oval, deeper than wide, hind margin smooth.

The *uropods* are subequal in extent and sparsely spinous; the peduncle of the third pair is subequal to the first joint of the ramus, which is also subequal to the second joint.

*Telson* not reaching the end of the peduncle of the third uropods, narrowing rather abruptly to a point with two spines on each side before the middle and one beyond.

Length, 3 mm.

## THAUMATELSON.\*

*Thaumateson*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 15.

General characters of *Metopa*.

*Palp of the first maxillæ* two-jointed.

*First gnathopods* distinctly subchelate.

*Telson* large, entire, oval and set in a vertical plane on its longer edge.

## T. HERDMANI. (Pl. 7, fig. 11.)

*herdmani*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 15.

W.Q., Oct., 1902; 8-net, Hut Point; from Sponges. One spec. W.Q., 13 Feb., 1904; D-net, Hut Point; one.

*Body* as in *Metopa*: the fourth side-plate unusually large, covering the bases of the last three pairs of peræopods. The last two pleon segments with a postero-dorsal tooth. Segments of the urus coalesced.

*Antennæ*: subequal, longer than the head.

*Upper antennæ*: First joint longer than the second, which is rather shorter than the third, and has the upper margin produced; there is no appendage. Flagellum shorter than the peduncle.

*Lower antennæ*: Peduncle subequal to that of the upper, second and third joints subequal and together longer than the flagellum.

*Maxillipeds*: Inner lobes reaching half-way up the narrow outer lobes, apparently divided rather further down than in *Metopa*; outer lobes, as in *Proboloides*, a mere slight expansion of the inner margin of the basal joint, which is produced distally half the length of the next joint, which, as well as the remaining joints of the palp, is short

[*Rectius* Thaumateson.—ED.]

and wide; the third joint expanded distally; dactylus wide at the base, the inner margin pectinate.

*First gnathopods*: First joint straight, subequal to the next four; second shorter than the third, which narrows distally to a rounded point; wrist triangular, about half as long as the hand, which is subquadrate, with transverse, rather convex, palm as long as the hind margin and defined by a group of spines.

*Second gnathopods*: First joint straight, widening distally, almost as long as the next four; third joint oblong, ending behind in a blunted acute angle; wrist produced behind a little beyond the base of the hand; this is subtriangular, nearly twice as long as the width at the palm, which is the widest part; front margin straight; distal half of hind margin slightly concave, ending in a tooth behind which is a short and a long spine defining the transverse, slightly convex and spinulose palm.

*First and second peræopods*: Similar; all the joints narrow. Side-plates of the first pair oblong, about twice as deep as wide, the angles rounded; those of the second broadly subtriangular, more rounded behind than in front, the lower margin slightly concave or sinuous.

Remaining peræopods resembling the first and second, the first joints narrow.

*First uropods* extending beyond the second, the rami subequal, shorter than the peduncle; in the second pair the upper ramus is shorter than the lower.

The single ramus of the *third uropods* is subequal to the peduncle, the first joint rather longer than the second.

*Telson* as described above.

Length 2.5 mm.

#### FAM. OEDICERIDÆ, G. O. SARS.

##### OEDICEROIDES NEWNESI.

*Oediceros newnesi*, A. O. Walker.

5 June, 1902, two; length of female with ova, 7 mm. W.Q., 15 June, 1902, six young. Tent Island, 3 Jan., 1904, 20 fm., one.

A better mounting of the mandible than was effected with the 'Southern Cross' specimen shows that the molar tubercle is well developed, with a toothed grinding surface. It must therefore be referred to the genus *Oediceroides* Stebbing.

The *mandibular palp* has the second joint wider and about one-fourth longer than the third, being widest about one-third of its length from the base.

##### OE. CALMANI. (Pl. 6, fig. 12.)

*Oe. calmani*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 15.

Coulman Island, 13 Jan., 1902, 100 fm., two females. Flagon Point, 23 Jan., 1902, one young. Barrier, 29 Jan., 1902, 100 fm., one.

*Female*: *Body* scarcely compressed laterally. Mesosome segments very short, subequal, the first with a transverse fold. First pleon segment about twice as long, the second shorter, the third much longer than the first; the last mesosome and first two pleon segments with a dorsal tubercle near the middle; the third pleon and first urus segments with a shallow carina; hind margin of the third pleon segment rounded. First four side-plates as deep as the segments.

*Head*: Rostrum shorter than the rest of the head and reaching the end of the first joint of the upper antennæ, the lower margin scarcely concave; the front sulcate, not carinate. Eyes contiguous, occupying the greater part of the rostrum, varying from red to brown.

*Upper antennæ* not quite reaching the end of the second joint of the lower; the first joint rather longer and twice as wide as the second, widening distally; the second twice as long as the third; first and second with tufts of plumose setæ. Flagellum ten-jointed, shorter than the peduncle.

*Lower antennæ*: First joint wider than long, setose; second stout, longer than the third, which has a long spine near the middle and another at the distal end, both on the lower margin.

*Mandibles*: Primary cutting edge with two short blunt teeth, secondary with a long and a short tooth, molar tubercle bicuspidate; first joint of the palp very short and obconical; second subequal to the third in length, but more than twice as wide near the base, both joints with long spine-like setæ on the front margin.

*Third peræopods*: First joint oblong-oval, the front margin somewhat produced, both margins with long setæ, on the distal half; third joint almost as wide as the first, densely setose.

*Fourth peræopods*: First joint ovoid, the hind margin denticulate, sparsely setose; the front margin with longer setæ which are plumose at the lower angle, otherwise as in the third pair. The dactyli in all the peræopods except the last (which are broken in all the specimens) are almost as long as the fifth joints.

The *gnathopods* and rest of the animal agree with *OE. rostrata*, Stebbing, from which species this differs in the conspicuous eyes, the different form and proportions of the rostrum, mesosome segments, first joint of the upper antennæ and second joint of the mandibular palp.

Length of female 30 mm.

#### FAM. EPIMERIIDÆ, G. O. SARS.

##### EPIMERIA INERMIS. (Pl. 8, fig. 13.)

*Epimeria inermis*, A. O. Walker.

Jan. 22, 1902, 500 fm., two females, length 35 mm.; W.Q., 14 July, 1903, Hole 10, 107 fm., one dissected; W.Q., 2 and 4 Sept., 1903, one; W.Q., 8 Sept., 1903, one young.

As the single specimen in the 'Southern Cross' collection was not dissected, the following additional details are given. The specimen from which they are taken was not full grown, and differs from the larger in the absence of the prominent convexity of the lower part of the fifth side-plate and of the dorsal carina, except on the third pleon segment.

*Upper antennæ*: First joint of the peduncle longer than the remaining two, swollen at the base on the lower margin; second nearly twice as long as the third; both have the upper margin produced and notched. Flagellum 28-jointed.

*Lower antennæ*: Basal joint produced on the inner side beyond the first joint, the upper margin in both forming an acute tooth; second joint rather longer and thicker than the third, the upper margin of which is produced and notched.

*Mandibles*: The palp stout, the second joint longer than the third, otherwise the mouth organs and maxillipeds are nearly as in *E. cornigera* (Fabr.).

*Gnathopods* nearly resemble those of *E. cornigera*; the hand of the second pair is shorter and wider at the distal end than that of the first, and is finely denticulate at the rounded and spinous palmar angle.

*Third peræopods*: Side plates rhomboidal; first joint with a long tooth-like process directed downwards from the upper part of the hind margin, which terminates in a sharp tooth.

*Fourth peræopods* like the third, except the side plate.

*Fifth peræopods*: Side plates rather wider at the top than the widest part of the first joint, narrowing downwards; first joint expanded above, narrowing abruptly near the middle, whence the hind margin curves outwards and ends in a tooth.

*First uropods*: Rami subequal, longer than the peduncle, narrow lanceolate, fringed with short spines on both margins.

*Second uropods*: Inner ramus not reaching the end of the first uropods; outer less than half as long and much narrower than the inner.

*Third uropods* not reaching the end of the longer ramus of the second pair, broadly lanceolate, subequal, longer than the peduncle, which has a prominent tooth.

*Telson* reaching to the base of the rami of the third uropods, tapering considerably and notched at the tip.

Length of the specimen described, 25 mm.

---EPIMERIA MACRODONTA. (Pl. 8, fig. 14.)

*Epimeria macrodonta*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 16.

Jan. 22, 1902, 500 fm., three; W.Q., 4 Sept., 1903, Hole 12, one.

All the segments of mesosome and pleon, with the exception of the first two segments, of which the first is twice as long as the second, armed with lateral teeth, increasing in length backwards, with longer dorsal teeth, curved and directed upwards and backwards; those of the last mesosome and first two pleon segments the longest.

First two segments of the urus with an upright dorsal tooth, that on the first segment the longer; the third segment with a lateral carina, which is turned up in a sharp tooth. First three side plates narrow, acutely pointed below, the first straight, second and third curved; the hind margin of the fourth forms an irregular crescent with acute points; the fifth has a long acute tooth directed backwards and outwards, reaching the hind margin of the sixth segment; the sixth has a small tooth; the seventh unarmed. Posterior angles of the epimeres of the pleon segments produced and acute.

*Head*: Lower margin of the ocular lobe produced forward in an acute tooth. Rostrum almost horizontal, slightly decurved, and much longer than the rest of the head. Eye large, round-oval, almost filling up the ocular lobe, colourless in spirit.

*Upper antennæ* shorter than the lower; first joint with a subequal distal tooth on each side, reaching nearly to the distal end of the lower margin of the second joint, which is subequal to the first, and has two long subequal distal teeth on the upper side, reaching to the seventh joint of the flagellum; third joint about half as long as the second, with a small distal tooth on the lower margin. Flagellum 32-jointed, slender.

*Lower antennæ*: Basal joint with four or five unequal teeth; first joint very short; second and third more than twice as long, subequal, the former with a small distal tooth below. Flagellum slender, reaching in the largest specimen to the fifth segment.

*Mouth organs and maxillipeds* as in *E. cornigera*.

*First and second gnathopods* almost alike, more slender than in *E. cornigera*, and almost exactly like those of *E. parasitica*, M. Sars.

*First and second peræopods*: First joint subequal to but wider than the third; fourth joint about half as long as the third; fifth considerably longer than the fourth.

*Third peræopods*: First joint rather longer than and twice as wide as the third, the hind margin concave, with a rounded protuberance at the proximal end and a large, very sharp tooth at the distal end directed backwards; front margin concave in the middle; front margin of the second joint produced downwards in a small tooth; third joint acutely produced behind.

*Fourth peræopods*: Hind margin of the first joint convex in the middle, otherwise like the third pair.

*Fifth peræopods*: First joint wider than that of the fourth pair, the margins more convex above, but the hind one concave above the strong and sharp distal tooth; front margins of first and second joints not produced.

The *uropods* are all subequal in extent; the second pair has the outer ramus one-third shorter than the inner; in the first and third pair the outer rami are scarcely the shorter; the peduncles of the third pair have the upper margins produced behind in an acute tooth, and are about one-third of the length of the rami; these are long and narrow, lanceolate, with a few small spines on both margins.

The *telson* narrows distally, the sides are slightly convex, and the divisions formed by a notch extending to about one-third of the length are subacute.

Length 33 mm.

This species has a superficial resemblance to *Acanthozone* (Boeck.\*), from which it differs in the shape of the head, and *Acanthechinus* (Stebbing), from which it differs in the head, mandibles, gnathopods, etc. Both these genera have the *telson* entire.

#### EPIMERIELLA.

*Epimeriella*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 17.

Body smooth, without dorsal teeth, except in the first segment of the *urus*.

Head with a very small rostrum.

Fifth pair of side plates small, oblong, wider than deep, without a projecting process.

Mandibles with the molar tubercle imperfectly developed.

Third and fourth pairs of *peræopods* much longer than the fifth.

Otherwise like *Epimeria*.

#### EPIMERIELLA MACRONYX.† (Pl. 9, fig. 15.)

*Epimeriella macronyx*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 17.

W.Q., 29 May, 1903, Hole 4, 5 fm., two; W.Q., 1 June, 1903; Hole 8, 10 fm., three; 26 Feb., 1904 (269), one. This last measured 25 mm.; the rest were young, measuring only 6 mm.

*Head* slightly produced in front. *Eyes* large, round, oval, prominent, colourless in spirit.

*Mesosome* smooth, first and third segments subequal, and much longer than the second; remaining segments increasing in length successively. First three side-plates about as deep as the segments, narrow, convex, and pointed below, fourth deeper than the others, narrowing below in a curved point, with the upper posterior angle produced under the fifth side-plate in an acute tooth; fifth, small, transverse, oblong, with rounded ends.

*Pleon* with an obscure dorsal *carina*; hind and lower margins of the third segment straight and forming a right angle.

First segment of the *urus* dorsally depressed in front, and with a postero-dorsal tooth.

*Upper antennæ*: First joint more than twice as long as, and much wider than, the second; third shorter than the second and subequal to the first joint of the flagellum, which has about twenty joints.

*Lower antennæ* subequal to the *upper*; first joint very short; second and third subequal, barely reaching to the end of the second joint of the upper.

*Mandibles*: Molar tubercle imperfectly developed; primary and secondary cutting

\* Skandinavske og Arktiske Amphipoder, 1876, p. 229; also G. O. Sars.

† From the great length of the dactyli of the third and fourth *peræopods*.

edges dentate; spine row long, of about twenty spines; the palp, which is set on in front of the middle, is longer than the mandible; the first joint about one-third as long as the second, which is subequal to the third. One of the mandibles appears to be without a secondary cutting plate.

*First maxillæ*: Inner plate with about 12 plumose setæ on its inner margin.

*First gnathopods*: First joint stout, rather longer than the side-plate, and subequal to the wrist and hand united; these are subequal to each other, the wrist rather the wider; the hand is oval, the palm undefined, pectinate; the whole hind margin sparsely and unequally spinous. Dactylus with 5 spines on the inner margin.

*Second gnathopods* are like the first, except the palm, which is more transverse, and about half as long as the rest of the hind margin.

*Second peræopods*: Side-plates reaching below the second joint. First joint narrow, oblong, subequal to the third and fourth united; third rather longer than the fourth, and shorter than the fifth. Dactylus continuous with the fifth joint, as long as the third, and slightly curved.

*Third and fourth peræopods* subequal: First joint oblong, twice as long as wide; third joint half as long as the first, acutely produced behind; fourth joint subequal to, and fifth rather longer than the first. Dactylus very long, about one-fifth longer than the fifth joint, and tapering very gradually. These two pairs appear to be generally carried elevated over the back. In the largest specimen (25 mm.) the dactyli are not quite so long relatively.

*Fifth peræopods* are considerably shorter, and the first joint wider, than the third and fourth; hind margin of the first joint convex, obscurely serrate, and produced downwards in a rounded lobe almost to the middle of the third joint; this is much produced behind, and is a little shorter than the fourth, which is as long as the dactylus and shorter than the fifth joint.

*First and second uropods*: The rami longer than the peduncles, the outer shorter and narrower than the inner.

*Third uropods*: Rami nearly twice as long as the peduncle, subequal, the outer the narrower, with fine spines on both margins.

*Telson*, reaching to about one-fourth the length of the rami of the third uropods, deeply notched at the end, with a minute notch on the tip of each division.

The above description, with the exception of that of the external characters of the animal as seen without dissection, is taken from a young specimen 6 mm. long.

#### FAM. IPHIMEDIIDÆ, STEBBING.

##### IPHIMEDIA PACIFICA.

*Iphimedia pacifica*, Stebbing.

W.Q., 20 Feb., 1902, 20 fm., one; 14 Jan., 1903, 130 fm., one, young, about 8 mm.; 14 July, 1903, 130 fm., one, length 24 mm.; 30 Sept., 1903, one, length 20 mm.; two on 4 Sept., 1905, one, length 30 mm.

The tooth on the first joint of the upper antennæ is much longer in the large specimens than is shown in Stebbing's figures. This is probably only a matter of age.

IPHIMEDIA ECHINATA. (Pl. 10, fig. 16.)

*Iphimedia echinata*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 150.

W.Q., 24 Sept., 1902, Hut Point, one, large; 24 Aug., 1903, Hole 12, D-net, three, large, 30 mm., and about twenty-five, young; 26 Sept., 1903, Hole 12, D-net, one, about 45 mm. long and 15 mm. across the back.

First segment of the *mesosome* longer than the second; the next four segments are longer than the second and subequal; the posterior angles of the first two are almost right angles, and of the next four acute. The fifth segment has sometimes a few small teeth on the hind margin; the sixth has more, and the seventh is dorsally depressed, and is longer than any of the other segments in the middle, but greatly narrowed downwards, with the hind margin more coarsely dentate. The pleon segments have strongly dentate, dorsal carinæ, with smaller teeth on each side, and on the hind margins; the posterior angle of the second is acute and upturned, and that of the third similar, but longer, and with a much longer curved tooth above it. The first urus segment is as long as the two next united, and has a dorsal depression followed by a group of upright teeth; the second and third are smooth, except for a tooth on each side of the telson. The first three pairs of side-plates narrow downwards to a point, the second and third curved; the fourth, fifth and sixth have a strong tooth with serrate edge directed outwards. The number of teeth appears to vary considerably in different specimens.

*Head*: Rostrum as long as the rest of the head, acute, decurved; ocular lobes rounded; *eyes* prominent, round, colourless.

*Upper antennæ*: First joint with two distal teeth on the upper side; second joint with a serrate tooth reaching almost to the end of the first joint of the flagellum on the upper margin, and a short one on the lower; third joint short. In a young specimen a rudimentary appendage was seen, but in a larger (though not adult) this was only indicated by two setæ. First joint of the flagellum as long as the next three.\*

*Lower antennæ* subequal to the upper; second and third joints subequal; the three peduncular joints have the upper margins produced; the basal joint has a prominent curved tooth on its upper side.

*Mandibles*, without molar tubercles, different; one, having the simple cutting edge oblique, obscurely dentate, with a tooth at the lower angle; the other having the cutting edge more strongly dentate, with a peculiar secondary apparatus in the form of a hollow chitinous cylinder with a smooth periphery. First joint of the robust palp shorter than the second, which is subequal to the third.

\* In the specimen figured the antenna was curved upwards.

*First maxillæ* normal.

*Maxillipeds* as in *I. pacifica*, except the inner plates, which are oblong and almost as wide as the outer.

*First gnathopods*: First joint widest in the middle; wrist rather shorter than the hand, which is chelate with short spines on the immovable digit.

*Second gnathopods*: First joint narrow, oblong, as long as the remaining joints; wrist and hand subequal, the latter chelate with long plumose setæ on the hind margin.

*First and second peræopods*: First joint strong, widening distally; second as long as the fourth; third rather longer and produced behind.

*Third peræopods*: First joint oblong, with a median ridge and five subequal teeth on the hind margin. In young specimens the spines are fewer and less equal. The side-plates are wider than deep, with a tooth directed backwards.

*Fourth peræopods*: First joint rather wider than in the third pair, with fewer and more unequal teeth, and the posterior angle very acute and upturned.

*Fifth peræopods*: Side-plates small. First joint wider than in the fourth pair, with four unequal teeth on the hind margin, and the posterior angle still more acute and produced.

*First uropods*: Rami subequal, shorter than the peduncle.

*Second uropods*: Outer ramus two-thirds of the length of the inner which is rather shorter than the peduncle.

*Third uropods*: Rami wide-lanceolate and subequal, longer than the peduncle.

*Telson* emarginate, the outer angles reaching to the end of the peduncle of the third uropods.

The nearest ally of this fine species is *I. pulchridentata*, Stebbing, from Heard Island, from which it differs in not having the lower ends of the first three pairs of side-plates forked, and in the numerous dorsal spine-like teeth on the seventh mesosome and three pleon-segments.

I. LONGIPES. (Pl. 9, fig. 17.)

*I. longipes*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 151.

Coulman Island, 100 fm., 13 Jan., 1902; one, length 30 mm. (not dissected).

*Mesosome* wide; pleon and urus compressed. *Head*, exclusive of the rostrum, longer than the first segment; rostrum fully as long as the rest of the head, deflexed and pointed; ocular lobe rounded in front and terminating below in a strong tooth directed downwards. *Eyes* round-oval, dark, widely separated.

*First segment* considerably longer than the second (which is the shortest of all) and subequal to the sixth; third, fourth, and fifth shorter than the first and subequal; seventh as long as the fifth and sixth united, with two long subdorsal teeth directed backwards. The first side-plates are rather deeper than the segment, much expanded below and rounded; second and third bluntly pointed; fourth sharply pointed below,

with the hind margin produced backwards in a spur; fifth and sixth with the hinder angles acute; seventh small and subquadrate.

The first two *pleon-segments* have two long subdorsal teeth, as in the seventh segment; the lower margin of the first is narrowed, with the posterior angle obtuse; the hind margin of the second is concave with the posterior angle acute; the third segment is smooth with the posterior epimeral angle forming a short, blunt tooth and a longer curved tooth above it.

First segment of the *urus* dorsally depressed, much longer than the remaining two united.

*Upper antennæ*: First joint with a strong distal tooth on the inner side reaching almost to the end of the second joint.

*First gnathopods* with a chelate hand.

*Last three pairs of peræopods* increasing in length successively, the last pair extending much beyond the ends of the uropods; hind margin of the first joints smooth, more or less concave, and ending below in a subacute tooth.

*Telson* reaching to the base of the peduncles of the third uropods, shorter than the width at the base, rather deeply notched.

#### I. HODGSONI. (Pl. 11, fig. 18.)

*I. hodgsoni*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 152.

Coulman Island, 13 Jan., 1902, 100 fm., one.

The whole body is clothed with fine spine-like teeth directed backwards and arranged more or less in zones on the segments of the mesosome, pleon, and urus; the side-plates are also densely spinous, and appear to be a little deeper than the segments. The body is but little compressed laterally and is widest about the first and second segments of the mesosome. The *antennæ* are rather short, subequal, and directed outwards, the basal joints of the upper being a mass of branching spines. The rostrum is almost straight and about as long as the rest of the head. *Eyes* round, darkish, and far apart.

Inner plates of the *maxillipeds* folded and squarely truncate; outer broad and rounded.

The *gnathopods* resemble those of *I. obesa*, Rathke.

Length 20 mm.

The single specimen was only partially dissected.

#### FAM. EUSIRIDÆ, G. O. SARS.

##### EUSIRUS PROPINQUUS.

*Eusirus propinquus*, G. O. Sars.

W.Q., etc., various dates, very abundant.

The only points of difference between this form and the type are as follows: The

first pair of side-plates are produced in front to a rounded acute angle; the eyes are dark brown (in spirit) instead of light red; the antennæ have longer and more slender flagella, and the telson is less deeply divided. The two last characters, however, vary with age; thus the telson in an adult female is like that of *E. minutus* as figured by Sars, while in an immature specimen it resembles that of *E. cuspidatus*, Kr.

In the large number of specimens taken but few are adult, viz. :—

1 male, length 50 mm., W.Q., 25 April, 1903, Hole 8, 10 fm.

1 female, with young, length 48 mm., W.Q., 25 Mar., 1903, Hole 8, 10 fm.

1 female, with ova, length 48 mm., W.Q., 31 Mar., 1903, Hole 4, 6 fm.

1 female, with ova, length 48 mm., W.Q., May, 1903, Hole 8, 10 fm.

In all probability this species, like our own *Gammarellus (Amathilla) homari*, Fabr., inhabits deep water when full grown, only coming to shallow water to deposit its young, which are hatched in the brood pouch.

Mr. Hodgson writes: "This species occurred constantly in the traps, but in small numbers. I therefore soon ceased to preserve specimens, unless I could get them in good condition, and as their length of leg rendered this difficult, occasional specimens occur in the collection from most periods of the year. As far as I recollect, the adults with ova or young were only taken in the summer or autumn."

#### E. MICROPS. (Pl. 11, fig. 19.)

*E. microps*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 152.

W.Q., Hole 8, 10 fm., 10 May, 1903, one, length 25 mm., and 1 June, 1903, one, length 30 mm.; Penguin Rookery, Mount Erebus, Feb., 1904, one, length 48 mm., in bad condition.

Last segment of the mesosome and first two of the pleon carinate, with a postero-dorsal tooth. Third pleon segment with the carina rounded behind, hind margin rather convex, finely crenate in adult, the posterior angle a little produced and acute with a row of five or six intramarginal spines on the lower margin in front of it.

*Urus* with the first segment dorsally depressed.

*Side plates* small, the first subquadrate, not wider below; the next three sub-triangular, the apex below; all rather deeply and irregularly crenate on the lower margin.

*Head* subequal to the first segment; ocular lobe not prominent, truncate. *Eyes* dark, almost round, diameter less than that of the first joint of the upper antennæ.

*Upper antennæ* reaching the base of the uropods; first joint about three-fourths of the length of the second, with a distal prominence on the lower margin terminated by a very sharply pointed tooth with a spine and a few setæ behind it; the second joint expands at the distal end, where there are two or three acute teeth; the third is subequal to the first of the flagellum. Secondary appendage as long as, and closely adherent to, the first joint of the flagellum.

*Lower antennæ* about half as long as the upper, the peduncles being subequal; second and third joints subequal.

*Mandibles*: First and second joints of the palp together longer than the mandible and four-fifths of the length of the third joint.

*First maxillæ*: Inner plate with five or six setæ.

*Maxillipeds* as in *E. longipes*, Stebbing.

*First gnathopods*: First joint robust; hinder angle of the third joint acute, as well as the carpal spur, densely setose; hand much longer than wide.

*Second gnathopods* rather longer than the first, the front margin of the second joint produced over the third.

*First and second peræopods* very slender, first joint about six times as long as wide and subequal to the next two; third joint twice as long as the fourth and rather longer than the fifth; all the joints with a few plumose setæ.

*Remaining peræopods* increasing in length backwards; the first joint has the hind margin rather concave, ending below in a sharp tooth, except in the third pair; the third joint is two-thirds of the length of the fourth, which is about three-fourths of the fifth; all the joints spinous and clothed with long plumose setæ. Dactylus slightly curved, the point blunt with a curved tooth near it.

*Second uropods*: Outer ramus about half as long and wide as the inner; this is a little longer than the peduncle, subequal in extent to the third uropods and spinous on both margins.

*Third uropods*: Rami subequal and similar, lanceolate, rather longer than the peduncle, with spines and plumose setæ on the inner margin.

*Telson* reaching beyond the end of the peduncle of the third uropods, with a small notch at the tip, the terminal divisions acute.

Recognisable by the relatively small eyes and slender hirsute legs. From its nearest ally, *E. holmii*, H. J. Hansen (Dijmphna Togtet Krebsdyr, p. 42, Pl. 22), it differs in the structure of the gnathopods.

#### FAM. CALLIOPIDÆ, G. O. SARS.

##### ORADAREA LONGIMANA.\*

*Oradarea longimana*, A. O. Walker.

Cape Adare, 9 Jan. 1902, 20 fm., nine young of various sizes, showing the gradual development of the dorsal teeth. Coulman Island, 13 Jan. 1902, 100 fm., three; W.Q., 19 Nov. 1902, Hut Point, one, length 20 mm.; 10 Jan. 1903, one; 26 Feb. 1903, one; 16 Mar. 1903, 35 fm., Hole 7, one; 30 Sept. 1903, Hole 12, one.

\* Mr. Stebbing remarks on this species (Tierreich, Amphipoda Gammaridea, p. 727): "Strangely like *Lept-amphopus novæ-zelandiæ*, G. M. Thomson." It differs, however, from this species as described in Trans. N. Z. Institute, Vol. II, p. 289, *Pherusa novæ-zelandiæ*, in having only the first two pleon segments dorsally produced in one tooth, instead of the two posterior segments of the mesosome and two anterior of the pleon produced into two teeth; also in the upper antennæ having an appendage.

In the description of this species I omitted to mention that in both pairs of antennæ the second joint is produced distally on each side of the third joint in a subacute lobe or tooth.

##### ATYLOIDES SERRATICAUDA.

*Atyloides serraticauda*, Stebbing.

Cape Adare, 9 Jan. 1902, 20 fm., one; and 24 Feb. 1904, in Laminaria roots, 13-20 fm., several. Cape Wadsworth, 15 Jan. 1902, 8-15 fms., one.

In addition to the difference noted in the description of the specimens taken by the 'Southern Cross' expedition at Cape Adare, viz., seven teeth instead of two on the hind margin of the third pleon segment, the following may also be mentioned:—

1. The eyes are hardly so large and vary much in depth of colour.
2. The first joint of the upper antennæ has a strong tooth at the distal end of the lower margin.
3. The side-plates of the first and second gnathopods have more teeth on the lower margins—about seven on the first and four\* on the second. These, however, may be considered as merely local or age variations, and are not, in my opinion, sufficient to constitute a new species. The 'Challenger' specimens from "off Melbourne" measured  $\frac{1}{4}$  inch or about 6 mm., the largest of the Cape Adare ('Southern Cross') being 15 mm.

##### STEBBINGIA GREGARIA.

*Stebbingia gregaria*, Pfeffer, Krebse v. Sud-Georgien Die Amphipoden, Jahrbuch d. wissenschaft. Anstalten Hamburg, V. (1888), p. 110.

W.Q., 29 Aug. 1902, Hole 12, two young specimens, length 6 mm.

These specimens differ in several respects from *Atyloides australis* (Miers) as described by Stebbing (Chall. Rep. p. 914). The basal joints of the flagellum of the upper antennæ are longer than wide, and there is no secondary appendage, both of which points agree with Pfeffer's description, but not with Stebbing's. The outer rami of the third uropods are shorter than the inner. The telson is divided only one-third of its length, with the tips of the divisions evenly rounded. In these last two points they differ from both Stebbing's and Pfeffer's descriptions, but the specimens are too young for any reliance to be placed on them. On the whole they agree better with Pfeffer's species than Stebbing's, of the identity of which I am doubtful (see Chall. Rep. pp. 913, 914, and 1654).

##### PONTOGENEIA MAGELLANICA. (Pl. 12, fig. 20.)

*Atylopsis magellanica*, Stebbing.

*Pontogeneia magellanica*, Stebbing.

W.Q., Hut Point, 13 Sept., 1902, one; 23 Nov., 1902, one, length, 12 mm. Tent Island, 3 Jan., 1904, three.

This is a similar instance to the last species of small variations which are insuffi-

\* In a young specimen there are only two.

cient for the establishment of a new species. The hind margin of the third pleon segment above the upturned angle is almost straight; the whole lower margins of the first side-plates are serrate; the hand of the first gnathopods is considerably longer than the wrist, in proportion of six to four, and the divisions of the telson are smooth and rounded at the tips.

## FAM. ATYLIDÆ, G. O. SARS.

## ATYLUS WALKERI, Stebbing.

*Atylus antarcticus*, A. O. Walker.  
*Atylus walkeri*, Stebbing.

W.Q., 31 Jan., 1902, Hut Point, 3 fm., several; 18 Mar., 1902, 10 fm., four;  
28 Nov., 1902, one.  
Length, 15 mm.

## FAM. DEXAMINIDÆ, STEBBING.

## POLYCHERIA ANTARCTICA.

*Dexamine antarctica*, Stebbing, Ann. and Mag. Nat. Hist. XV. (1875), p. 184.  
*Polycheria antarctica*, Stebbing.

W.Q., 30 Sept., 1903, Hole 12, D net, six; length 6 mm.

This species was described by Mr. Stebbing, in 1875, from three small specimens found in a sponge dredged up by Sir J. Ross a few miles to the E. of the 'Discovery's' Winter Quarters. The specimens were not in good condition, or, probably, full-grown, so that the description is not as satisfactory as it might otherwise have been. Mr. Stebbing informs me that he has now united his *Tritæta Kergueleni* with this species. The present specimens agree with the description of *T. Kergueleni*, except in the following features: the side-plates of the first gnathopods are subquadrate, not produced in front; the posterior angle of the third pleon segment is produced, and acute; the margins of the telson are without spines; and the inner plate of the first maxillæ has two setæ.

*Polycheria tenuipes*, Haswell, *P. brevicornis*, Haswell, and *P. obtusa*, Thomson, have been referred to this species. The description and figure of the second gnathopod of the first of these, and the description of the same limb in the second, are quite unlike that of *P. antarctica* (Proc. Linn. Soc. N.S.W., Vol. IV., 1880, pp. 345-6, Pl. XXII., fig. 8g.).

## MELPHIDIPPA MACRURA.

*Melphidippa macrura*, G. O. Sars.

Jan. 27, 1902, 300 fm., one; length to end of telson 25 mm.

The specimen which, with the exception of the loss of the third uropods, was in excellent preservation and was therefore not dissected, agrees with Sars' description

except that the middle postero-dorsal tooth on the first and second pleon segments is shorter, a character of little importance.

## FAM. LILLJEBORGIIDÆ, STEBBING.

## LILLJEBORGIA DUBIA.

*Lilljeborgia dubia*, Haswell.

W.Q., 29 Aug., 1902, and 28 Nov., 1902, two specimens, both young, the largest 12 mm.

## FAM. PHOTIDÆ, G. O. SARS.

## HAPLOCHEIRA BARBIMANA.

*Haplocheira barbimana*, G. M. Thomson.

Fairly abundant in W.Q., Oct. and Nov., 1902, especially at Hut Point; also at Flagon Point, 23 Jan., 1902, and W.Q., 30 Sept., 1903.

The appendage of the *upper antennæ*, which was broken in the 'Challenger' specimen, is three-jointed, the first wider than, but subequal in length to, the second; the third minute, reaching almost to the end of the second joint of the flagellum. The first urus segment has two small postero-dorsal teeth; these are sometimes difficult to see, and may have escaped Mr. Stebbing's notice, as they are not mentioned in his description. No sexual differences were observed. The females taken (except two on 1 Oct., 1902, which had young in their pouches) had generally parted with their ova.

## EURYSTHEUS LONGICORNIS. (Pl. 12, fig. 21.)

*Gammaropsis longicornis*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 153.

W.Q., 29 Jan., 1902, one female; W.Q., 20 Feb., 1902, several males and females; W.Q., 19 Mar., 1902, 10 fm., one female; W.Q., 22 Mar., 1902, 10 fm., one female.

*Head* almost as long as the first two segments; ocular lobe not much produced, angular.

*Eyes* round, red in the centre.

Third pleon segment dorsally depressed behind; posterior angle rectangular. First urus segment dorsally depressed in front. First four side-plates not as deep as the segments.

Female:—

*Upper antennæ*, reaching to the penultimate joint of the flagellum of the lower; the first joint more than twice as thick and less than half as long as the second, which is about one-fifth longer than the third; flagellum six-jointed, the first joint almost as long as the next two; appendage one-jointed, about one-third as long as the first joint of the flagellum.

*Lower antennæ*: First joint stout, about one-third of the second, which is shorter than the third; flagellum subequal to the second joint of the peduncle, five-jointed. Both pairs of antennæ are sparsely setose.

*Mouth organs* normal; the mandibular palp reaching beyond the first joints of the antennæ. The outer plates of the maxillipeds have spine-teeth only on the distal end of the inner margin.

*First gnathopods*: Side-plates oblong, rounded below, deeper than wide. First joint narrow, shorter than the fourth and fifth joints united; wrist subequal in length and width to the hand, hind margin convex, flattened near the middle; hind margin of the hand evenly convex, palm spinulose. *Dactylus* slender.

*Second gnathopods*: Side-plates as in the first pair. First joint widening distally; wrist subtriangular, half as long as the hand, the hind margin subangular and setose; hand with the palm subequal to the rest of the hind margin, minutely crenulate, slightly convex near the base of the dactylus, then concave to the palmar angle, which is rounded, with a spine on the side. *Dactylus* with two or three teeth near the point.

*First and second peræopods* as in *E. erythrophthalmus*, but less setose.

*Last three pairs of peræopods* increasing in length successively, the third pair as in *G. nana*, Sars; the fourth and fifth have the hind margin of the first joint convex above and almost straight below, with the posterior angle right. The last pair do not extend beyond the uropods.

*First and second uropods*: Outer rami shorter than the inner and subequal to the peduncles.

*Third uropods*: Peduncle twice as long as the styliiform rami, of which the outer is slightly the shorter. All the uropods are sparsely spinous.

*Telson* not reaching to the middle of the peduncle of the third uropods, roof-shaped, with a small notch and spine at the distal end; when flattened and seen from above it appears to be triangular.

Length 6 mm.

Male:—

*Upper antennæ* not reaching the end of the peduncle of the lower, otherwise as in the female.

*Lower antennæ* almost as long as the whole animal.

*Second gnathopods*: First joint stouter than in the female, the front margin terminated by a blunt tooth; wrist very short, hind margin a little produced, subangular, setose; hand widening distally, front margin almost straight, hind margin rather longer than the palm, rather convex, with four fascicles of setæ terminating in a strong tooth forming the palmar angle; palm almost transverse, with a strong tooth behind the palmar one and an irregularly toothed and setose space between it and the base of the dactylus, the point of which reaches to the palmar angle, but is carried over the side of the hand.

Length 6 mm.

The most noticeable character of this species is (as the name implies), the great length of the lower antennæ, especially in the male.

FAM. SEBIDÆ. NOV.

*Body* rather slender, subdepressed; side-plates moderately deep.

*Antennæ* subequal, rather short.

*Mandibles* with a toothed cutting edge, molar tubercle obscure, palp rather small, three-jointed.

*Maxillipeds* with small inner and outer plates, palp well developed.

*First gnathopods* chelate in the females, chelate or subchelate in the males.

*Second gnathopods* longer than the first, perfectly chelate.

*Third uropods* uniramous.

*Telson* entire.

The genus *Seba* has been successively allotted to "the confines of the family *Leucothoidæ* (G. O. Sars)," Stebbing, p. 783; the *Lysianassidæ*, Della Valle, p. 773\* ; and the *Corophidæ*, Chevreux,† p. 111. As none of these positions is satisfactory, I have thought it better to establish a new family for it. As for the genus, it appears to me extremely doubtful whether the original species (*S. innominata*, A. Costa, of Sp. Bate, Brit. Mus. Cat., p. 159), as described by him, ever existed; it was repudiated by A. Costa. I propose, therefore, to call it *Seba*, Stebbing, 1875, with *Seba saundersi*, Stebbing, as the type.

SEBA ANTARCTICA. (Pl. 13, fig. 22.)

*Seba antarctica*, A. O. Walker, Ann. and Mag. Nat. Hist. XVIII. (1906), p. 154.

Common in sponges at Hut Point.

The females of this species agree in the smallest detail with the very careful and accurate description of *Seba saundersi*, Stebbing, in the 'Challenger' Report, and I have very little doubt that it is identical. For reasons given elsewhere,‡ however, it is impossible, in the absence of the description of the male from the same locality as *S. saundersi* (off Cape Virgins, Patagonia), to be certain of this.

For the description of the female I refer to that of *S. saundersi* above mentioned. The males appear to be dimorphic; the commoner form is only to be distinguished by the absence of the incubatory lamellæ. In one gathering, however (W.Q., 19 Mar., 1902, 10 fm.), two male specimens, measuring respectively 7 mm. and 5 mm., occurred; the length of females with ova and small males being 4.25 mm. In addition to their larger size, these were remarkable for having the meral joints of the last three pairs of peræopods greatly expanded behind, especially in the larger of the two.

\* Fauna and Flora d. Golfes v. Neapel. Gammarini, p. 773.

† Amphipodes provenant des Campagnes de l'Hirondelle (1900), p. 111.

‡ Ann. and Mag. Nat. Hist. XVII. (1906), p. 569.

## FAM. ISCHYROCERIDÆ, STEBBING.

## HEMIJASSA.

Since the publication of *Jassa goniamera*, A. O. W., Canon A. M. Norman has pointed\* out that the genus *Jassa*, Leach, was restricted by Bruzelius† to species with the upper antennæ “*flagello appendiculari destitutæ*,” or, as is the case with his type species *J. capillata* (Rathke), having only a rudimentary appendage. As *J. goniamera* has a well-developed appendage, but differs from *Ischyrocerus*, Lillj. and *Bruzeliella*, Norman, in having no secondary teeth on the outer ramus of the third uropods, it becomes necessary to establish a new genus.

## HEMIJASSA GONIAMERA.

*Jassa goniamera*, A. O. Walker.

Coulman Island, 100 fm., 13 Jan., 1902, two specimens; W.Q., Flagon Point, 10–20 fm., 17 Jan., 1903, three; and 23 Jan., 1903, two.

## FAM. COLOMASTIGIDÆ, STEBBING.

## COLOMASTIX PUSILLA.

*Colomastix pusilla*, Grube, Ausflüg n. Triest, p. 137 (1861).

Oct. 1902, Hut Point, D net; sponges. Two males, one young, length 4.5 mm.

Differs from *C. brazieri*, Haswell, in having the first two pairs of peræopods subequal and similar to the remainder; also in the shape of the telson.

\* Ann. and Mag. Nat. Hist. XVI. (1905), p. 83, note.  
† Bidrag till Känn. Skand. Amphipodens Fauna, 1858.

## EXPLANATION OF PLATES.

## LIST OF ABBREVIATIONS USED WITH THE FIGURES.

*c* = cephalon, head.  
*ant*<sup>1</sup>, *ant*<sup>2</sup> = upper and lower antennæ.  
*M* = mandible.  
*Mp* = mandibular palp.  
*mx*<sup>1</sup>, *mx*<sup>2</sup> = 1st and 2nd maxillæ.  
*map* = maxillipeds.

*gn*<sup>1</sup>, *gn*<sup>2</sup> = 1st and 2nd gnathopods.  
*pp*<sup>1-5</sup> = 1st to 5th pairs of peræopods.  
*up*<sup>1-3</sup> = 1st to 3rd pairs of uropods.  
*T* = telson.  
*pl* = pleon; *pl*<sup>3</sup> = 3rd pleon segment.  
*ur* = urus and appendages.

## PLATE 1.

Fig. 1.—*Hyperia macronyx*.

Fig. 2.—*Hyperoche luetkenides*.

## PLATE 2.

Fig. 4.—*Waldeckia obesa*, Chevreux.

## PLATE 3.

Fig. 5.—*Aristias antarcticus*.

Fig. 6.—*Orchomene goniops*.

## PLATE 4.

Fig. 3.—*Hyperiopis australis*.

Fig. 7.—*Orchomenella chelipes*.

## PLATE 5.

Fig. 8.—*Podoprionides incerta*.

Fig. 9.—*Proboloides antarcticus*.

## PLATE 6.

Fig. 10.—*Probotiella typica*.

Fig. 12.—*Oediceroides calmani*.

## PLATE 7.

Fig. 11.—*Thaumatelson herdmanni*.

## PLATE 8.

Fig. 13.—*Epimeria inermis*.

Fig. 14.—*Epimeria macrodonta*.

## PLATE 9.

Fig. 15.—*Epimeriella macronyx*.

Fig. 17.—*Iphimedia longipes*.

## PLATE 10.

Fig. 16.—*Iphimedia echinata*.

## PLATE 11.

Fig. 18.—*Iphimedia hodgsoni*.

Fig. 19.—*Eusirus microps*.

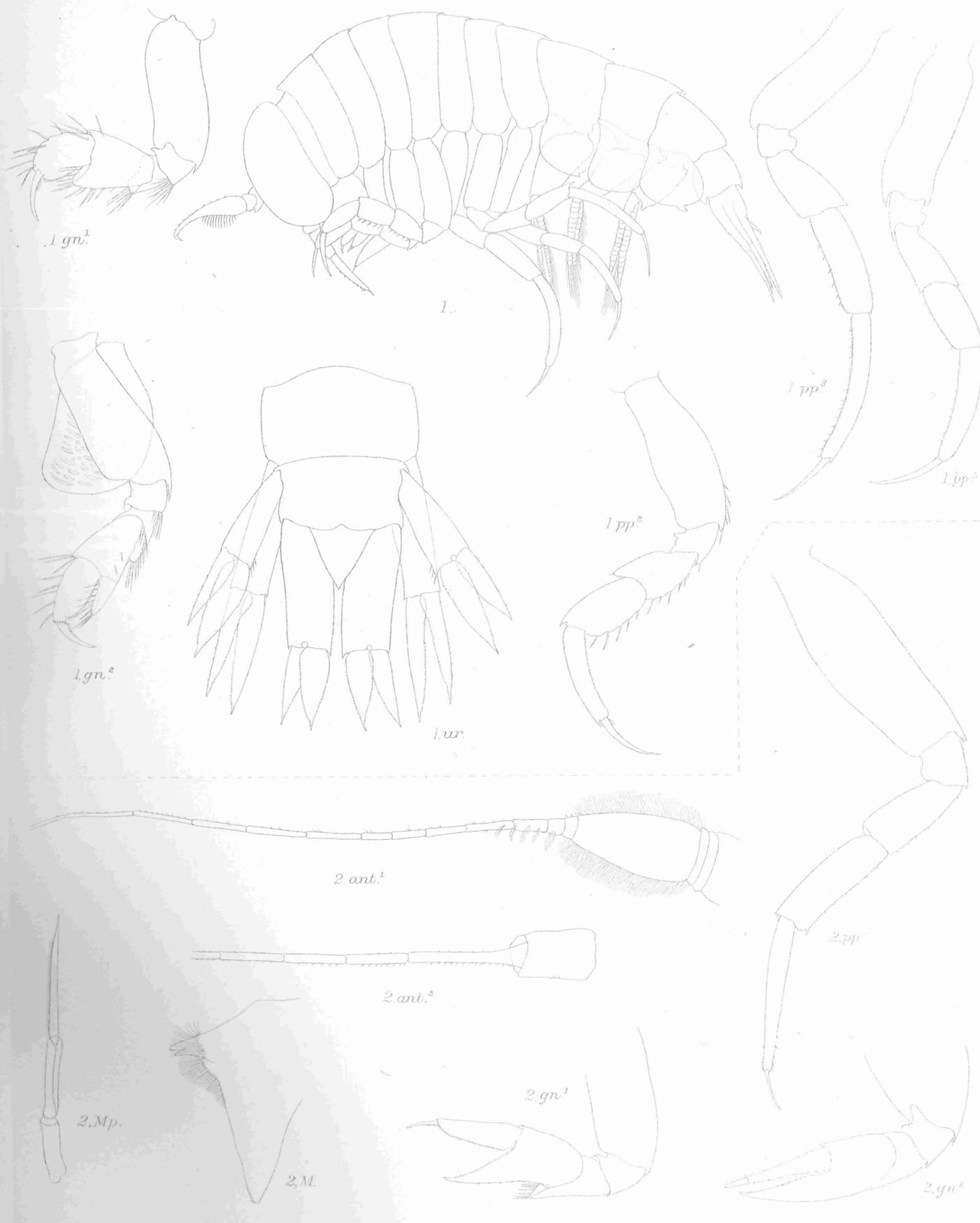
## PLATE 12.

Fig. 20.—*Pontogeneia magellanica*.

Fig. 21.—*Eurystheus longicornis*.

## PLATE 13.

Fig. 22.—*Seba antarctica*. The figure of the whole animal is drawn from the larger of the two males mentioned on p. 37, while *pp*<sup>5</sup> ♂ is from the smaller of the two: note the difference in the third joint.



Antarctic (Discovery) Exp.

Huth del. sc et imp

1. HYPERIA MACRONYX.

2. HYPEROCHE LUTKENIDES.



Antarctic (Discovery) Exp.

4. WALDECKIA OBESA.

Huth del. sc. et imp



Antarctic (Discovery) Exp.

5. ARISTIAS ANTARCTICUS.

6. ORCHOMENE GONIOPS.

Huth del. sc. et imp.

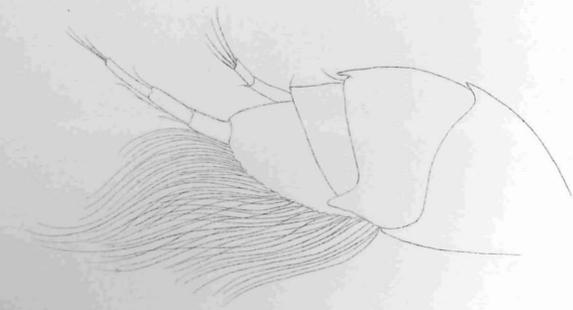


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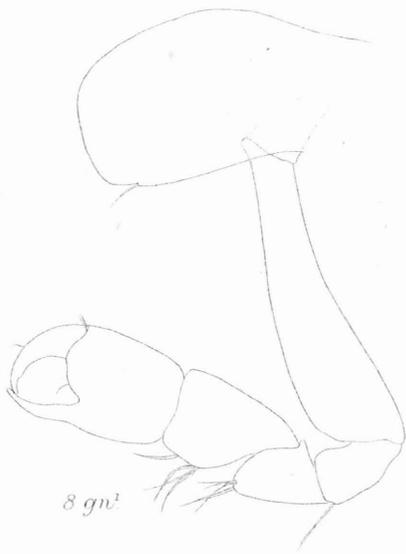
3. HYPERIOPSIS AUSTRALIS.

7. ORCHOMENELLA CHELIPES.

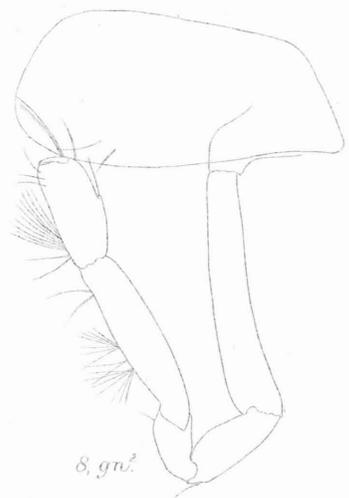
Huth del. sc. et imp.



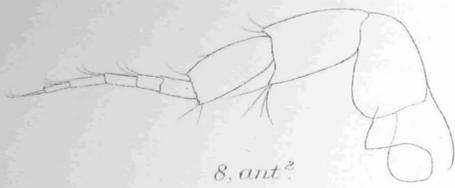
8 ant. 1



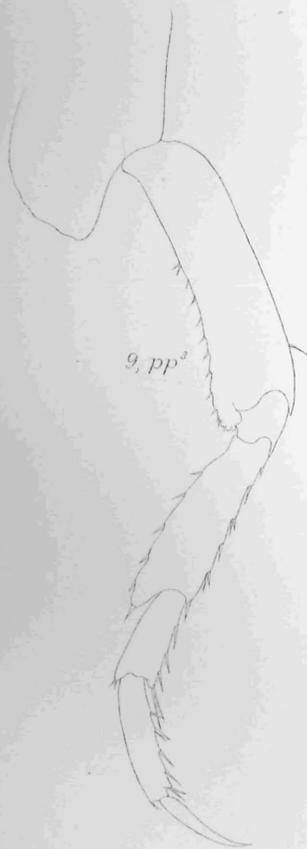
8 gn. 1



8 gn. 2



8 ant. 2



9 pp. 1



9 gn. 2 ♀



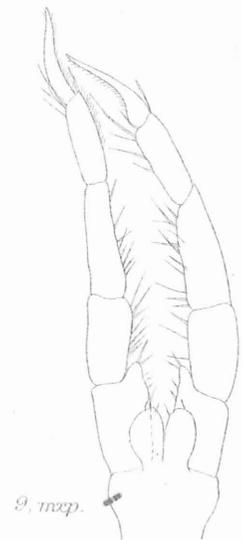
9 gn. 2 ♀



9 gn. 1 ♀



9 gn. 1 ♂



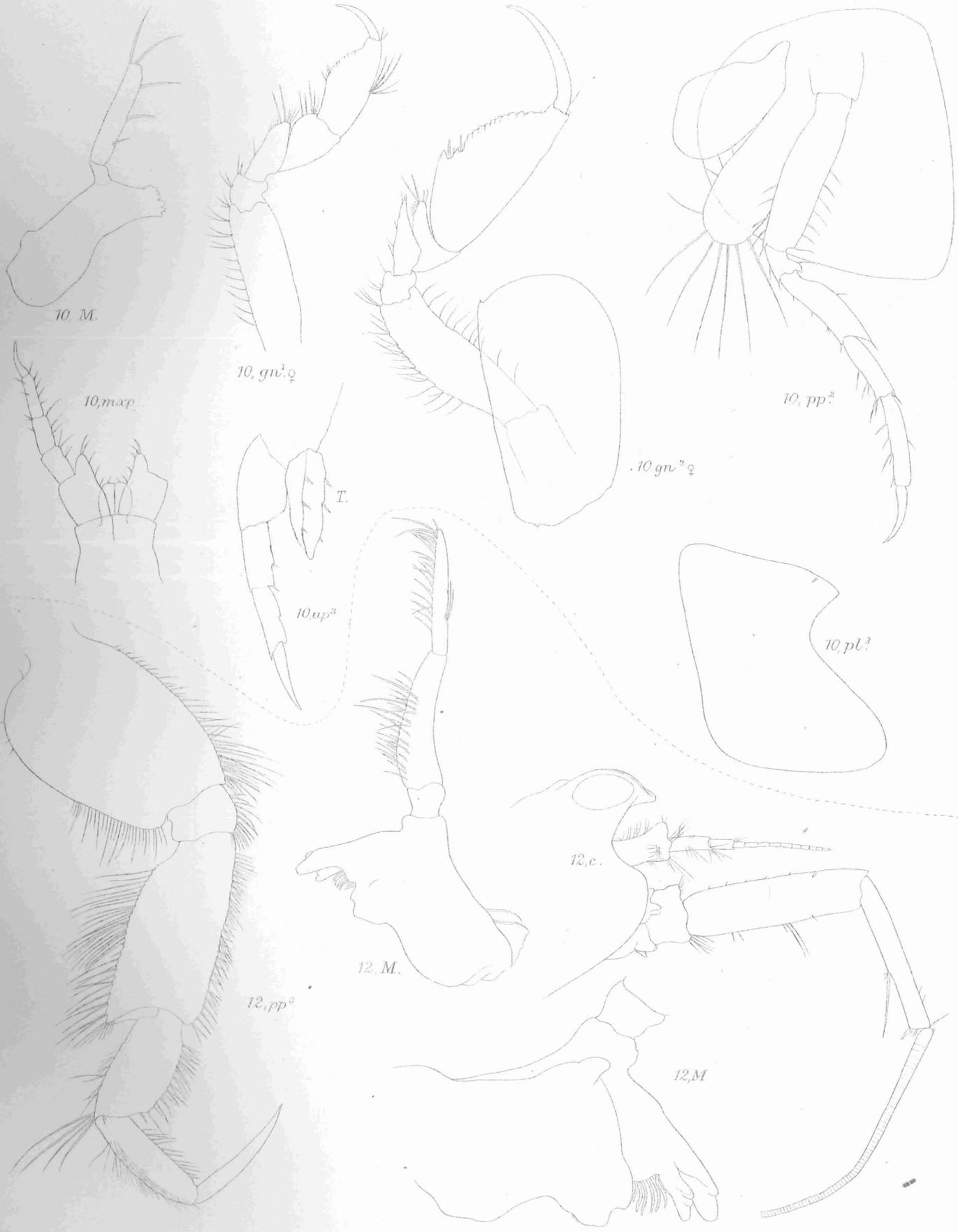
9 max.

Antarctic (Discovery) Exp

8. *PODOPRIONIDES INCERTA.*

9. *PROBOLOIDES ANTARCTICUS.*

Huñ del se et imp.

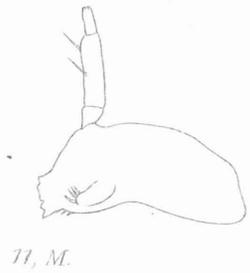
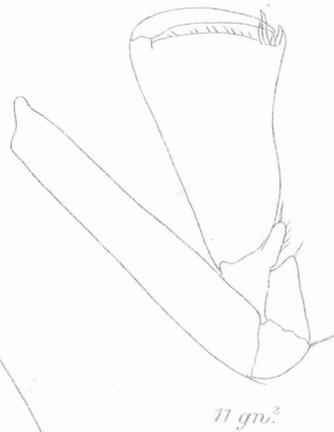
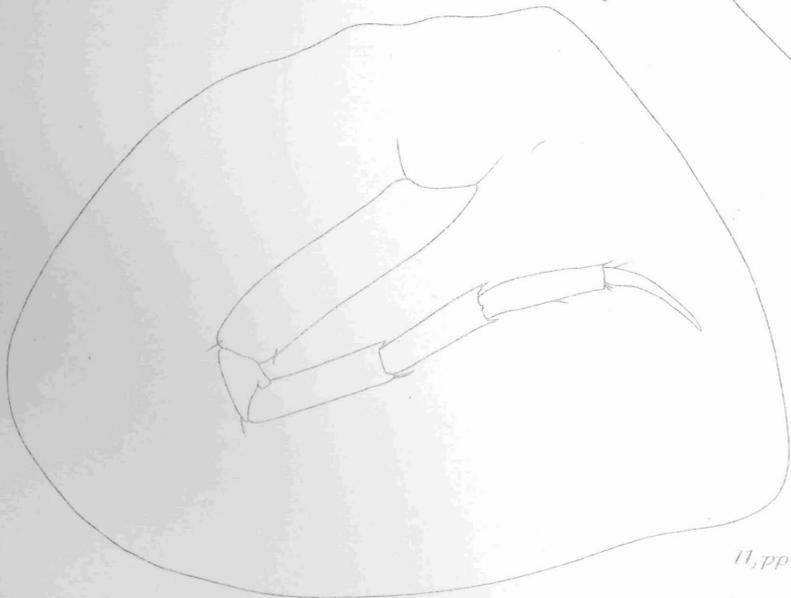
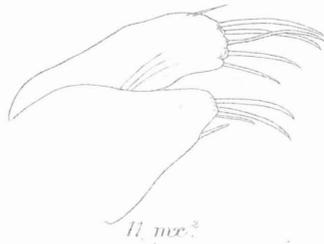
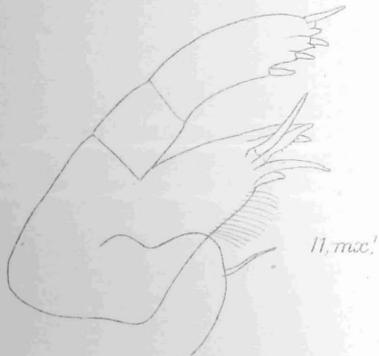
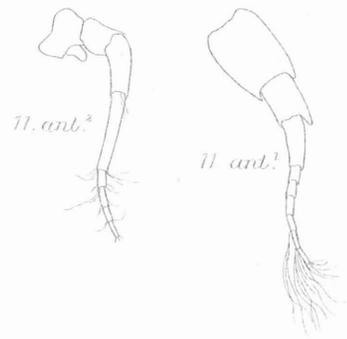
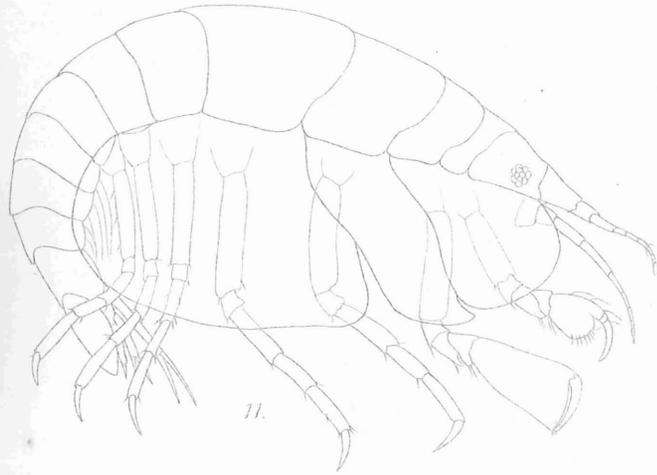
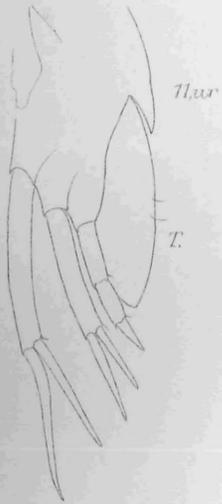


Antarctic (Discovery) Exp.

10. PROBOLIELLA TYPICA.

12. OEDICEROIDES CALMANI.

Huth del. sc. et. imp.



Antarctic (Discovery) Exp.

II. THAUMATELSON HERDMANI.

Hath del. sc et imp

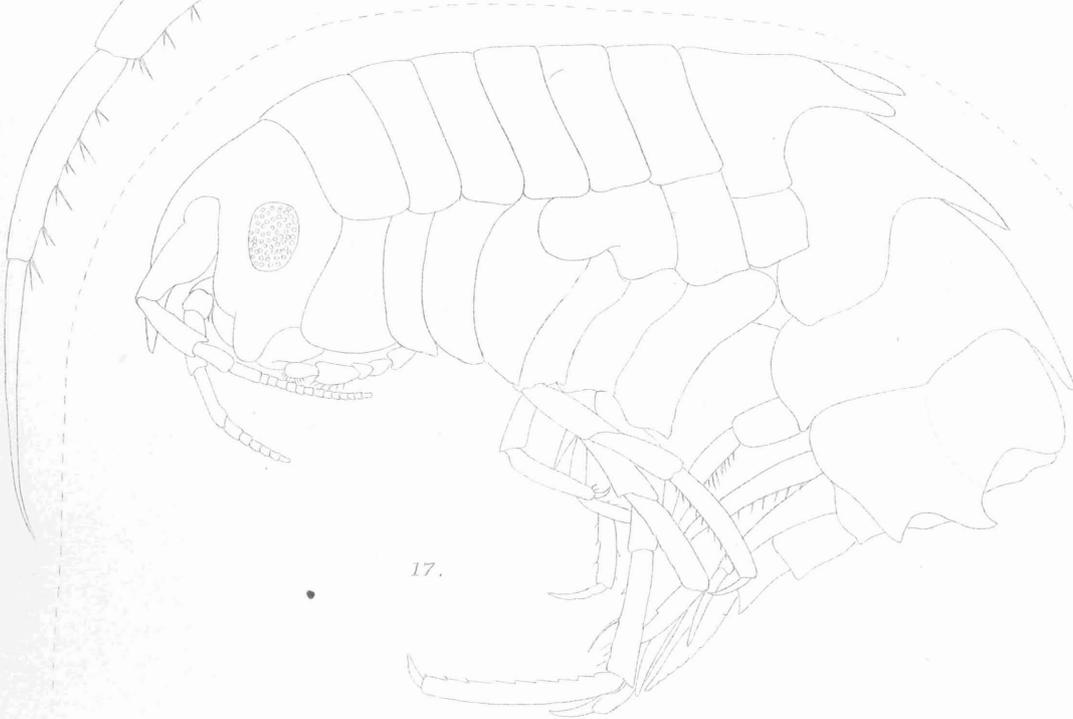
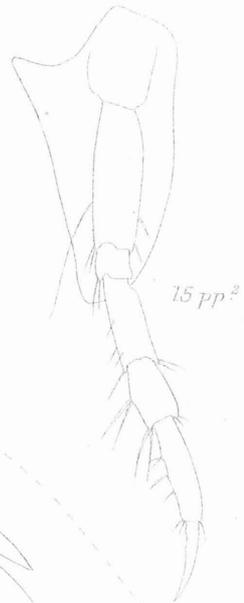
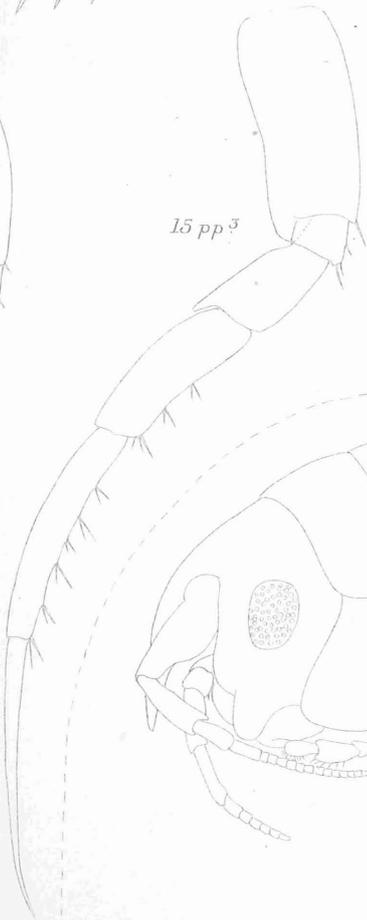
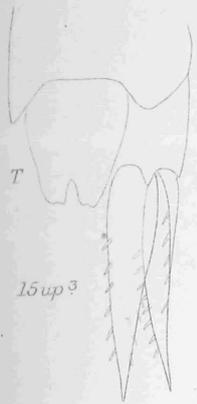


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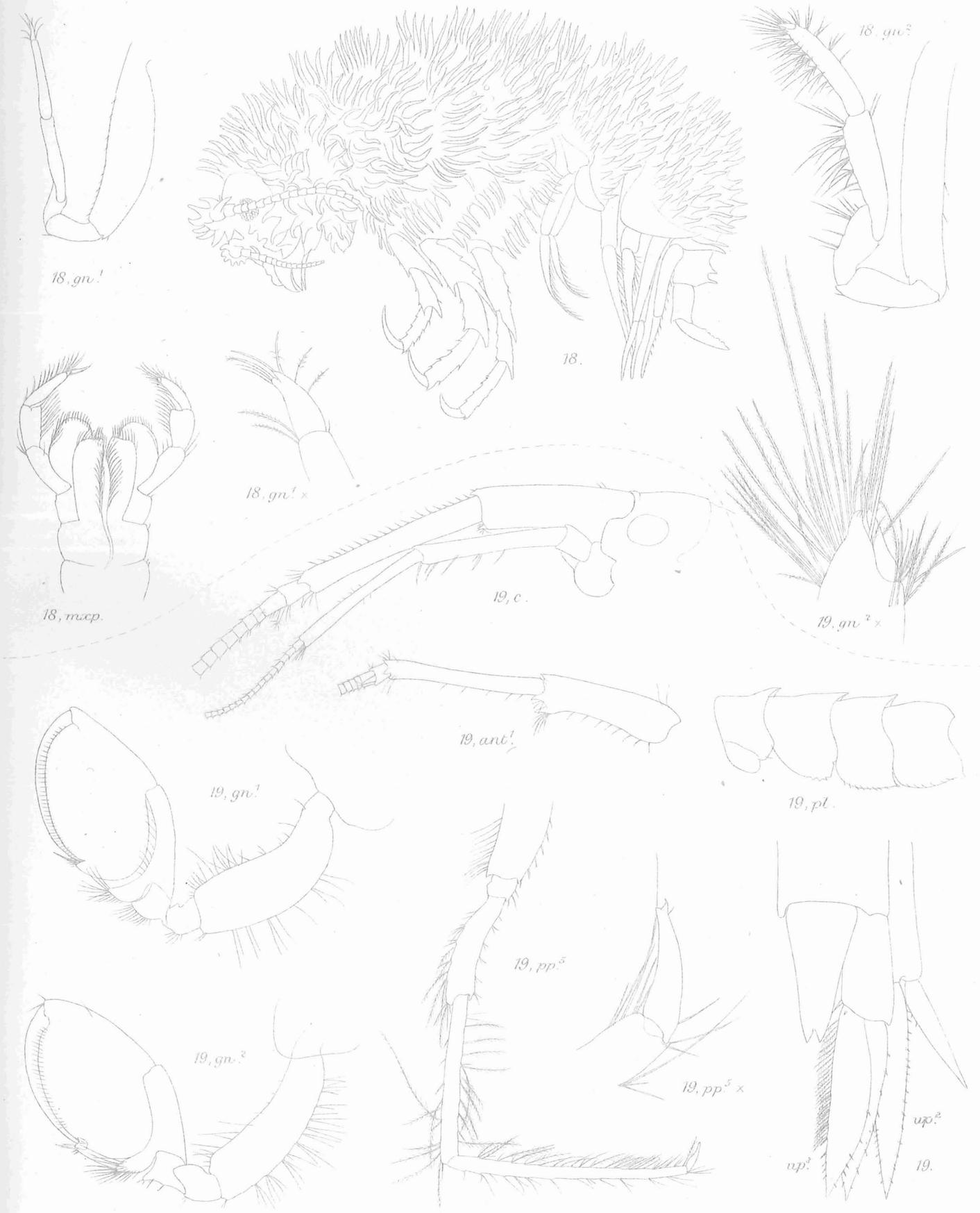
13. EPIMERIA INERMIS.

14. E. MACRODONTA.

Hath del. sc et imp





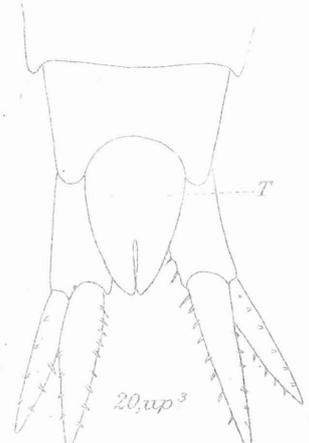
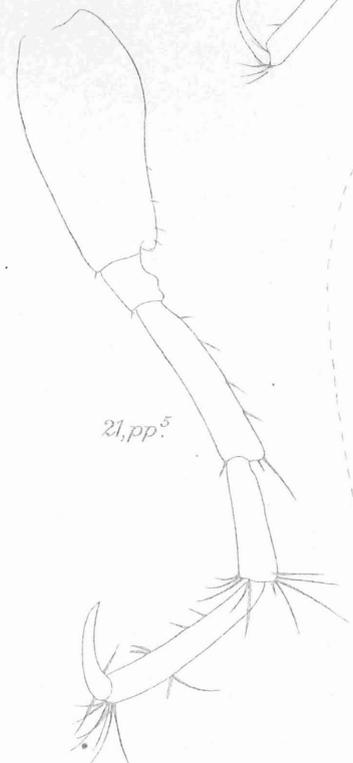
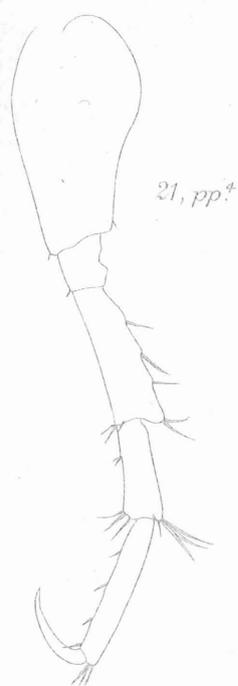
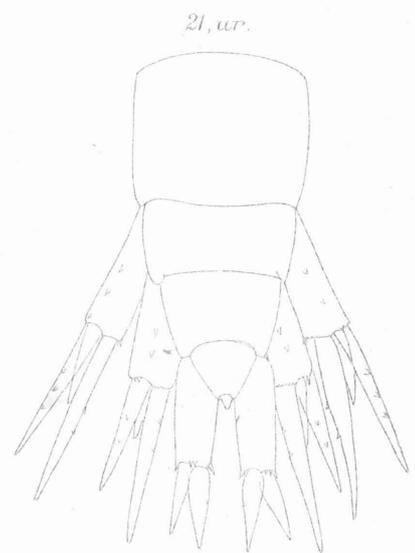
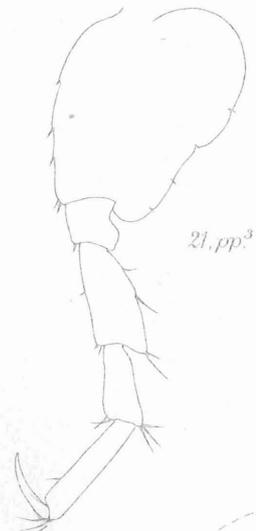
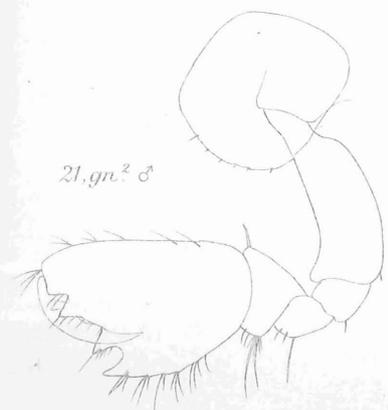
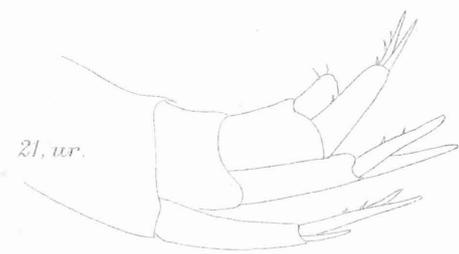
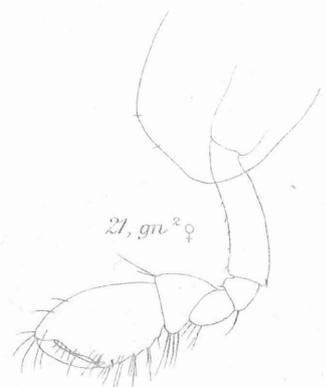


Antarctic (Discovery) Exp.

Hull del. sc et imp.

18. IPHIMEDIA HODGSONI.

19. EUSIRUS MICRUPS.



Antarctic (Discovery) Exp.

Huth del. sc. et imp.

20. PONTOGENEIA MAGELLANICA.

21. EURYSTHEUS LONGICORNIS.

