

THE AMPHIPODA

COLLECTED DURING THE VOYAGES OF THE WILLEM BARENTS IN THE
ARCTIC SEAS IN THE YEARS 1880—1884.

BY

THOMAS R. R. STEBBING.

With plates 1—7.

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The arctic amphipoda collected by the Willem Barents' expeditions of 1878 and 1879 were described by Dr. P. P. C. Hoek. The same eminent carcinologist had already carried out the preliminary sorting of the present collection, when, upon appointment to his important post at Helder, he found that the time requisite for describing it was no longer at his command. Under these circumstances at his suggestion Professor Max Weber did me the honour of asking for my services, and the following paper is the result.

Of the sixty species here recorded the majority are already well known. They include a very large number of the most striking forms among the Gammaridea. The specific names in the list are due to a score of authors, concerning whom, as writers on Amphipoda, it may be said that they have among them not only most of the best but also the best out of most. For fifteen of the species mentioned science is indebted to the elaborate accuracy of Kröyer, whose high qualities appear to be a kind of heirloom in the Scandinavian school of naturalists. That the Amphipoda should have been in the first instance best studied by northern observers is, however, not surprising. For, compared with the forms of these Crustacea commonly met with in Dutch and English waters, the Arctic species claim attention and respect by gigantic size, a bristling armature, brilliant colouring, or prodigious swarms. They cannot be overlooked and ignored, as their kindred practically are in England. In regard to many of the established species and genera I have not given a full synonymy, but have thought it sufficient to refer to the Bibliography annexed to my Report on the Challenger Amphipoda. In view of the full descriptions published elsewhere, and especially in the admirable work on the Crustacea of Norway by G. O. Sars, now in course of publication, I have usually limited myself to an occasional comment or identifying note upon existing genera or species. In a few instances detailed descriptions of old species have been given, in each case, as will be easily perceived, to serve a special purpose. Five new species are described. Though this may seem an inconsiderable number in so fine a collection, nevertheless, when it is remembered who have been the reapers of the harvest of Arctic amphipoda during the last fifty years, this late gleaning will not fall short of any reasonable expectations. To judge by the results obtained at Kerguelen Island in the Southern Ocean, it is much rather in Antarctic than in Arctic waters that the explorer who devotes himself to the search after Amphipoda may hope to find new and surprising forms. There are, it is true, some remarkable instances in which the same species occurs both far north and far south, but these are after all not very numerous.

Of the forty-two genera to which the present Report refers eleven belong to the family Lysianassidae, ten of them being accepted as defined in the classical work of Sars above-mentioned. I am doubtful whether the genera of that family have not been needlessly multiplied, but under existing circumstances I have been compelled to follow the example of the dog in the fable, which, being unable to defend its master's dinner from the other dogs, took part of the dinner for itself. Thus, while deploring the increased number of Lysianassid genera, I am forced by that very in-

crease to add to the number the new genus *Paronesimus*. For the remarkable new genus *Gulbarensia** no apology is needed, and the transfer of *Rhachotropis fragilis* (Goës) to a new genus *Rozinante* cannot, I think, be opposed. Attention may also be called to the recognition of *Amathilla Heuglini*, Buchholz, as being in fact the type of Stuxberg's genus *Weyprechtia*. Lastly, it is right to mention that, contrary to my former usage, adopted from Boeck, of numbering the joints of the limb from one to six, I now number them from two to seven. This is no doubt the more correct practice, although it appears to leave the first joint enshrouded in a mysterious silence. In the amphipoda in fact the first joint is not a joint, for whether it be regarded as the bundle of muscles commonly soldered to the side-plate, or as comprising those muscles together with the side-plate, it does not form any proper articulation, and is counted in chiefly for the advantage of comparative anatomy.

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*) Since the name *Barentsia* was applied by Hincks in 1880 to a genus of Polyzoa, its use in this paper on page 25 and plate 5 is hereby cancelled in favour of *Gulbarensia*.

**) On page 25, line 24, reference is made to "the two specimens" of this species. The wording should be "all the specimens", as there were in fact several.

GENUS SOCARNES, Boeck, 1870.

1870. *Socarnes*, Boeck, Crust. amph. bor. et arct., p. 19 (99).
1888. » Stebbing, Challenger Amphipoda, p. 697.
1890. » Sars, Crustacea of Norway, vol. I. pt. 2. p. 43.

Socarnes Vahl (Kröyer),

1838. *Lysianassa Vahl*, Kröyer, Grönlands Amphipoder. p. 5 (233).
1838. *Anonyx Vahl*, Kröyer, Grönlands Amphipoder, p. 16 (244).
1844. » » Kröyer, Naturhist. Tidsskr. R. I. Bd. 2. p. 256; R. II. Bd. 1. p. 599.
1870. *Socarnes Vahl*, Boeck, Crust. amph. bor. et arct., p. 20 (100).
1872. » » Boeck, De Skand. og Arkt. Amph., p. 129, pl. 6, fig. 8.
1890. » » Sars, Crustacea of Norway, vol. I. pt. 2. p. 44, pl. 16. fig. 2.
1890. » *Vahl*, Meinert, Crustacea Malacostraca, p. 151.
Loc. Lat. 70° 24' 50" N. — Lat. 45° 50' 51" E. 6 VII 1882. 55 Fath.

Socarnes bidenticulatus (Sp. Bate).

1835. *Gammarus nugax*, Owen (not Sabine), Ross's Second Voyage, Appendix, p. LXXXVII.
1858. *Lysianassa bidenticulata*, Sp. Bate, Ann. and Mag. Nat. Hist. Ser. 3. vol. 1. p. 362.
1862. » *nugax*, Sp. Bate, Brit. Mus. Catal. Amph. Crust. p. 65. Pl. 10. fig. 3.
1866. » *Vahl* (pars), Goës, Crust. amph. maris Spetsbergiam alluentis, p. 2.
1870. *Socarnes Vahl* (pars), Boeck, Crust. amph. bor. et arct. p. 20 (100).
1872. » » Boeck, De Skand. og Arkt. Amph. p. 129.
1877. *Anonyx bidenticulatus*, Miers, Ann. and Mag. Nat. Hist. ser. 4. vol. 19. p. 136.
1882. » *ovalis*, Hoek, »Willem Barents" Crustaceer, p. 42, Taf. 3. fig. 29 — 29 r.
1885. *Socarnes bidenticulatus* Sars, Den norske Nordhavs-Exped. Crust. I A. pp. 139, 276.
I B. pl. 12. fig. 1.
1886. » » Koelbel, Crust. von Jan Mayen, die internat. Polarforsch.
Bd. 3. p. 8.
1886. » » Sars, Den norske Nordhavs-Exped. Crust. II. p. 38.
1887. » » Hansen & Holm, Dijnphna-Togtet Krebsdyr, pp. 211, 495,
Tab. 21. fig. 5—5c.
1887. » » Hansen, Crust. mar. Groenl. occid. p. 62.
1888. » » Stebbing, Challenger Amphipoda, pp. 308, etc.
1890. » » Sars, Crustacea of Norway, vol. 1. pt. 2. p. 44.

Spence Bate's species was described and figured, he says, from a specimen in the Royal College of Surgeons, and of this specimen he further says, "it is probably the original of the one described in Ross's Voyage". For this reason he changed the specific name *bidenticulata* to *nugax*, Owen having given the name *Gammarus nugax* on the supposition that he was dealing with Sabine's species of that name, earlier described by Phipps as *Cancer nugax* and transferred by J. C. Fabricius to *Gammarus*. Goës, without attending to the tolerably striking

difference in the third pleon-segment, made Owen's *Gammarus nugax* as figured and described by Bate a synonym of *Lysianassa Vahli*, Kröyer. Boeck heedlessly followed Goës. Miers, however, reinstated Bate's species as *Anonyx bidenticulatus*, and Sars, pointing out its close approximation in many respects to *Socarnes Vahlii*, then named it *Socarnes bidenticulatus*. This name he still retains in his latest work on the Crustacea of Norway, although to *Socarnes Vahli* (Kröyer) he curiously gives as a synonym "*Gammarus ngax* [*nugax*], Owen, not Phipps".

Loc. Lat.	75° 53' N.	Long.	54° 13' E.	18 VIII 1881.	60 Fath.
	77° 7' N.		58° 54' E.	16 VIII 1882.	13
	69° 55' N.		54° 43' 28" E.	20 VII 1883.	57
	69° 48' 30" N.		56° 38' 35" E.	11 VIII 1883.	68
	70° 13' 22" N.		18° 21' E.	8 VII 1884.	75
	76° 59' N.		49° 37' E.	6 IX 1881.	

Dr. Hoek (in MS.) observes that among the 9 specimens taken in 68 fathoms in 1883, three have the lower angles of the third pleon-segment rounded, instead of their being produced and acute. Since, however, in other specimens these angles are sometimes blunted and very little prominent, the absolute disappearance of the projection does not seem to be of specific importance.

GENUS HIPPOMEDON, Boeck 1870.

1870. *Hippomedon*, Boeck, *Crust. amph. bor. et arct.*, p. 22 (102).

1888. » Stebbing, *Challenger' Amphipoda*, p. 625.

1890. » Sars, *Crustacea of Norway*, vol. 1. pt. 3. p. 55.

Sars describes the first maxillae as having the outer plate only armed with a limited number of denticulated spines. Probably the usual number of eleven is normally always present in this genus, though some may be in a position difficult to observe.

Hippomedon squamosus, n. sp.

Plate I.

In prominence of sculpture this species appears to exceed all other members of the genus. In addition to the closely set fine anastomosing lines which can be distinguished in many parts of the integument, on most parts there are a large number of projecting scales; in shape something like a crossbow, with a minute setule at the centre. The lateral angles of the head are blunt. The postero-inferior angles of the first pleon-segment are rounded, of the second acute, minutely produced, of the third acute and strongly produced upwards; the fourth segment has a deep dorsal depression.

No eyes were perceived.

First Antennae. The first and second joints of the peduncle are apically produced. Owing to the transparency of the skin the apparent prominence is greater than the reality both in this and various other species. The second and third joints are very short. The first joint of the flagellum is longer than the peduncle. There is a seta-like spine at the apex of this and of the second joint. The secondary flagellum is three-jointed, and is scarcely as long as the first joint of the primary.

Second Antennae. The gland-cone is prominent, the third joint short, the fourth broader but considerably shorter than the fifth, both of these having fringes of short setae on the upper margin. The flagellum is rather more than twice as long as the peduncle, consisting of 32 joints, each, except the terminal one, carrying a calceolus.

The upper lip is a little unequally bilobed.

The left mandible has a small strap-shaped secondary plate. The elongate palp is set just over the molar tubercle; the second joint carries thirteen setae on the upper part, the third joint is fringed with twenty two.

First Maxillae. The inner plate has two setae; the outer plate has eleven apical spines, of which seven are stout, each with a single lateral tooth, the other four are slender, denticulate, and so placed as not to be easily seen. The palp is broad, with about thirteen little denticles on the truncate apex of the second joint.

Maxillipeds. The outer plate has about fifteen small spine-teeth on the inner margin.

First Gnathopods. The side-plates are a little expanded below. The second joint is longer than the fourth and fifth together; the hand is much more than half the length of the fifth joint, and has the palmar portion finely denticulate, separated from the rest of the hind margin only by a spine, which the apex of the finger overlaps. As in the first and second peraeopods, so here, the apex of the finger is covered by a little transparent cap.

Second Gnathopods. The second joint is as long as the next three together, the third joint is longer than the fourth; the hand is about half the length of the fifth, and is almost oblong, the hind margin rather shorter than the front; the finger small, implanted at about the centre of the apical margin.

First Peraeopods. The side-plates of these and the two preceding pairs of appendages have two or three rows of scales along the front margin, the hinder part being without them. The fourth joint is longer and broader than the fifth, and produced downwards at the front apex. The sixth joint is a little curved; it is longer but much narrower than the fifth, to which it is attached near the front margin. The seventh joint is more than two thirds as long as the sixth, and slightly curved.

Second Peraeopods. The side-plates are deeply excavate, and have scales disposed over the whole surface; some of the joints are a little shorter than in the preceding pair.

Third Peraeopods. The side-plates have a nearly straight lower margin. The oval second joint is much broader above than below and much longer than broad. The finger is slender and straight.

Fourth Peraeopods. These are very like the preceding pair, but all the free joints, except the short third one, are longer.

Fifth Peraeopods. The second joint is longer and broader than in the two preceding pairs, and of equal width above and below; the fourth and fifth joints are much narrower, and both these and the two following joints are shorter than in those pairs.

The first uropods have the branches subequal, a little shorter than the peduncles. On one side one branch in the specimen described was (no doubt abnormally) much shorter than the other. The second uropods have the branches subequal, longer than the peduncles, shorter than the branches of the first pair. In the third pair the peduncles are shorter than in the second pair, the branches longer, subequal, lanceolate, the outer or under one having an indistinctly defined terminal joint.

Telson twice as long as broad, reaching beyond the peduncles of the third uropods; the outer margins nearly straight, with three spines adjacent on either side; the cleft extending for nearly three quarters of the total length, dehiscent only near the acute apices, in each of which a spine is implanted.

Length of the specimen, apart from the antennae, half an inch.

Loc. Lat. 72° 9' N.

Long. 24° 42' 0" E.

24 VI 1881. 154 Fath.

The specific name refers to the squamose sculpture of the integument. The species appears to come nearest to *Hippomedon Holbölli* (Kröyer), from which it is distinguished by the sculpture, apparently by complete want of eyes, by the details of the first antennae, by the bolder angles of the third pleon-segment, and by the proportions of the telson. In the last three characters it agrees closely with *Hippomedon propinquus*, Sars, but it is separated from that species by the much more elongate oval of the second joint in the third peraeopods.

GENUS ORCHOMENELLA, Sars, 1890.

1890. *Orchomenella*, Sars, *Crustacea of Norway*, vol. 1. pt. 3. p. 66.

The first maxillae have on the outer plate eleven spines, all of them denticulate, and most of them rather massive.

Orchomenella minutus (Kröyer).

1846. *Anonyx minutus*, Kröyer, Naturhistorisk Tidsskrift. R. 2. Bd. 2. pp. 23-30, 42-43, 56-57.
 1846. *Anonix minutus*, Kröyer, Voyages en Scandinavie, etc. pl. 18. fig. 2, *a-l*.
 1851. *Anonyx minutus*, Liljeborg, Öfversigt Kongl. Vetensk. Akad. Förhandl. p. 22. n°. 39.
 1856. » » Sp. Bate, Report Brit. Assoc. 1855, p. 58.
 1857. » » Sp. Bate, Ann. & Mag. Nat. Hist. Ser. 2. vol. 19. p. 138.
 1857. » » White, Popular History of British Crustacea, p. 170.
 1857. » » Reinhardt, Fortegnelse over Grönlands Krebsdyr, in Rink's Grönland, Bd. 2. App. 2. N°. 39.
 1862. » » Sp. Bate, Brit. Mus. Catal. Amph. Crust. p. 76. pl. 12. fig. 6.
 1862. » » Bate and Westwood, Brit. Sess. Crust. vol. 1. p. 108. woodcuts.
 1866. *Lysianassa minuta*, Goës, Crust. amph. Spetsberg., Öfvers. K. Vet. Akad. Förh. 1865, p. 520.
 1866. *Anonyx minutus*, Heller, Amph. adriat. Meer., Denkschr. der k. Akad. d. Wiss. Math. naturw. Cl. B. 26. Abth. 2. p. 24.
 1870. *Orchomene minutus*, Boeck, Crust. amph. bor. et arct, p. 36 (116).
 1870. *Anonyx minutus*, Metzger, Jahresbericht der naturf. Gesellsch. zu Hannover N°. 20. p. 37 and Arch. f. d. gesamt. Naturw. Bd. 36. p. 520.
 1875. *Orchomene minuta*, Lütken, Crustacea of Groenland, in Royal Society manual.
 1876. *Orchomene minutus*, Boeck, De Skand. og Arkt. Amph. p. 174. pl. 5. fig. 3.
 1876. *Anonyx serratus*, Stebbing, Ann. and Mag. Nat. Hist. ser. 4. vol. 17. p. 340. pl. 19. fig. 3, *a-c*.
 1877. *Anonyx minutus*, Stalio, Catal. Crost. dell' Adriatico, Atti. R. Inst. Veneto, s. 5. vol. 3. p. 243.
 1878. » » Sp. Bate, Crust. in Couch's Cornish Fauna revised and added to, Journ. Roy. Inst. Cornwall, Pt. 2. N°. 19. p. 46.
 1880. » » Nebeski, Amph. der Adria, Arb. aus dem zool. Inst. zu Wien. Bd. 3. Heft 2. p. 34.
 1882. *Orchomene minutus*, G. O. Sars, Oversigt af Norges Crustaceer, Christ. Vidensk. Forh. N°. 18. p. 21.
 1883. » » J. S. Schneider, Tromsø Mus. Aarsberetning for 1882, p. 27.
 1883. » » S. I. Smith, Proc. U. S. Nat. Mus. vol. 6. p. 227.
 1884. » » J. S. Schneider, Crust. i Kvaenangsfjorden, Tromsø Mus. Aars. VII. p. 69.
 1885. *Anonyx minutus*, Carus, Prodrromus Faunae Mediterraneae, vol. 1. p. 420.
 1886. *Orchomene minutus*, Sars, Den norske Nordhavs-Expedition, Crustacea. II. p. 42.
 1887. » » Bonnier, Catal. Crust. Malac. de Concarneau, p. 77.
 1887. » » Hansen, Dijnphna-Togtet Krebsdyr, Résumé.
 1887. » » Hansen, Malacostraca marina Groenlandiae occid., Vidensk. Meddel naturk. Foren. i Kjobh. p. 76.
 1888. » » Stebbing, Challenger Amphipoda, pp. 215, etc.
 1890. » » Meinert, Crustacea Malacostraca, p. 154, pl. 1. fig. 13-17.
 1890. *Orchomenella minuta*, Sars, Crustacea of Norway, vol. 1. pt. 3. p. 66. pl. 24. fig. 1.

With regard to the above synonymy it should be stated that Goës demurs to the inclusion of the species named *Anonyx minutus* by Spence Bate in his British Museum Catalogue and British Sessile-Eyed Crustacea; Boeck, in concluding his account of *Orchomene minutus*, says, "that which Spence Bate figures from the English coast does not entirely agree with our species, and that which Metzger has found on the coast of East Friesland, will not according to him agree with Kröyer's description", while Sars in 1886 remarks, "Heller records the animal as occurring in the Adriatic; but I regard it as very doubtful, whether the species examined by

that naturalist be actually identical with the northern form". If Spence Bate, Heller, and Metzger, have not had in view Kröyer's species, half of the above references will have to be cancelled, leaving to *Orchomenella minutus* only those which are concerned with northern localities. For the Mediterranean species of Heller and Nebeski Carus borrows a description from Spence Bate's British Museum Catalogue.

Kröyer speaks of the form of the species as being of the usual character, and rightly, although when distended the animal and especially the male may have the somewhat slender appearance depicted by Petersen in the "Voyages en Scandinavie".

Among the numerous specimens of this abundant species the zealous investigator may always cherish the hope of finding examples of *Orchomenella pinguis* (Boeck), in which the hind margin of the third pleon-segment is minutely crenulated and the first gnathopods are stouter, with a relatively shorter wrist. One may be permitted to wonder whether the animals of these two species, unaided by the microscope, can know one another apart.

Loc. Lat. 73° 5' N.	Long. 52° 14' E.	6 VIII 1881. 36 Fath.
Lat. 75° 53' N.	Long. 54° 13' E.	18 VIII 1881. 60 Fath.
	Zeehunds-Bay, brackish water	18 VIII 1881.
	Hammerfest Harbour.	25 IX 1881.
Lat. 69° 51' 33" N.	Long. 57° 23' 48" E.	31 VII 1883. 25 Fath.

GENUS ANONYX, Kröyer, 1838.

1838. *Anonyx*, Kröyer, Grönlands Amphipoder, p. 242.
 1870. » Boeck, Crust. amph. bor. et arct., p. 27 (107).
 1888. » Stebbing, Challenger Amphipoda, pp. 607, 1689, etc.
 1891. » Sars, Crustacea of Norway, vol. 1. pt. 4. p. 87.

In the left mandible there are two teeth at the lower angle of the cutting edge; on the right mandible there is only one tooth in this position. In the first maxillae two of the eleven spines on the outer plate are placed considerably below the apex; there are only six or seven spine-teeth on the apex of the palp.

Anonyx nugax (Phipps).

1774. *Cancer nugax*, Phipps, A Voyage towards the North Pole, p. 192, pl. 12, fig. 2.
 1781. *Gammarus nugax*, Fabricius, Species Insectorum, p. 515.
 1826. *Talitrus nugax*, Ross, Appendix to Parry's Third Voyage, Crustacea, n°. 15.
 1838. *Anonyx lagena*, Kröyer, Grönlands Amphipoder, pp. 237, 244, pl. 1. fig. 1. ♀.
 1838. *Anonyx appendiculosus*, Kröyer, Grönlands Amphipoder, pp. 240, 244, pl. 1. fig. 2. ♂.
 1840. *Lysianassa lagena*, Milne-Edwards, Hist. nat. des Crust., vol. 3. p. 21.
 1840. *Lysianassa appendiculata*, Milne-Edwards, Hist. nat. des Crust., vol. 3. p. 21.
 1845. *Anonyx ampulla*, Kröyer, Naturhist. Tidsskr., R. 2. Bd. 1. p. 578. Bd. 2. p. 43
 1846. » » Kröyer, Gaimard's Voyages en Scandinavie, etc., pl. 13. fig. 2.
 1877. *Anonyx nugax*, Miers, Ann. and Mag. Nat. Hist. ser. 4. vol. 20. p. 135.
 1888. » » Stebbing, Challenger Amphipoda, p. 1690.
 1891. » » Sars, Crustacea of Norway, vol. 1. pt. 4. p. 88. pl. 31.

There are various other references which might be added, but most of them will be found in the Bibliography to the Challenger Amphipoda. Spence Bate does not seem to have been aware that Kröyer did not distinguish his *Anonyx ampulla* from his *Anonyx lagena*. Spence Bate's *Anonyx lagena* is *Anonyx nugax* (Phipps), while his *Anonyx ampulla* is now *Tryphosites longipes*, and his *Lysianassa nugax* is *Socarnes bidenticulatus* (Sp. Bate).

Sars gives the "maximum length of arctic specimens 40 mm.", but Miers has recorded a specimen measuring 44 mm., and in the present collection the length of an inch and four fifths, or 45 mm.

from rostral point to end of telson, is attained. This species was the most northerly of the Crustacea obtained in Nares' Voyage to the North Polar sea, being taken at a depth of 72 fathoms in latitude 83° 19' N. The Norwegian North Atlantic Expedition obtained it in numerous places, down to 658 fathoms. H. J. Hansen, in his Malacostraca of West Greenland, supposes that it is probably most frequent between 10 and 50 fathoms. Dr. Hoek in 1882 records several stations at which the species was obtained by the Willem Barents in 1878 and 1879. In subsequent years it was taken at the following stations.

Lat. 70° 12' 22" N.	Long. 56° 38' 35" E.		1883. 68 Fath. Temp. — 1°.1.
Lat. 71° 33' N.	Long. 64° 36' E.	22 III	1883. 60 Fath. Temp. — 1°.4.
Lat. 69° 45' 12" N.	Long. 54° 34' 26" E.		1883. 31 Fath. Temp. — 0°.9.
Lat. 69° 32' 56" N.	Long. 59° 9' 7" E.		1883. 15 Fath. Temp. — 1°.1.
Lat. 69° 58' 30" N.	Long. 54° 43' 28" E.		1883. 57 Fath. Temp. — 1°.
Lat. 69° 55' N.	Long. 58° 54' E.	16 VIII	1882. 43 Fath. Temp. + 2°.3.
Lat. 71° 39' N.	Long. 64° 58' E.	23 IV	1883. 78 Fath. Temp. — 1°.3.
Lat. 70° 1' 12" N.	Long. 55° 53' 52" E.		1883. 72 Fath. Temp. — 0°.9.
Lat. 70° 1' N.	Long. 63° 57' E.	10 II	1883. 60 Fath. Temp. — 1°.6.
Lat. 70° 24' 50" N.	Long. 45° 50' 51" E.	6 VII	1882. 55 Fath. Temp. — 0°.6.

Anonyx Lilljeborgii, Boeck, (? *nugax* Phipps).

1870. *Anonyx Lilljeborgii*, Boeck, Crust. amph. bor. et arct., p. 29 (109).

1872. *Anonyx Lilljeborgii*, Boeck, De Skand. og Arkt. Amph., p. 154. pl. 4. fig. 3.

1891. *Anonyx Lilljeborgii*, Sars, Crustacea of Norway, vol. 1. pt. 4. p. 90. pl. 32. fig. 1.

This species is scarcely distinguishable from *Anonyx nugax*, except by its greatly inferior size. This inferiority would itself suffice to account for some of the distinctions drawn between the two species. Sars mentions that the lateral corners of the head are "a little more produced and narrowly rounded at the tip", that the first side-plates are "less dilated in their inferior part", that the third pleon-segment has "the terminal lobe comparatively smaller . . . and less acute", that the first antennae are comparatively shorter, with the peduncle less swollen, that the first gnathopods are less robust, that the second have a narrower hand, that the last three pairs of peraeopods are comparatively less elongated, that the last uropods have the rami considerably narrower, with a less number of marginal denticles, and that the telson is a little longer in proportion to its breadth. In my opinion none of these points have any importance for specific distinction. In regard to the first side-plates and the angles of the third pleon-segment I do not think that any distinction can be drawn between the two species. The only point which may perhaps be really relied upon is, that in the present species in the second gnathopods the hand "is more distinctly produced at the tip" beneath the finger. In both species the relations of length between the wrist and hand of the first gnathopods seem subject to considerable variation; in both, the second uropods have the inner ramus indented some way above the apex and furnished at the indentation with a considerable spine as in so many other species of this family. In *Anonyx Lilljeborgii* Sars calls attention to the circumstance that the first two pairs of peraeopods are furnished with "a very conspicuous obtuse denticle at the end of the propodos immediately below the dactylus". This may possibly be included among the specific distinctions, since this knobbed spine, though also present in *Anonyx nugax*, is more conspicuous in the smaller species. Boeck states that the eyes of *Anonyx nugax* are black, and those of *Anonyx Lilljeborgii* red. Sars states that in the former species the ocular pigment is very dark, black, in the latter brownish red. In our specimens there is no such distinction in colouring, the pigment being dark wine red, and the effect in the mass would be described by saying that the eyes are black. It does not seem probable that there should be a third species agreeing with *Anonyx nugax* in the colour of the eyes, but with *Anonyx Lilljeborgii* in size (about six-tenths of an inch) and in the produced hand of the second gnathopods, while in other respects

all the three would be practically indistinguishable. I retain Boeck's species for the moment, as the most convenient way of calling attention to the subject, but my own conviction is that *Anonyx Lilljeborgii* is only a small form of *Anonyx nugax*.

Loc. Vardö. Busse Sund. 1881.
 Hammerfest Harbour 25 IX 1881.
 Lat. 70° 30' N. Long. 45° 29' E. 6 VII 1882. 55 Fath.

GENUS HOPLONYX, Sars, 1891.

1891. *Hoplonyx*, Sars, Crustacea of Norway, vol. 1. pt. 4. p. 91.

In separating this genus from *Anonyx* Sars derives the name from the armature of the finger of the first gnathopods, describing the joint in question as "dactylus rather elongated, minutely denticulated inside and having beyond the middle a very distinct secondary tooth and a few setae, apex composed of 2 juxtaposed pointed lamellae". In *Onisimus* the finger is similarly constructed, but with a simple apex. In *Hippomedon squamosus* the finger has a double apex, as described above.

Hoplonyx cicada (O. Fabricius).

1780. *Oniscus cicada*, O. Fabricius, Fauna Groenlandica, n°. 233.

1845. *Anonyx gulosus*, Krøyer, Naturhist. Tidsskr. R. 2. Bd. 1. p. 611.

1846. » » Krøyer, Gaimard's Voyages en Scandinavie, etc. pl. 14.

1888. *Anonyx cicada*, Stebbing, Challenger Amphipoda, pp. 46, 617, 1645, 1690, etc.

1891. *Hoplonyx cicada*, Sars, Crustacea of Norway, vol. 1. pts. 4, 5. p. 92. pl. 32. fig. 2.

By Norman, Boeck, and Sars, the *Anonyx Holbölli* of Spence Bate is given as a synonym to this species. That determination, however, cannot depend on the figures and descriptions given by Mr. Spence Bate himself. In the British Museum Catalogue the telson is figured as short and emarginate instead of long and deeply cleft. In the British Sessile-Eyed Crustacea the telson is apparently figured with care, and exhibits only a single pair of dorsal denticles, which Sars gives as a character of his new species *Hoplonyx similis*.

Loc. Lat. 70° 48' N. Long. 38° E. 12 VII 1880. 115 Fath.
 Lat. 71° 4' N. Long. 62° 43' E. 12 VII 1883. 76 Fath. (Varna).

GENUS ALIBROTUS, Milne-Edwards, 1840.

1840. *Alibrotus*, Milne-Edwards, Hist. Nat. des Crustacés, vol. 3. p. 23.

1862. » Spence Bate, Brit. Mus. Catal. Amph. Crust., p. 86.

1870. *Onisimus* (pars), Boeck, Crust. amph. bor. et arct., p. 31 (111).

1891. *Alibrotus*, Sars, Crustacea of Norway, vol. 1 pt. 5. p. 101.

According to Milne-Edwards, in this genus the first two pairs of feet "are large, strong, and suited for walking and digging; they are nearly of the same form, and end in a large, flat, and elongate joint, the apex of which is armed with a stout, conical, and scarcely flexible nail". So characterized the genus seems little applicable to Krøyer's *Anonyx litoralis*. In reviving the name Sars varies the definition. In both sexes the flagella of both pairs of antennae are composed of numerous short joints. The palp is considerably longer than the trunk of the mandibles. The first gnathopods have the hand broader than in the nearest related genera. The telson is entire.

Alibrotus litoralis (Krøyer).

1845. *Anonyx litoralis*, Krøyer, Naturhist. Tidsskr. R. 2. Bd. 1. p. 621.

1846. *Anonyx littoralis*, Krøyer, Gaimard's Voyages en Scandinavie etc., Crust. pl. 13. fig. 1.

1862. *Alibrotus littoralis*, Spence Bate, Brit. Mus. Catal. Amph. Crust., p. 86. pl. 14. fig. 7.
 1870. *Onisimus littoralis*, Boeck, Crust. amph. bor. et arct., p. 32 (112).
 1891. *Alibrotus littoralis*, Sars, Crustacea of Norway, vol. 1. pt. 5. p. 102. pl. 35. fig. 2.

According to Sars the side-plates of the third peraeopods are "more broad than deep". This is not the case in our specimen. The fifth peraeopods have the hind margin of the large second joint strongly serrate, as is shown in Krøyer's figure 1*p*. Sars states that the telson is "scarcely more long than broad", and figures it with the length and breadth exactly equal. In our specimen the length is considerably more than the breadth, in close agreement with Krøyer's figure 1*n*, and the terminal border agrees with his description in showing "three small emarginations, a broader one in the middle and a smaller on either side of it, with a setule issuing from each of the latter". The sixth segment of the pleon carries dorsally close to the upper corners of the telson a row of five unequal spines on each side. Above these and close to the preceding segment there are on each side three rows of microscopic prickles.

Loc. Lat. 77° 28' N. Long. 55° 18' E. 27 VIII 1881. 150 Fath.

GENUS ONISIMUS Boeck, 1870.

1870. *Onisimus*, Boeck, Crust. amph. bor. et arct., p. 31 (111).
 1891. *Onesimus*, Sars, Crustacea of Norway, vol. 1. pt. 5. p. 104.

On the outer plate of the maxillae there are the usual eleven denticulate spines.

Onisimus Edwardsii (Krøyer).

1846. *Anonyx Edwardsii*, Krøyer, Naturhist. Tidsskr. R. 2. Bd. 2. pp. 1, 41.
 1846. » » Krøyer, Gaimard's Voyages en Scandinavie, Crust., pl. 16. fig. 1.
 1870. *Onisimus Edwardsii*, Boeck, Crust. amph. bor. et arct., p. 33 (113).
 1888. » » Stebbing, Challenger Amphipoda, p. 1713.
 1890. » » Meinert, Crustacea Malacostraca, p. 153.
 1891. *Onesimus Edwardsii*, Sars, Crustacea of Norway, vol. 1. pt. 5. p. 105. pl. 36. fig. 1.
 Loc. Vardö. Busse Sund. 1881.

The specimen from near Smeerenburg (N. Spitsbergen), taken in June 1878 from a depth of about 8 fathoms, which was referred by Dr. Hoek to *Onesimus leucopis*, Sars, is certainly distinct from that species, and belongs to *Onisimus Edwardsii*.

Onisimus plautus (Krøyer).

1845. *Anonyx plautus*, Krøyer, Naturhist. Tidsskr. R. 2. Bd. 1. p. 629. Bd. 2. p. 39.
 1846. » » Krøyer, Gaimard's Voyages en Scandinavie, etc. Crust., pl. 15. fig. 2.
 1870. *Onisimus plautus*, Boeck, Crust. amph. bor. et arct., p. 32 (112).
 1888. » » Stebbing, Challenger Amphipoda, p. 1714.
 1891. *Onesimus plautus*, Sars, Crustacea of Norway, vol. 1. pt. 5. p. 107. pl. 37. fig. 1.

There can be little doubt that Boeck and Sars have correctly identified Krøyer's species, but it must be mentioned that the figure of it in Gaimard's *Voyages* has the third segment of the pleon completely rounded, not produced upward and acute, as described by those authors and as in the example here assigned to the species.

The *Anonyx plautus* of Spence Bate is distinguished from Krøyer's species by the differently shaped first gnathopods, by the third segment of the pleon with angles not produced, and by the telson which is not incised and scarcely emarginate; it seems to approach most nearly *Nannonyx Goëssii* (Boeck).

Loc. Long: 70° 30' 8" N. Lat: 49° 41' 5" E. 29 VII. 1881. 52 Fath.

Onisimus caricus, Hansen.

1887. *Onisimus caricus*, Hansen, Oversigt over de paa Dijnphna-Togtet indsamlede Krebsdyr, p. 24. pl. 21. fig. 6—6e.

The lateral angles of the head are broadly rounded. The postero-lateral angles of the third pleon segment are produced upwards into a short blunt point. The fourth pleon segment has a slight transverse depression, but is otherwise rather flattened dorsally, which in adult specimens produces the effect of considerable width. There are minute prickles on many parts of the skin. Two longitudinal rows are present near the centre of the back of the short sixth pleon segment, and two such rows also on the upper part of the telson.

The eyes are almost colourless in spirit, irregular in shape, between round and triangular.

The first antennae have a much dilated first joint, a little produced at the inner angle; the third joint is short, with a very irregular distal margin; in a male specimen, about nine-tenths of an inch long, the flagellum has twenty-seven joints, the first as long as four or five of those which follow it; almost every joint has a calceolus and a row of short setae; the secondary flagellum is five-jointed, the terminal joint minute, the first nearly as long as the first of the primary, constricted at the base, armed with eight strong setae on the inner margin, with the adjacent part channelled. In a specimen half an inch long the principal flagellum has thirteen joints, with no calceoli, the secondary has five joints as in the larger specimen.

The second antennae have the gland-cone very blunt, the third joint shorter than the fifth and the fifth than the fourth, the flagellum composed of thirty-seven joints, each with a calceolus, the last two excepted. In the smaller specimen the flagellum has sixteen joints, without calceoli.

The epistome is defined but not completely separated from the upper lip by a very shallow sinus; it is strongly arched, and when in its natural position presents a triangular appearance, the sides of the triangle being defined by the palps of the mandibles. The upper lip is firmly attached both to the epistome and to the lower lip; its apex is formed by a narrow slightly rounded or squared projection.

The mandibles have a tooth at the lower angle and another which is very insignificant at the upper angle of the cutting edge. The left mandible has a small strap-shaped secondary plate. The spine-row is limited to three very small spines. The molar is directed backwards as in *Onisimus plautus*. The palp, which is planted above the base of the molar, is slightly longer than the trunk. The spines on the outer side of the distal half of its second joint are numerous, close set and long, and this is also the case with those which fringe the distal three quarters of the inner edge of the third joint; these are forty-four in number on the large specimen, but only eighteen on the smaller. Between the palp and the cutting edge there is the usual articulating process.

The lower lip has the lobes strongly furred distally, and indented both on the apical and the inner margin.

The first maxillae have two unequal feathered setae on the small inner plate; on the much furred outer plate they have eleven spines, of which as usual the upper are stouter and less denticulated than the lower; the second joint of the palp carries on the apex eight spine-teeth, or as in the smaller specimen only seven.

The second maxillae have the outer plate broader and much longer than the inner; both are furry; the inner has the distal part of the inner edge armed with spines and strongly plumose setae; the outer plate has various spines.

The maxillipeds agree with those in other species of *Onisimus* very closely, except that in the outer plate the outer margin near the apex in both the large specimen and the small one carries three slender spines instead of only a single spine.

First Gnathopods. The side-plates are greatly widened below; on the inner surface they are furnished with several scattered setules. The third, fourth, and fifth joints are of nearly equal

length; the fourth is acute at the apex; the hand is longer than the fifth joint; it has setae on both margins and some groups on the surface; the palm is sloping, nearly straight, bordered with little spines and fringed with minute spinules which pass along a small portion of the hind margin. There are some stout spines to assist the impact of the finger, which has a denticle on the spinulous inner margin.

The second gnathopods have an elongate second joint, the third joint much longer than the fourth but shorter than the wrist, the hand about half as long as the wrist, widened distally, with the palm concave, the finger strongly arcuate. The hand and three preceding joints are much furred. «The breast» or hind surface of the fifth joint is covered with scale-like markings.

First and Second Peraeopods. The fourth joint is nearly as long and as wide as the second, and the fifth is not much larger than the third; the finger is curved. The side-plates of the second peraeopods are rather squarely produced.

Third Peraeopods. The side-plates have the length and depth equal; they are a little shorter but much broader than the second joint of the limb, which is produced downwards behind in a rounded lobe. The fourth joint is not much longer than broad, with slender spines on both margins and stout ones in front. The fifth joint is stout, slightly tapering, with spines along the front margin and at the apex behind.

In the fifth peraeopods the second joint is as usual much larger and the fourth joint narrower than in the preceding pairs.

The first uropods have the rami nearly equal and a little shorter than the peduncle; they are armed with numerous spines; in the second pair the rami are as long as or longer than the peduncle; they are spined like the preceding pair; in the third pair the inner ramus is a little longer than the peduncle, and has two or three spines on one margin and five on the other; the outer ramus has a small apical joint, and in the adult specimen carries plumose setae as well as spines.

The telson is scarcely longer than broad, and does not reach the apex of the peduncles of the third uropods. Besides its shallow central emargination it has a pair of minute lateral indents, each carrying a couple of small setules.

Loc, Lat. 71° 13' N.	Long. 64° 43' E.	24 II. 1883. 59 Fath. (Varna).
Lat. 71° 4' N.	Long. 62° 43' E.	12 VII. 1883. 76 Fath. (Varna).

***Onisimus brevicaudatus*, Hansen.**

Onisimus brevicaudatus, Hansen, Oversigt over de paa Dijnphna-Togtet indsamlede Krebsdyr. p. 216. pl. 21. fig. 7—7e.

The lateral angles of the head are narrowly rounded. The postero-lateral angles of the third pleon-segment are produced upwards in a short acute point.

The first antennae of the specimen examined have a principal flagellum of fifteen or sixteen joints, most of them with calceoli. The second antennae have twenty-four joints in the flagellum, most of them carrying calceoli.

The mouth organs seem to be in complete agreement with those of *Onisimus caricus*, except that the outer plate of the maxillipeds has only one spine instead of three on the convex outer margin.

The first gnathopods have the wrist longer than the third or fourth joint, distally more widened than in *Onisimus caricus*, the spinules of the palm not continued along the hind margin, the finger more prolonged so as to project beyond the palm. The side-plates are rather less widened, and do not show setules on the inner surface.

The second gnathopods have the hand narrow, with the margins subparallel, the hinder produced further than the anterior; the short finger, planted in the middle of the obliquely truncate apex, does not leave a cavity when closed down. Hansen explains that this form belongs only to the male of this species. The peraeopods agree very nearly with those of *Onisimus caricus*, and the proportions of the uropods are similar.

The telson has a length only equal to its breadth, and the truncate apical margin is not at all indented. No prickles could be distinguished on its surface, although on the sixth pleon segment there are two rows of them as in *Onisimus caricus*, which in so many other respects this species closely resembles.

A second specimen, with the marsupial plates very small, agrees with Hansen's statement that in this species the male and female have a differently shaped hand in the second gnathopods. This joint in the specimen examined quite agrees with Hansen's description, as being shaped almost as in *Onisimus caricus*, yet somewhat broader towards the apex, the front margin much longer than the hinder, the apical border deeply and obliquely emarginate, with the finger robust and curved, attached near the anterior angle. In our specimen the first antennae have a primary flagellum of twelve joints, a secondary of five; the second antennae have a flagellum of fourteen joints. There are no calceoli. The apical margin of the telson is not so sharply truncate as in the male specimen, but is very faintly concave. This part appears to be subject to variation, since Hansen found the apex of the telson sometimes a little convex. He describes and figures the telson as much broader than long, which will not agree with our specimens.

The two specimens here described were the only undoubted representatives of this species in the collection. They were accompanied by several, of various sizes, of *Onisimus caricus*, and by two specimens, which agree with Hansen's description of *Onisimus affinis* in regard to the hand of the second gnathopods and in the little central indentation of the apical margin of the telson, but the shape of the telson otherwise agrees with that of *Onisimus brevicaudatus*, of which I suppose them to be young males. From the existing information it seems probable that *Onisimus affinis* is a synonym of *Onisimus brevicaudatus*.

Loc. Lat. 71° 13' N. Long. 64° 43' E. 24 II 1883. 59 Fath. (Varna).

GENUS *CHIRONESIMUS*, Sars, 1891.

1891. *Chironesimus*, Sars, *Crustacea of Norway*, vol. 1. pt. 5. p. 108.

Chironesimus Debruyneii (Hoek).

1882. *Anonyx debruyneii*, Hoek, *Die Crust. des "Willem Barents"*, *Nied. Arch. für Zool.*, Suppl. Bd. I. p. 44, pl. 3. fig. 30—30x.

1891. *Chironesimus Debruyneii*, Sars, *Crustacea of Norway*, vol. 1. pt. 5. p. 109. pl. 37. fig. 2.

In the first antennae the inner margin of the upper surface of the first joint forms a ridge, that of one antenna lying close to that of the other.

In the first maxillae the inner plate has two very unequal plumose setae; the outer plate has eleven spines, all of them denticulate; the apex of the palp is set with nine small spine-teeth.

The broad outer plate of the maxillipeds has on the inner margin numerous minute closely set spine-teeth, and two or three at intervals on the broadly rounded apical margin.

The first gnathopods have some fine denticles on the palm and a row of spines along the distal part of the hind margin. There is a denticle on the inner margin of the finger.

In the second gnathopods the palm forms a shallow cup, the concavity being set round with numerous setules and about a score of blunt spines. It is perhaps with reference to these that Sars speaks of it as being "coarsely denticulated in its outer part". The strongly curved finger does not reach the extremity of the palm; its inner margin is fringed with setules, but shows no signs of the denticulation of which Sars speaks.

The second uropods have the inner branch deeply indented below the middle, and at the indent carrying a prominent spine.

In general the specimens agree so exactly with the figures and description recently given by Professor Sars that it seems superfluous to add anything further to the above notes. For purposes

of identification attention may be called to the importance of the upper lip with compressed linguiform lobe directed forwards. The hand of the second gnathopods is often not easy to see, and its peculiar shape is found again in Hansen's *Onisimus caricus* and *Onisimus brevicaudatus*.

Loc. Lat. 77° 5' N. Long. 63° 53' E. 25 VIII 1881. 65 Fath.

Genus *Paronesimus*, n.

The genus stands near to *Onisimus*, Boeck, and *Chironesimus*, Sars. It is distinguished from *Onisimus* by having the palp much longer than the trunk in the mandibles, by having the palp of the first maxillae more elongate and with fewer spines on the apex, by the truncate palm of the second gnathopods, and by the telson which is much longer than broad and incised for more than a third but less than half of the length. From *Chironesimus*, which it strongly resembles in general appearance, it is distinguished by fewer spines on the palp of the first maxillae, by narrower second maxillae, by a different shape and armature of the outer plate of the maxillipeds, by the less deeply cleft telson and the smaller uropods.

The generic name signifies »near to *Onisimus*».

Paronesimus Barentsi, n. sp. ♀.

Plate 2.

The single specimen was dissected under the impression that it belonged to *Chironesimus Debruyneii* (Hoek), with which, however, it agrees only in general figure, while differing in numerous details. The third segment of the pleon has the postero-inferior angles slightly produced and up-turned. The shape of the eyes is believed to be the same as in the species just mentioned.

First Antennae. The first joint of the peduncle is very stout, the two following joints are small. The flagellum has the first joint not very elongate but longer than the only three remaining joints. The secondary flagellum has four joints subequal in length to the first four of the primary.

Second Antennae. The fifth joint of the peduncle is equal in length to the third, but narrower; the fourth joint is much longer. The ten-jointed flagellum is equal in length to the last two joints of the peduncle.

Mandibles. The cutting edge has a small tooth at either extremity. The left mandible has a small strap-shaped secondary plate. There are only two small spines in the spine-row. The molar tubercle is not very prominent, its grinding surface sloping a little backward. There is the usual articulating projection in front of the palp. The latter is planted just over the molar, and has eighteen or nineteen setae on the third joint, which is but little shorter than the second.

Lower Lip. The apices are broad and apparently smooth.

First Maxillae. The inner plate is short, with two unequal plumose setae on the apex. The outer plate has eleven denticulate spines, none of them very stout. The second joint of the palp is elongate, and carries on one maxilla four, on the other five, spine-teeth.

Second Maxillae. The inner plate is narrower and much shorter than the outer, yet much more than half its length.

Maxillipeds. The inner plate has three little teeth on the apex. The oval outer plate reaches to the apex of the second joint of the palp, and has ten or twelve minute teeth, crowded on the apical margin but in open order lower down; there is a single spine on the convex outer margin at some distance from the apex. The fourth and fifth joints of the palp are rather long.

First Gnathopods. The side-plates are not broader below than above. The second joint is stout, the third longer than the fourth and equal to the wrist, which is stouter than the hand but much shorter. The hand is a little curved and tapering, the apical margin occupied for more than half its extent by the finger, then at a different level forming a small sinuous palm. The spines and setae are few. The finger is short and stout.

Second Gnathopods. The second joint is long and slender, widening distally; the third is about half the length of the second and as long as the wrist. The hand is considerably more than half as long as the wrist, nearly twice as long as its greatest breadth, widening gradually towards the palm which is a little sinuous, with some setules around the hinder portion. The finger is strongly curved, its acute apex touching the palm at a little distance from the tooth-like extremity.

First Peraeopods. The second joint is stout. The fourth joint is longer than the sixth and twice as broad, a little produced at the front apex. The fifth joint is not longer than the third. The finger is short and curved.

Second Peraeopods. The side-plates are not greatly produced below; the greatest breadth is two thirds of the length. The limb is similar to that in the preceding pair, but with a longer fourth joint.

Third Peraeopods. The side-plates have an equal length and breadth, with the hinder lobe produced a little below the front one. The second joint is nearly as long as the side-plate but much narrower, its front margin concave, the hinder convex and produced behind the third joint. The fourth joint is about equally broad and long, not longer than the fifth but twice as broad. The sixth joint is longer than the fifth. The finger is slender and curved.

Fourth Peraeopods. The side-plates have a straight front edge. The joints, except the third, are rather longer than in the preceding limb.

Fifth Peraeopods. The second joint is longer and very much broader than in the two preceding pairs. The fourth joint is less broad, the fifth and sixth are less long than in the preceding pair.

Uropods. The first pair have the peduncle much longer than the rami, which are subequal, each carrying three spines on the margin. In the second pair the peduncle is much and the rami a little shorter than in the first pair; the rami are armed in the same way; they are shorter than the peduncle. In the third pair the smooth inner ramus is as long as the peduncle, the outer ramus is a little longer, and has a tooth or second joint at the apex but no other armature.

The telson does not quite reach the apex of the peduncle of the third uropods. It is cleft for four-ninths of its length. Each apex carries a small spine.

The specific name refers to the ship by which the species was obtained.

Loc. Lat. 75° 49' N.

Long. 53° 42' E.

18 VIII. 1881. 68 Fath.

GENUS MENIGRATES, Boeck, 1870.

1870. *Menigrates*; Boeck, *Crust. amph. bor. et arct.*, p. 33. (113).

1876. » Boeck, *De Skand. og Arkt. Amph.*, p. 169.

1891. » Sars, *Crustacea of Norway*, vol. 1. pt. 5. p. 110.

In the mandibles the molar presents no grinding surface but an elongate microscopically denticulate edge. The first maxillae have eleven denticulate spines on the outer plate and six spine-teeth on the apex of the palp. In the specimen mentioned below one of the first maxillae has the abnormal number of twelve spines on the outer plate.

Menigrates arcticus, Schneider, 1884, is identified by Sars with *Aristias tumidus* (Kröyer), so that the genus *Menigrates* at present contains but a single species.

Menigrates obtusifrons, Boeck.

1860. *Anonyx obtusifrons*, Boeck, *Forhandl. ved de Skand. Naturf. 8^{de} Möde*, p. 643.

1865. *Anonyx brachycercus*, Lilljeborg, *On the Lysianassa magellanica*, etc., p. 27. pl. 4. fig. 42—49.

1870. *Menigrates obtusifrons*, Boeck, *Crust. amph. bor. et arct.*, p. 34 (114).

1876. » » Boeck, *De Skand. og Arkt. Amph.*, p. 169, pl. 6. fig. 2.

1891. » » Sars, *Crustacea of Norway*, vol. 1. pt. 5. p. 111. pl. 38. fig. 1.

In the synonymy of this species Sars includes "*Anonyx plautus*, Sp. Bate (not Kröyer)", but,

besides the very much smaller size of Spence Bate's species, it is distinguished from *Menigrates* by the very different proportions of the hand and wrist in the first gnathopods, by not having the angles produced in the third segment of the pleon, and by having no incision in the telson, agreeing in most respects, as already observed, with *Nannonyx Goësi* (Boeck).

The rather puzzling superficial resemblance between *Menigrates obtusifrons*, Boeck, and *Onisimus plautus* (Kröyer), has been pointed out by Sars, by whose figures and descriptions, however, they can be easily distinguished.

The upper antennae of our specimen, a male, have a flagellum of thirteen joints; the lower antennae have one of sixteen joints; in each the joints are broad, with large calceoli; only the two apical joints are minute. The accessory flagellum of the upper antennae is four-jointed, strongly developed.

The length of the specimen is rather more than half an inch.

Loc. Lat. 74° 31' N. Long. 49° 8' 6" E. 13 VIII 1884. 100 Fath.

GENUS LEPIDEPECREUM, Bate and Westwood, 1868.

1868. *Lepidepecreum*, Bate and Westwood, Hist. of British sessile-eyed Crustacea, vol. 2. p. 509.
 1882. » Sars, Oversigt af Norges Crustaceer, p. 22.
 1888. » Stebbing, Challenger Amphipoda, p. 686.
 1891. » Sars, Crustacea of Norway, vol. 1. pt. 5. p. 112.

The genus at present contains four species, *Lepidepecreum longicorne*, Bate and Westwood, *Lepidepecreum umbo* (Goës), *Lepidepecreum clypeatum*, Chevreux, and *Lepidepecreum foraminiferum*, Stebbing. Sars wishes to cancel the name *longicorne* in favour of the later *carinatum*, on the ground that *longicorne* refers only to a masculine character; but that is an insufficient reason for interfering with the invaluable law of priority. There can be little doubt that Sars is right in making *Lepidepecreum mirabile*, Meinert, a synonym of Bate and Westwood's species. He does not refer to Chevreux's species, which is distinguished from the others by having the hand a little longer than the wrist, and the eyes inconspicuous.

Lepidepecreum umbo (Goës).

1866. *Lysianassa umbo*, Goës, Crust. amph. maris Spetsbergiam alluentis, etc. Öfv. af K. Vet. Akad. Förh. 1865. p. 4. Taf. 37. fig. 6.
 1870. » » Iarzynsky, Praemissus Catal. Crust. amph. in mari albo, etc. St. Pet. L. Univ. Zool. Mus. Tom. 1. Pt. 2. p. 315.
 1870. *Orchomene umbo*, Boeck, Crust. amph. bor. et arct. Vidensk-Selsk. Forh. 1870. p. 37 (117).
 1876. » » Boeck, De Skand. og Arkt. Amph. p. 178.
 1882. *Lepidepecreum umbo*, Sars, Oversigt af Norges Crustaceer, pp. 22, 81.
 1884. *Orchomene (Lepidepecreum) umbo*, J. S. Schneider, Crust. i Kvaenangsfjorden, Tromsø Mus. aarsb. VII. p. 70.
 1886. *Lepidepecreum umbo*, Sars, Den Norske Nordhavs-Exped. Crust. II. p. 42.
 1888. » » Stebbing, Challenger Amphipoda, pp. 355, 686, etc.
 1892. » » Sars, Crustacea of Norway, vol. 1. pt. 3. p. 115. pl. 39. fig. 2.

The upper antennae in the specimen, a male, have a principal flagellum of ten joints, and the secondary flagellum four-jointed. The flagellum of the second antennae consists of sixty-four joints. The tip of the fourth pleon segment is dorsally recurved.

Loc. Between 73° 20' and 75° 13' N.

GENUS AMPELISCA, Kröyer, 1842.

1842. *Ampelisca*, Kröyer, Naturhist. Tidsskrift, R. 1. Bd. 4. p. 154.
 1888. » Stebbing, Challenger Amphipoda, p. 1035, etc.

1891. *Ampelisca*, Sars, Crustacea of Norway, vol. 1. pt. 8. p. 164.

In re-describing the genus Sars speaks of the first maxillae as having the inner plate without distinct marginal setae. There are, however, at least in some species, two apical setae. On the outer plate there are eleven spines.

***Ampelisca Eschrichtii*, Krøyer.**

1842. *Ampelisca Eschrichtii*, Krøyer, Naturhist. Tidsskr. R. 1. Bd. 4. p. 155.

1882. *Ampelisca eschrichti*, Hoek, Crust. »Willem Barents», Nied. Arch. für Zool., Suppl. Bd. 1. p. 59.

1888. *Ampelisca Eschrichtii*, Stebbing, Challenger Amphipoda, p. 1687, etc.

1891. » » Sars, Crustacea of Norway, vol. 1. pt. 8. p. 174. pl. 61. fig. 1.

This species was taken by the Willem Barents' Expedition at numerous stations in 1878 and 1879, as already recorded by Dr. Hoek, who mentions that the largest specimen had a length of over 30 mm. Sars speaks of the "length of adult female reaching 25 mm." This measure is not unfrequently exceeded. Sars has decided that the species *Ampelisca dubia*, Boeck, and *Ampelisca propinqua*, Boeck, are only stages of growth of the present species, a welcome abrogation of two perplexing forms.

A single specimen in the present collection was taken in 1884 at

Lat 72° 34' N. Long. 48° 6' E. 140 Fath. Temp. — 0°.6.

***Ampelisca macrocephala*, Lilljeborg.**

1852. *Ampelisca macrocephala*, Lilljeborg, Öfversigt af Kongl. Vet. Akad. Förhandl. ärg. 9. p. 7.

1888. » » Stebbing, Challenger Amphipoda, p. 1687, etc.

1891. » » Sars, Crustacea of Norway, vol. 1. pt. 3. p. 172. pl. 60. fig. 1.

Of the two specimens in the present collection the one dissected measured half an inch. The other is about six tenths of an inch long. The agreement with Sars' description and figures of the species is very close, but in the first and second peraeopods the finger is decidedly longer than the two preceding joints combined; in the fifth peraeopods the finger, even without its whip-like termination, is considerably more than half as long as the preceding joint, and the rami of the third uropods are not double the length of the peduncle. These, however, are trivial differences in measurement which may vary from specimen to specimen. The telson has "four pairs of dorsal denticles and a single pair of apical spinules", just as Sars describes, and the outer ramus of the second uropods is "armed, near the tip, with a very long and slender spine".

Mouth of Duna. 25 V. 1883.

GENUS BYBLIS, Boeck, 1870.

1870. *Byblis*, Boeck, Crust. amph. bor. et arct., p. 68 (148).

1883. » Stebbing, Challenger Amphipoda, pp. 402, 1669, etc.

1891. » Sars, Crustacea of Norway, vol. 1. pt. 8. p. 182.

***Byblis Gaimardii* (Krøyer).**

1846. *Ampelisia Gaimardii*, Krøyer, Gaimard's Voyages en Scandinavie, etc., pl. 23. fig. 1.

1870. *Byblis Gaimardi*, Boeck, Crust. amph. bor. et arct., p. 68 (148).

1888. *Byblis Gaimardii*, Stebbing, Challenger Amphipoda, p. 1692, etc.

1891. » » Sars, Crustacea of Norway, vol. 1. pt. 8. p. 183. pl. 64.

Loc. Lat. 70° 48' N.	Long. 38° E.	12 VII 1880. 115 Fath.
Lat. 75° 49' N.	Long. 53° 41' E.	18 VIII 1881. 60 Fath.
Lat. 71° 19' N.	Long. 63° 36' E.	23 VI 1883. 85 Fath.

Byblis intermedius, n. sp.

This species, represented by a single specimen, is very near to *Byblis affinis*, Sars, *Byblis erythroptus*, Sars, and *Byblis Guernei*, Chevreux. The head has a blunt rostral point, and the lower pair of corneal lenses placed below the slightly advanced lateral angles. There are traces of red pigment round all the eyes. The peduncles of the first antennae do not reach the end of the fourth joint of the second pair, the whole peduncle being little if at all longer than that joint. There are twenty-seven joints in the flagellum. In the second antennae the fourth and fifth joints of the peduncle are equal; the flagellum has thirty-six joints. The gnathopods and peraeopods are as in *Byblis affinis*, except that in the first two pairs of peraeopods the finger as in *Byblis Guernei* is just as long, instead of not quite so long, as the preceding joint. In the pleon the third segment exactly corresponds with that figured by Sars for *Byblis affinis*, with broadly rounded lateral projections, which Sars describes as the "epimeral plates... bluntly truncated at the lateral corners". On the other hand, the telson is very much broader than long, the cleft falling considerably short of the middle, and rather resembling the telson of *Byblis erythroptus* than that of *Byblis affinis*; it is very short, like that of *Byblis Guernei*.

In *Byblis affinis* Sars figures the peduncle of the first antennae as reaching the apex of the fourth joint of the second pair, and states that the length of the adult female scarcely exceeds 9 mm. The specimen of *Byblis intermedius*, a female, measured half an inch from front of the head to the extremity of the third uropods.

Loc. Lat. 72° 9' Long. 24° 42' E. 14 June 1881. 145 Fath.

GENUS HAPLOOPS, Lilljeborg, 1855,

1855. *Haploops*, Lilljeborg, Öfversigt af Kongl. Vetensk. Akad. Förhandl. Ärg. 12. p. 135.

1888. » Stebbing, Challenger Amphipoda, pp. 285, 1704, etc.

1891. » Sars, Crustacea of Norway, vol. 1. pl. 9. p. 191.

In the generic description Sars says, "corneal lenses, when present, only two, the inferior pair being quite absent". Della Valle, however, states that the genus *Haploops*, as represented in the Mediterranean, has four eyes, each with a corneal lens. This is also true of the species *Haploops laevis*, Hoek. Goës says of *Haploops tubicola* that "from a great depth at Aukpadlartok in Greenland Torell brought a great quantity of specimens very robust and having conspicuously four eyes, two on the top of the head and two at the front lower lateral angles of it—for the rest clearly agreeing with our species". Considering the close general resemblance between the various species of this genus, it seems probable that the specimens referred to by Goës may have belonged to *Haploops laevis*. The first maxillae have either two plumose setae or only one such seta on the inner plate, and eleven slender spines on the outer.

Haploops robusta, Sars

1891. *Haploops robusta*, Sars, Crustacea of Norway, vol. 1. pt. 9. p. 195. pl. 68. fig. 2.

This species is distinguished by Sars from *Haploops setosa* by its much larger size, more robust form, the evenly rounded lateral corners of the head, the much shorter and stouter antennae, and the non-produced angles of the third pleon-segment. He was only acquainted with a single specimen, 19 mm. in length. The specimens in the present collection are of various sizes, the largest being 22½ mm. or nine tenths of an inch long, exclusive of the antennae. There are no corneal lenses, but an appearance of an ocular spot including a few bright points near

each angle of the head. These angles are not so strongly rounded off as in Sars' figure, but more so in some specimens than in others. The angles of the third pleon segment are minutely produced, at least in some of the specimens including the largest. The proportions of the antennae do not differ much from those of *Haploops setosa*. In a specimen six tenths of an inch long the flagellum of the first antennae has thirty-three joints, that of the second thirty joints. The fourth segment of the pleon has a strong dorsal hump with a pair of small tubercles flanking it in advance; the fifth segment has a pair of rather stout tubercles, and the sixth is prominently raised on each side of the telson. The telson is much more deeply divided than in *Haploops setosa*. In the fifth peraeopods the fourth and fifth joints are rather longer in proportion to their breadth than in the species just named, but with all differences allowed for, the resemblance between the two species remains extremely close.

Loc. Lat. 75° 3' 5 N.	Long. 35° 50' E.	25 VI 1880. 147 Fath.
Lat. 72° 41' N.	Long. 31° 49' E.	2 VII 1882. 136 Fath.
Lat. 72° 9' N.	Long. 24° 42' E.	14 Juni 1881. 145 Fath.
Lat. 72° 14' 8" N.	Long. 22° 30' 9" E.	30 Juni 1881. 165 Fath.
Lat. 75° 13' N.	Long. 15° 46' E.	12 Juli 1881. 175 Fath.
Lat. 75° 49' N.	Long. 53° 41' E.	18 Aug. 1881. 68 Fath.

Haploops tubicola, Lilljeborg.

1852. *Ampelisca Eschrichti*?, Lilljeborg, Öfversigt af Kongl. Vet.-Akad. Förhandl. Ärg. 9. p. 6.
 1855. *Haploops tubicola*, Lilljeborg, Öfversigt af Kongl. Vet.-Akad. Förhandl. Ärg. 12. p. 135.
 1855. *Haploops carinata*, Lilljeborg, Öfversigt af Kongl. Vet.-Akad. Förhandl. Ärg. 12. p. 136.
 1891. *Haploops tubicola*, Sars, Crustacea of Norway, vol. 1. pt. 9. p. 192. pl. 67.

Sars has recently decided that *Haploops carinata* is not an independent species, but the male of *Haploops tubicola*. Lilljeborg himself at first united the two forms as the sexes of Krøyer's *Ampelisca Eschrichtii*, but when correcting that mistake he established a separate species for each sex.

A specimen, four tenths of an inch long, no doubt a young male, in the present collection, agrees closely with the description and figures given by Sars. The angles of the third pleon-segment, however, are a very little produced, and the side-plates of the second peraeopods have the produced portion very blunt instead of acute. The second joint of the mandibular palp has a bend at the base. There are two setae close together at the apex of the inner plate of the first maxillae.

Haploops laevis, Hoek.

Plate. 3.

1882. *Haploops laevis*, Hoek, Die Crustaceen gesammelt während der Fahrten des "Willem Barents" in den Jahren 1878 und 1879; Nied. Arch. für Zool. Suppl. Bd. 1. p. 61. pl. 3. fig. 31.
 1887. » » Hansen, Oversigt over de paa Dijnphna-Togtet indsamlede Krebsdyr, p. 230.

The obtuse-angled front of the head is a little depressed below the rest of the dorsal surface; the lateral angles are not strongly advanced. Most of the segments of the peraeon have a patch of very fine down along the centre of the back. The corners of the second and third segments of the pleon are squared.

There are two pairs of corneal lenses, the larger pair at the top of the head just behind the frontal depression, the smaller pair at or under the lateral angles. On the Plate the upper antennae are figured as seen from below, and with them is shown a part of the flat under-surface of the head, containing the lower pair of eyes and the sockets of both pairs of antennae.

The first antennae have the first joint much thicker than the second and nearly as long, the third joint a third of the length of the second, the flagellum contains thirty joints. This description applies to a specimen six-tenths of an inch long, a female with the marsupial plates incompletely developed. As shown in the figure, one member of this pair of antennae in the specimen was incompletely developed, having the second joint of the peduncle shorter than the first, and a flagellum of only fourteen joints.

The second antennae have the second joint of equal breadth and length, with a short but prominent acute gland-cone. The third joint is more than half the length of the fourth, and the fourth is nearly as long as the fifth. There are thirty joints in the flagellum. Both pairs of antennae are fringed with numerous long setae.

The lips and mouth-organs generally agree very nearly with those of *Haploops tubicola*. A few differences may be noted. In the mandibles the spines of the spine-row are ten and eleven in number as against eight and nine, and the second joint of the palp is wider, and it is also rather longer than the third instead of shorter than or equal to it. In the first maxillae there appears to be only one seta on the narrow tip of the flask-shaped inner plate; the second joint of the palp is much more widened distally than in the other species, and has several more setae, though it agrees in having four spines inserted on the toothed apex.

First Gnathopods. The side-plates, though narrow at the base, are greatly widened distally, and much exceed in size any of the following pairs; they cover the bases of the second antennae. The limbs are much the same as in *Haploops tubicola*, except that the hand is a little widened instead of narrowed distally, thus forming a more decided palm, which the shorter finger does not overlap.

Second Gnathopods. The hand is a more elongate oval than in the species compared. Both pairs of gnathopods have as usual the hand and wrist armed with a crowd of finely serrate spines and setae and the fingers have several setules on the inner margin.

The peraeopods differ but slightly from those of *Haploops tubicola*. In the first pair the side plates are rather shorter and broader than those of the second gnathopods, and the fourth and fifth joints are armed with long plumose setae as in the following pair, whereas in *Haploops tubicola* these joints in the first peraeopods are much more scantily furnished than in the second. In the fifth peraeopods the large second joint has an emargination in the upper border of the outer surface, in which is set a small oval piece apparently connecting the joint with the side-plate.

The first uropods have the peduncle very little longer than the slender smooth curved outer branch; the inner branch is similar to the outer, but only two-thirds of its length. The second pair have the peduncle straight, nearly as long as that of the first pair, the branches subequal, considerably shorter than the peduncle, the outer with a row of nine small spines on one margin and two on the other, the inner branch carrying four spines. The third pair have the peduncles shorter than the branches, of which the outer is as long as those of the second pair, and fringed on part of both margins with plumose setiform spines; the inner and shorter branch carries two short stout spines on the surface, and a bunch of plumose setiform spines on the blunt apex.

The telson is scarcely longer than its greatest breadth, cleft for fully two thirds of the length, each of the broadly rounded apices carrying a spine; the lateral margins show one or two minute setules.

Hansen records a specimen just over 19 mm. in length. None of the specimens in the present collection seem to exceed seven-tenths of an inch.

Loc.	Lat. 71° 4' N.	Long. 64° 35' E.	31 I 1883. 55 Fath. (Varna).
	Lat. 74° 32' N.	Long. 35° 50' E.	29 VI 1880. 147 Fath.
	Lat. 70° 30' N.	Long. 49° 41' E.	29 Juli 1881. 54 Fath.
	Lat. 75° 49' N.	Long. 53° 47' E.	18 Aug. 1881. 68 Fath.
	Lat. 69° 48' N.	Long. 54° 43' E.	20 VII 1883. 57 Fath.

Lat. 69° 42' 53" N. Long. 56° 51' 30" E. 16 VII 1883. 24 Fath.
 Lat. 74° 31' N. B., Long. 49° 8' 6" E. 1884. 100 Fath.

GENUS STEGOCEPHALUS, Krøyer, 1842.

1842. *Stegocephalus*, Krøyer, Naturhist. Tidsskr. R. 1. Bd. 4. p. 150.
 1888. » Stebbing, Challenger Amphipoda, p. 728, etc.
 1891. » Sars, Crustacea of Norway, vol. 1. pt. 9. p. 197.

Sars assigns two species to this genus, the type species *Stegocephalus inflatus*, Krøyer, and his own *Stegocephalus similis*. The *Cancer ampulla* of Phipps he regards as equivalent to *Stegocephalus Kessleri*, Stuxberg, and as most probably belonging to a new genus *Aspidopleurus*.

***Stegocephalus inflatus*, Krøyer.**

1842. *Stegocephalus inflatus*, Krøyer, Naturhist. Tidsskr. R. 1. Bd. 4. p. 150.
 1888. » » Stebbing, Challenger Amphipoda, p. 728, pl. 137 A.
 1891. » » Sars, Crustacea of Norway, vol. 1. pt. 9. p. 198. pl. 69.
- | | | | | | |
|------|---------------------|----------------------|---------|-------|-------------------|
| Loc. | Lat. 74° 30' N. | Long. 26° 3' E. | 22 VI | 1880. | 180 Fath. |
| | Lat. 74° 32' N. | Long. 35° 50' E. | 29 VI | 1880. | 147 Fath. |
| | Lat. 74° 75' N. | Long. 34° 6' E. | 30 VI | 1880. | 175 Fath. |
| | Lat. 70° 30' 50" N. | Long. 45° 29' 51" E. | | 1882. | 55 Fath. |
| | Lat. 73° 57' 30" N. | Long. 51° 26' 3" E. | | 1882. | 135 Fath. |
| | Lat. 71° 9' N. | Long. 63° 36' E. | 23 VI | 1883. | 85 Fath. (Varna). |
| | Lat. 71° 4' N. | Long. 64° 5' E. | 14 II | 1883. | 55 Fath. (Varna). |
| | Lat. 69° 32' 56" N. | Long. 59° 9' 7" E. | | 1883. | 15 Fath. |
| | Lat. 69° 48' 30" N. | Long. 54° 43' 28" E. | | 1883. | 59 Fath. |
| | Lat. 70° 12' 22" N. | Long. 56° 38' 35" E. | | 1883. | 63 Fath. |
| | Lat. 75° 49' N. | Long. 53° 43' E. | 18 VIII | 1881. | 68 Fath. |
| | Lat. 72° 34' N. | Long. 48° 6' E. | | 1884. | 140 Fath. |
| | Lat. 74° 31' N. | Long. 49° 86" E. | | 1884. | 100 Fath. |
| | Lat. 75° 42' N. | Long. 19° 0' 4" E. | | 1884. | 45 Fath. |

GENUS OEDICEROS, Krøyer, 1842.

1842. *Oediceros*, Krøyer, Naturhist. Tidsskr. R. 1. Bd. 4. p. 155.
 1888. » Stebbing, Challenger Amphipoda, p. 837, etc.

***Oediceros saginatus*, Krøyer.**

1842. *Oediceros saginatus*, Krøyer, Naturhist. Tidsskr. R. 1. Bd. 4. p. 156.
 1888. » » Stebbing, Challenger Amphipoda, p. 1713, etc.
 Vardö, Busse Sund. 1881.

***Oediceros lynceus* M. Sars.**

1859. *Oediceros lynceus*, M. Sars, Oversigt over norsk-arkt. Krebsdyr. Forhandl. i Vidensk.-
 Selsk. i Christiania 1858, p. 143.
 1888. » » Stebbing, Challenger Amphipoda, pp. 837, 1713, etc.
 Loc. Lat. 69° 55' N. Long. 58. 54' E. 16 VII 1882. 43 Fath. (Varna).

Oedicerus microps, G. O. Sars.

1882. *Oedicerus microps*, Sars, Oversigt af Norges Crustaceer, Christiania Vidensk. For-
 handlinger 1882. No. 18. p. 95, pl. 4. fig. 8, 8a.
Oedicerus microps, Stebbing, Challenger Amphipoda, pp. 539, 599.
 Harbour at Hammerfest. 25 Sept. 1881.

GENUS MONOCULODES, Stimpson, 1853.

1853. *Monoculodes*, Stimpson, Marine Invertebrata of Great Manan, p. 54.
 1888. » Stebbing, Challenger Amphipoda, p. 1677, etc.
 1889. » Norman, Ann. and Mag. Nat. Hist. p. 447.

Monoculodes Hanseni, n. sp.

Plate 4.

The head has a transverse dorsal groove near the base; the lateral angles are obtuse, very little produced; the rostrum is long, with a little acute depressed tip, just above which the eyes form a prominent oval tubercle. The peraeon is dorsally wide, without keel, except the faintest trace at the back of the last segment. The first three segments of the pleon have a slight discontinuous keel, and the postero-lateral angles broadly rounded. The first two segments have numerous adpressed surface spines, and the last segment has a submarginal fringe of them.

In the upper antennae the first joint of the peduncle reaches a little beyond the elongate rostrum; the second joint is longer and thinner than the first; the third is about a sixth of the length of the second; the flagellum of eleven joints is half the length of the peduncle, but may have one or two joints missing.

The lower antennae have the gland-cone short, the third joint not twice as long as its breadth, the fourth joint just shorter than the second in the upper antennae but considerably thicker, the fifth joint notably shorter and thinner than the fourth; the flagellum was missing.

The upper lip is broad, the distal margin very slightly concave at the centre, the corners broadly rounded and furred.

The mandibles have five or six teeth on the cutting edge, and on the left mandible the secondary plate is very like the principal, with one large and six small teeth; on the right mandible the secondary plate is of slighter construction. In the spine-row there are eight or nine spines, very minutely serrate. The molar tubercle is prominent, with a finely denticulate crown and small seta. Above it there is a narrow process near the base of the elongate palp, of which the second joint is long and curved, distally narrowing, equal in length to the first and third joints combined. There are many spines along the palp, and a group of very long ones at the apex.

The lower lip is broad; the mandibular processes are broadly rounded.

The first maxillae have a widely oval inner plate, with ciliated margins, a short plumose seta at the apex, and a smooth one a little below it. The outer plate has two of the seven spines minutely furcate, and some of the others furnished with a small lateral tooth; the second joint of the palp is wide, with long and short spines fringing the triangular apex.

The second maxillae have the inner plate oval, the outer rather longer and narrower, concave on the inner margin; both plates are distally fringed with numerous spines.

The maxillipeds have short wide inner plates carrying long and slender spines on the apical margin. The outer plates are long and narrow, widest near the base, closely fringed with rather slender spines on the inner and apical margins, three descending the outer margin, and those on the apex reaching the extremity of the long and wide second joint of the palp. The fourth joint of the palp is slender and curved, as long as the third joint.

The first gnathopods have the side-plates distally widened, serrate, and fringed with setae. They are advanced almost to the lateral angles of the head. The second joint is equal in length to the wrist and hand combined. It has numerous long spines and setae on both margins and the inner surface. The fourth joint has a produced apex, and many spines on the hind margin and inner surface. The wrist is about as long as the hand, with a broad and strongly spined process less than half the length of the hand. The hand widens considerably with a smooth slightly concave hind margin to the commencement of the long convex palm, which is closely fringed with short spines and defined by a longer one; there are numerous spines on the surface and near the convex front margin of the hand. The finger closely fits the palm, its tip just overlapping it.

The second gnathopods have almost quadrangular side-plates with the lower and part of the hind margin serrate and fringed. The marsupial plates are narrow, longer than the second joint of the limb, fringed with very long setae. The second joint is elongate, fringed with many long spines and setae, some of the latter being verticillately plumose. The fourth joint is without a produced process; the wrist, including its long and narrow closely spined process, is as long as the hand. The hand is much longer than that in the first gnathopods, which it in general resembles except in being much longer in proportion to its breadth. The finger matches the palm, without overlapping it.

The first peraeopods have side-plates differing from the preceding pair by being wider and having the lower margin sinuous. The second joint is shorter than in the preceding pair of limbs, widened distally, with groups of very long spines or setae along the hind margin and on the inner surface near the lower part of the front margin. The fourth joint is similarly armed, and greatly widened distally; the fifth joint is much shorter, not distally widened, similarly armed; the sixth is longer than the fifth, curved, a little widened near the distal end but narrowest at the two extremities, with a dozen rows of spines on the convex front margin and six small groups on the concave hind margin. The finger is as long as the sixth joint, smooth, curved, with a tiny nail. There is no cap visible over the nail, in this or the other limbs; it may be accidentally wanting.

The second peraeopods have the side plates nearly as broad as deep, with gently concave hind margin, the lower margin quite straight. The limb differs but little from those of the preceding pair, but the sixth joint is not at all widened distally.

The third peraeopods have the side-plates considerably wider than the preceding pair, both lobes serrate and fringed on the lower margin, the front margin curved, though less strongly than the hinder one. The second joint is not half the width of the side-plate, with spines on both margins and long feathered setae on the front; the hinder expansion is broadly curved above but almost disappears below; from the inner surface very long plumose setae project beyond the expansion. The fourth joint is three-fourths the length of the second, with spines along the front and long plumose setae on the hind margin. The fifth joint is little more than half the length of the fourth; it has five or six groups of spines on each margin. The sixth joint is long, scarcely curved, with five or six groups of spines behind and three or four in front; the finger equals it in length.

The fourth peraeopods have side-plates equal in width and depth. The limb differs little from those of the preceding pair, but the fifth and sixth joints are rather longer.

The fifth peraeopods have the side-plates much wider (or properly speaking longer) than the depth. The second joint widens rather abruptly above the middle and then narrows to the extremity; its width is two thirds of its length; both margins are fringed but not very strongly. The fourth joint is rather shorter than the second, while the fifth is much longer; the sixth may be nearly as long as the fifth, but it is broken, and the finger is wanting in all the specimens.

All the uropods extend back to nearly the same point, only the outer branch in the third uropods falling short of the others. The peduncles are longer than the rami, those of the first pair reaching nearly as far back as those of the second, and the second as those of the third; the rami in the first pair are equal, and so also in the second; in the third the outer is the shorter.

The telson is small, longer than broad, a little narrowed apically, and with the sides near the apex and the apical border itself slightly insinuate; there are two or three very small setules on each side not far from the apical border.

The length is seventeen-twentieths of an inch.

The figure of the animal was drawn from a different specimen from that of which the parts are figured.

The name of the species is given out of respect to Herr H. J. Hansen of Copenhagen, whose works upon the sessile-eyed Crustacea are well known.

The present species stands very close to *Monoculodes longirostris*, Goës, but it is very much larger, in the proportion of 21 to 12; the apex of the rostrum is more depressed, the second joint of the upper antennae is longer than the first instead of shorter than or equal to it, and the sides of the telson are insinuate instead of straight. The differences in the mouth-organs are very slight, but *Monoculodes longirostris* has no spines on the outer margin of the outer plates of the maxillipeds. The gnathopods of the latter species are also less widened at the palms, while in the first and second peraeopods the sixth joint is more widened distally than in the new species, and the side-plates of the third peraeopods are less wide and have the front margin straighter.

From the obscure *Monoculodes Kröyeri* of Boeck the present species is distinguished by the longer rostrum, by the fourth joint of the lower antennae being longer than the fifth, by the insinuate telson, and other particulars, while it agrees with that species more nearly in length and in the traces of a keel on the segments of the pleon.

When all differences have been taken into account, it must still appear that the three species, *longirostris*, *Kröyeri*, and *Hanseni*, are very nearly related.

Loc. Lat. 71° 32' N. Long. 64° 37' E. 24 III 1880. 55 Fath. (Varna).

GENUS ACANTHOSTEPHEIA, Boeck, 1870.

1870. *Acanthostepheia*, Boeck., *Crust. amph. bor. et arct.*, p. 83.

1888. » Stebbing, *Challenger Amphipoda*, p. 1667, etc.

According to Boeck's definition the hinder side-plates are very acuminate. This applies to the type species, but must be withdrawn from the generic character as being inapplicable to a species closely related to the type but distinct in this particular.

Acanthostepheia Malmgreni (Goës).

1866. *Amphithonotus Malmgreni*, Goës, *Crust. amph. maris Spetsbergiam alluentis*, p. 10. fig. 17.

1870. *Acanthostepheia Malmgreni*, Boeck, *Crust. amph. bor. et arct.*, p. 83. (163).

1888. » » Stebbing, *Challenger Amphipoda*, pp. 600, 859, 1685, etc.

The eyes have the shape of a French bean; with their front ends they touch the upper keel of the rostrum where it is continued on to the broad part of the head, and they diverge backwards. Boeck give the length of the species as about 30 mm. Hansen records a specimen from Umanakfjord in West Greenland measuring 39 mm. Specimens in the present collection attain a length of an inch and three quarters or 43 mm. from tip of rostrum to extremity of the uropods.

Loc. Lat. 75° 14' N.	Long. 44° 26' E.	23 VII 1880. 130 Fath.
Lat. 73° 28' N.	Long. 23° E.	1 VII 1880. 160 Fath.
Lat. 70° 49' 7" N.	Long. 50° 47' 3" o. c.	26 VII 1881. 62 Fath.
Lat. 71° 15' N.	Long. 63° 36' E.	25 VI 1883. 94 Fath. (Varna).
Lat. 71° 15' N.	Long. 64° 3' E.	13 II 1883. 54 Fath. (Varna).
Lat. 71° 3' N.	Long. 64° 37' E.	24 III 1883. 55 Fath. (Varna).

Mouth of Duna.		1883.
Lat. 69° 32' 56" N.	Long. 59° 9' 7" E.	1883. 15 Fath.
Lat. 69° 42' 55" N.	Long. 56° 51' 30" E.	1883. 24 Fath.
Lat. 69° 45' 12" N.	Long. 54° 34' 26" E.	1883. 31 Fath.
Lat. 70° 1' 12" N.	Long. 55° 53' E.	1883. 72 Fath.
Lat. 70° 12' 22" N.	Long. 56° 38' 35" E.	1883. 68 Fath.

Acanthostepheia pulchra, Miers.

1881. *Acanthostepheia pulchra*, Miers, Ann. and Mag. Nat. Hist. Ser. 5, vol. 7. p. 47.
pl. 7, figs. 1, 2.
1888. » » Stebbing, Challenger Amphipoda, pp. 529, 859.

The species is distinguished from *Acanthostepheia Malmgreni* in several particulars. The eyes, which in both species are prominent, are here longitudinally adjacent except for the narrow boundary between them formed by the cephalic keel. From the figure which Goës gave of the type species, it might be supposed that the eyes were small and lateral. Both in that species and this they are of good size and dorsal in position. The joints of the peduncles in both pairs of antennae in the present species are less elongate than in those of the type, and the fifth joint in the lower antennae is considerably longer than the fourth instead of equal to it. As Miers remarks, the postero-lateral angles of the last two segments of the peraeon and of the first three of the pleon are rounded instead of being acute. It should be added that the lobes of the last three pairs of side-plates of the peraeon are all rounded, whereas in the type species they are all pointed. In our specimens the dorsal carina forms two lobes on the first segment of the peraeon, where the description by Miers makes mention of only one. This species attains a length of an inch and a half. Its very great resemblance to the type species may be partly inferred from the circumstance that the two specimens in the present collection had been mixed up with a large number of *Acanthostepheia Malmgreni*, obtained from numerous stations, as recorded above.

Barentsia, n. g.

This genus is nearly related to *Acanthostepheia* in regard to the antennae, mouth-organs, and limbs, but is distinguished from it by having no produced rostrum, and by having a single ocular prominence. The third joint of the mandibular palp is longer than the second.

The name of the genus is taken from that of the "Willem Barents", the vessel by which the present collection was obtained.

Boeck, in describing his subfamily Oedicerinae, says that the upper lip is insinuate at the apex. That will certainly not apply to all the genera; for example, of *Oediceropsis brevicornis*, Lilljeborg, Boeck himself says that the upper lip is without incision at the apex. The same remark applies to *Barentsia*. Here also the inner lobes of the lower lip are not large, as they are stated to be in Boeck's account of the subfamily.

Barentsia Hoeki, n. sp.

Plate 5.

The front of the head is broad, obtuse-angled, without rostrum, flanked by short acute lateral processes. Separated from the frontal margin by a groove is a semicircular collar-like prominence occupied by the large single eye, which has numerous component ocelli, but shows no trace of any median division. Immediately behind the eye and starting from the centre of its concavity a dorsal keel traverses the head. The segments of the peraeon are prominently ridged along both the front and hind margins; the first four segments have scarcely any indication of a central keel, but the fifth and sixth have each a median carinate tooth, and the postero-lateral angles acute.

The single specimen of this remarkable species was unfortunately defective, ending with the sixth peraeon-segment.

The first antennae are three-quarters of an inch long, the first joint twice as long as the second, the third not twice as long as broad, the flagellum nearly equal in length to the peduncle, consisting of thirty-six joints. The second antennae are an inch long, the first three joints short, the gland-cone acute, the fourth and fifth joints subequal in length, the flagellum rather longer than the peduncle, consisting of more than one hundred and sixty joints, most of which are very short and those in the proximal half, except the first one, considerably broader than long. There is very little armature on either pair of antennae, but there are some small seta-like spinules and here and there a feathered cilium on the peduncles.

The upper lip is broad, narrowing towards the scarcely curved almost smooth apical border.

The mandibles have a strong, not much divided cutting edge, the secondary plate larger on the left than on the right mandible, eleven spines in the spine-row of the left mandible, the number on the right being perhaps smaller; the molar tubercle is prominent but not very stout, beset with unusually prominent denticles single or double, and carrying a small feathered seta at one corner. Above it, by the side of a strong process, is planted the long palp in which the third joint is longer than the second, both of them carrying numerous spines.

The lower lip is very broad, not very deep, with the inner lobes small, the outer ones wide.

The first maxillae have two very small plumose setae at the apex of the broadly oval inner plate, seven spines on the apical margin of the outer plate, some of these spines carrying one or two very minute lateral denticles; the second joint of the palp is apically narrowed and fringed with spines, thinly along the outer side and thickly along the distal half of the inner side.

The second maxillae have the plates broad, the outer the longer, less squared apically than the inner, each fringed with numerous spines round the distal half.

The maxillipeds have short inner plates, with scabrous surface, the inner margins without setae, the apical fringed with many slender spines, but seemingly without spine-teeth. The outer plates reach half way along the large and long second joint of the palp, and are fringed with numerous slender spines, of which there are several on the outer margin, these being more slender and less closely set than those on the inner. The third joint of the palp is curved; the finger is acute, with little bead-like points along the inner margin.

First Gnathopods. The side-plates are widened distally; like all the following pairs they are rather short and have the edges partially serrate and spinulose. The second joint is very little longer than the hand; the fourth joint is fringed with spines near the prominent apex. The process of the wrist is closely set with spines along almost all the hind margin and on the rounded apex. The hand is large, oval, five-sevenths of the hind margin being occupied by the palm, which is defined by a stout spine and closely fringed with various rows of spines and spinules. The long curved acute finger matches the palm in length, and is beaded along the inner margin.

Second Gnathopods. The side-plates are apically narrowed. The branchial vesicles are large and broad. The limb differs from that of the first pair in the greater length as well of the second joint, as of the hand, the finger, and the process of the wrist. The second joint is also broader, but the hand a little narrower.

First Peraeopods. The side-plates are broader than the preceding pair. The second joint is considerably shorter and narrower than that of the second gnathopods; the fourth joint is longer than either the fifth or sixth; the fifth has many slender spines on the hind margin; the sixth is longer than the fifth, but much narrower, gently curved, fringed with spines on both margins, the longer ones being on the convex front border; the finger is much shorter than the sixth joint, with the inner margin smooth and nearly straight.

Second Peraeopods. The side-plates are rather broader than the preceding pair, not incised on the hind margin. The limb closely resembles those of the first pair, except that the second joint is crooked instead of straight.

Third Peraeopods. The side-plates are broader than deep, each lobe ending below in a back-

ward directed point. The branchial vesicles are round, not very large. The second joint is about as long as in the preceding limb, little expanded, and chiefly near the top; the fourth joint is wider, the fifth narrower than in the preceding pair, the general structure similar, but the finger more than twice as long.

In the fourth peraeopods the side-plates are narrower than the preceding pair, otherwise similar. The fifth differ in having the second joint less expanded, the fourth and following joints rather longer.

The specific name is chosen in compliment to Dr. P. P. C. Hoek, who expended no little trouble in the preliminary sorting of the specimens of the present collection before it was entrusted to my care.

Loc. Lat. 71° 32' N. Long. 64° 37' E. 24 III 1883. (Varna).

GENUS ACEROS, Boeck, 1860.

1860. *Aceros*, Boeck, Forhandl. ved det Skand. Naturf. 8de Møde, p. 651.

1888. » Stebbing, Challenger Amphipoda, p. 1667, etc.

1889. » Norman, Ann. and Mag. Nat. Hist. ser. 6. vol. 3. p. 457.

Boeck's statement in the definition which he gave to the genus in 1870, that the upper antennae have an elongate peduncle, with a short flagellum, must be cancelled, since in the species *Aceros distinguendus*, Hansen, these antennae have a short peduncle, with a flagellum twice as long. Boeck also says that the first maxillae have the inner plate elongate, narrow; but neither of these epithets is appropriate. In describing the type-species he rightly says that this plate is round-oval. He affirms that there are eyes placed on the sides of the head, but other observers have not been able to detect any eyes. The first maxillae have seven spines on the outer plate; the mandibles have a structure very different from what is usual in the family, the cutting edge being of great extent and strength, with only one or two slight indentations at the lower corner; a very small inner plate is divided (at least on one of the mandibles) into six little teeth; the molar tubercle has some prominent teeth and a plumose seta.

Aceros phyllonyx (M. Sars.).

1859. *Leucothoe phyllonyx*, M. Sars, Oversigt over de i den norsk-arctiske Region forkommende Krebsdyr. Forh. i Vid.-Selsk. i Christiania. Aar 1858, p. 148.

1870. *Aceros phyllonyx*, Boeck, Crust. amph. bor. et arct., p. 92 (172).

1888. » » Stebbing, Challenger Amphipoda, p. 319, etc.

1889. » » Norman, Ann. and Mag. Nat. Hist. ser. 6. vol. 3. p. 457.

In the specimen examined the first maxillae had five setae on the apex of the inner plate, of which only one was conspicuously plumose. The specimen, a female, was three quarters of an inch long. Boeck in his Latin description says that the third joint of the upper antennae is very short; in the subsequent Norwegian account he says that it is about a third of the length of the second joint. In our specimen it is not very short, yet much less than a third of the second joint.

Loc. Lat. 74° 32' N. Long. 35° 50' E. 29 VI 1880. 147 Fath.

Lat. 73° 28' N. Long. 23° E. 1 VII 1880. 160 Fath.

Lat. 72° 41' N. Long. 31° E. 2 VII 1880. 136 Fath.

Lat. 72° 12' N. Long. 31° 50' E. 3 VII 1880. 160 Fath.

Lat. 75° 13' N. Long. 15° 46' E. 12 VII 1881. 175 Fath.

Various stations in the Kara Sea; Varna-Expedition 1882—83.

GENUS AMATHILLOPSIS, Heller, 1875.

1875. *Amathillopsis*, Heller, Crust. Pycn. u. Tunicaten der k. k. öster.-ungar. Nordpol-Expedition. Denkschr. math.-naturw. Classe der kaiserl. Akad. der Wissenschaften, Bd. 35. p. 11.

1888. » Stebbing, Challenger Amphipoda, pp. 442, 859, etc.

Amathillopsis spinigera, Heller.

1875. *Amathillopsis spinigera*, Heller, Crust. Pycn. u. Tunicaten der k. k. öst.-ung. Nordpol-Expedition, p. 11. pl. 3. fig. 17—22. pl. 4. fig. 1—8.
 1888. » » Stebbing, Challenger Amphipoda, p. 1687, etc.

The third joint of the mandibular palp is very little shorter than the second. One specimen of this handsome species, not quite fully extended, measures from the rostrum to the extremity of the third uropods two inches and three tenths or 57 mm. The upper antennae being an inch and seven tenths long, the total length of the specimen is four inches or 100 mm.

Loc. Lat. 73° 20' N. Long. 57° 15' E. 25 VIII 1884. 140 Fath.

GENUS PLEUSTES, Spence Bate, 1858.

1858. *Pleustes*, Spence Bate, Ann. and Mag. Nat. Hist. ser. 3. vol. 1. p. 362.
 1888. » Stebbing, Challenger Amphipoda, pp. 308, 870, etc.

Pleustes panopla (Kröyer).

1838. *Amphithoe panopla*, Kröyer, Grönlands Amphipoder, p. 270—273. Tab. 2. fig. 9, *a—i*.
 1840. *Amphithoe panopla*, Milne-Edwards, Hist. nat. des Crustacés, vol. 3. p. 41.
 1846. » » Kröyer, Voyages en Scandinavie, pl. 11. fig. 2, *a—x*.
 1851. » » Liljeborg, Öfvers. af Kgl. Vet. Akad. Förhandl.
 1857. *Amphithoe panopla*, Reinhardt, Rink's Grönland, Bd. 2. Naturh. Tillaeg. 2. N°. 59.
 1858. *Pleustes tuberculata*, Spence Bate, Ann. and Mag. Nat. Hist. ser. 3. vol. 1. p. 362.
 1859. *Paramphithoe panopla*, Bruzelius, Skand. Amph. Gamm. p. 69.
 1859. *Amphithoë panopla?* Michael Sars, Overs. norsk-arctiske Krebsdyr, Christiania 1858.
 1859. » *panoploides*, Michael-Sars, do. do.
 1860. *Paramphithoe panopla*, Boeck, norske Amph., Skand. Nat. 8de Möde i Kjöbenhavn.
 1862. *Pleustes tuberculatus*, Spence Bate, Brit. Mus. Catal. Amph. Crust. p. 62. pl. 9. fig. 8.
 1862. » *panoplus*, Spence Bate, Brit. Mus. Catal. Amph. Crust. p. 63. pl. 9. fig. 9.
 1866. *Paramphithoë panopla*, Goës, Crust. amph. maris Spetsbergiam alluentis, p. 7.
 1867. *Amphithonotus cataphractus*, Packard, mem. Bost. Soc. Nat. Hist., vol. 1. p. 298
 (teste S. I. Smith).
 1870. *Paramphithoë panopla*, Boeck, Crust. amph. bor. et arct. p. 96 (176).
 1874. *Pleustes panoplus*, Buchholz, Die zweite deutsche Nordpolarfahrt. Bd. 2. p. 334—
 337. Taf. VI.
 1875. *Paramphithoë panopla*, Lütken, Crustacea of Greenland, Admiralty Manual. N°. 74.
 1876. *Pleustes panoplus*, Boeck, De Skand. og. Arkt. Amph. p. 302—304, pl. 21. fig. 2.
 1882. » » Hoek, »Willem-Barents'' Crust., p. 52.
 1882. » » Sars, Oversigt af Norges Crustaceer, p. 25.
 1883. » » J. S. Schneider, Tromsø Mus. Aarsberetning for 1882, p. 29.
 1883. » » S. I. Smith, Proc. U. S. Nat. Mus. vol. 6. p. 228.
 1884. » » J. S. Schneider, Crust. i Kvaenangsfjorden, Tromsø Mus. Aarsb.
 VII. p. 97—100.
 1885. » *panopla*, Sars, Den norske Nordhavs-Exped. XIV. Ia. p. 168.
 1886. » *panoplus*, Koelbel, Crust. von Jan Mayen, p. 7.
 1886. » » Sars, Den norske Nordhavs-Exped. XV. II. p. 51.
 1887. » » Hansen, Malac. mar. Groenl. occid. p. 119.
 1888. » *panopla*, Stebbing, Challenger Amphipoda, p. 872, etc.
 1889. » *panoplus*, Vosseler, Kükenthal's Beiträge zur Fauna Spitzbergens, p. 155.

In the transactions of the New Zealand Institute, Vol. XI. p. 402, 1879, Mr. T. W. Kirk

records the capture of "Pleustes panoplus, Kröyer" at Worsler Bay, New Zealand, along with *Podocerus cylindricus*, Say, and observes, "These are both arctic species, and their occurrence on our coast is somewhat remarkable." In vol. XVIII of the same serial, p. 150, 1886, Messrs. Thomson and Chilton cite the species *Pleustes panoplus*, but apparently only on Mr. Kirk's authority. Until a detailed account has been given of the New Zealand specimens, it would be rash to accept the specific identification. *Pleustes tuberculata* is also doubtful.

Loc. Lat. 75° 3' N.	Long. 35° 50' E.	25 VI 1880. 147 Fath.
Lat. 75° 13' N.	Long. 15° 46' E.	12 VII 1881. 175 Fath.
		Hammerfest Harbour. 25 IX 1881.

GENUS EPIMERIA, Costa, 1851.

1851. *Epimeria*, A. Costa, in Hope's Catalogo dei Crostacei Italiani, p. 46.
1888. » Stebbing, Challenger Amphipoda, p. 877, etc.

Epimeria loricata, Sars.

1872. *Epimeria coniger*, Whiteaves, Ann. and Mag. Nat. Hist., ser. 4. vol. 10.
1879. » *loricata*, Sars, Crust. et Pycn. nova, p. 450.
1885. » » Sars, Den norske Nordhavs-Exp., p. 166, pl. 14. fig. 2.
1888. » » Stebbing, Challenger Amphipoda, p. 878, pl. 68.
Loc. Lat. 70° 9' N. Long. 35° 36' E. 10 VII 1880. 92 Fath.
Lat. 75° 20' N. Long. 46° 40' E. 26 VIII 1880. 150 Fath.
Lat. 75° 13' N. Long. 15° 46' E. 12 VII 1881. 175 Fath.

GENUS ACANTHOZONE, Boeck, 1870.

1835. *Acanthosoma*, Owen, Ross's Second Voyage in search of a North-West Passage. Appendix, p. xci.
1870. *Acanthozone*, Boeck, Crust. amph. bor. et arct., p. 104 (184).
1888. » Stebbing, Challenger Amphipoda, pp. 50, 162, etc.

In defining his subfamily Epimerinae, in which he included the two genera *Epimeria* and *Acanthozone*, Boeck states that the maxillipeds have the inner plates broad and dentate. The epithet *dentate* would be better omitted, since in some species, if not in all, the inner margins of these plates are quite smooth, such spines as there are being set back on the surface, and even the apical margins, which are closely set with spines and setae, though not quite smooth, can scarcely be called dentate.

Acanthozone hystrix (Owen).

1835. *Acanthosoma Hystrix*, Owen, Ross's Second Voyage in search of a North-west Passage, Appendix, p. xci, plate B. fig. 4—7.
1838. *Amphithoe Hystrix*, Kröyer, Grönlands Amphipoder, Vid. Sel. naturvid. og mathem. Afh. VII Deel. pp. 259—265. Tab. 2. fig. 7.
1838. » *Hystrix*, Kröyer, Conspectus Crust. Groenl., Naturk. Tidssk. B. 2. H. 1. p. 259.
1840. *Amphithoe hystrix*, Milne-Edwards, Hist. nat. des Crustacés, t. 3. p. 40.
1855. *Acanthosoma hystrix*, Bell and Westwood, Belcher's Last of the Arctic Voyages, p. 406.
1857. *Amphithoe hystrix*, Reinhardt, Rink's Grönland, Bd. 2. app. 2. N°. 58.
1859. *Paramphithoe hystrix*, Bruzelius, Skand. Amph. Gamm., K. Vet. Akad. Handl. B. 3. N°. 1. p. 71.

1859. *Amphithoë hystrix*, Michael Sars, Overs. norsk-arctiske Krebsdyr, Forh. Vid. Selsk. Christiania 1858, N^o. 41.
1860. *Acanthosoma hystrix*, Boeck, Forh. Skand. Naturf. 8de Möde i Kjöbenhavn.
1862. *Paramphithoe hystrix*, Spence Bate, Brit. Mus. Catal. Amph., Crust., p. 147, pl. 28, fig. 1.
1866. » » Goës, Crust. amph. mar. Spetsbergiam alluentis, p. 9.
1870. *Acanthozone cuspidata*, Boeck, Crust. amph. bor. et arct., p. 104 (184).
1874. » *hystrix*, Buchholz, Die zweite deutsche Nordpolarfahrt. Bd. 2. p. 362. Taf. 11. fig. 1 h. (Smaller specimen *only*).
1875. » *cuspidata*, Lütken, Crustacea of Greenland, Admiralty Manual, N^o. 87.
1876. » » Boeck, De Skand. og Arkt. Amph. p. 229, pl. 20. fig. 3.
1877. » *hystrix*, Miers, Spitzbergen Crustacea, Ann. and Mag. Nat. Hist. ser. 4. vol. 19. p. 136.
1877. » » Miers, Arctic Crustacea, Ann. and Mag. Nat. Hist. ser. 4. vol. 20.
1878. » » Miers, Nares' Voyage to the North Sea, App. 7, p. 245.
1882. » *cuspidata*, Hoek, "Willem-Barents" Crustacea, Nied. Arch. für Zool. Bd. 1. Suppl. p. 48.
1882. » » G. O. Sars, Oversigt af Norges Crustaceer, p. 26.
1886. » » Koelbel, Crustaceen von Jan Mayen, Internat. Polarforsch. 1882—1883, Bd. 3. p. 7.
1886. » » Sars, Den norske Nordhavs-Exped., Crust. II. p. 54.
1887. » » Hansen and Holm, Dijnphna-Togtet Krebsdyr, pp. 223, 495.
1887. » » Hansen, Malac. mar. Groenl. occid. Vid. Meddel. Naturh. Foren. i Kjöbh. p. 128.
1888. » *hystrix*, Stebbing, Challenger Amphipoda, pp. 50, 318, 466, etc.

In 1877 Mr. E. J. Miers pointed out that the *Oniscus cuspidatus* of Lepechin differs from the present species "in having vertically projecting spines upon only the first four segments of the pereion". In Owen's species there are ten of these vertical spines, very conspicuous, in the median line on as many successive segments, without counting the large quasi-rostral and almost horizontal front spine of the first peraeon-segment or the comparatively small spine of the fourth pleon-segment. Miers further observed that Owen's species was distinguished from the species figured by Buchholz as *Acanthozone hystrix* both in regard to the rostral spine and to the first joint of the fourth and fifth peraeopods. Hoek and Koelbel attribute the differences to inaccuracy on the part of Buchholz. But we have to consider that the specimen of which Buchholz gives an elaborate figure was nine-tenths of an inch in length and that the differences do not so much consist in omission of details, which might be due to oversight, as in additions which could scarcely have been unintentional or the result of any ocular delusion. It is scarcely conceivable even that the well-marked rostrum which Buchholz gives to the head could have been a transfer by mistake of the spine on the first joint of the upper antennae which is not shown in the figure of his species. In the true *Acanthozone hystrix* one of the most notable features is the large front spine or process of the first peraeon-segment produced crest-like over the head, in place of which Buchholz only represents a moderate-sized spine directed obliquely forwards. But in this respect his species is less striking than the better known one, in others it is more so. The side-plates are more elaborately denticulate, and so in the third, fourth and fifth peraeopods is the hind margin of the first joint; also, the second pleon-segment has thirteen spines instead of nine, and the third segment has seven instead of five. A smaller specimen, only 8 mm. in length, he describes as having the rostrum weak and depressed, the front dorsal spine of the first segment stronger and directed forward, the first joint of the upper antennae armed with a long slender spine, and the animal as in other respects agreeing with the account given by Kröyer, Bruzelius, and Boeck, so that he supposes them to have had only young specimens before them. In face of

this definite comparison of the two forms, it is not possible to ignore their distinctness, and in 1888 I proposed for Buchholz's species the name *Acanthozona Buchholzi*. That two species very much alike in general facies may occur in the same region is shown by the instance of *Stegocephalus ampulla* (Phipps) and *Stegocephalus inflatus*, Kröyer, as also by that of *Acanthostepheia Malmgreni* (Goës) and *Acanthostepheia pulchra*, Miers, and many other examples might be adduced.

Boeck gives for the species which he describes a length of 7 mm., which agrees nearly with the length of the smaller specimen described by Buchholz. The specimens in the present collection, which agree with Owen's figure and with the descriptions given by Michael Sars in 1859 and Boeck in 1876, attain a length of an inch and a quarter, the antennae not included. In describing the first maxillae Boeck speaks of the inner plate as rather pointed with about ten setae on the inner margin. In its natural position it has a quadrangular appearance with the setae on the distal border. The eleven spines of the outer plate are tolerably strong, with only one or two lateral teeth a piece. The palp is long with ten slender spines on the apex.

It is no doubt by an accidental slip that Boeck speaks of the inner plate of the maxillipeds reaching to the end of the palp's second joint. His figure shows that the short first joint is intended. These inner plates are remarkably broad, carrying on the apical margin four spine-teeth and a close-set row of seventeen feathered setae. Doubtless the number of the latter will vary with the size of the specimen. The outer plates have a few slender spines set at some distance from the smooth inner margin. The apical margin, which is as it were separated from the inner by a blunt tooth, carries a series of long curved spines passing over into setae, the whole group numbering sixteen or seventeen. Boeck does not mention the lower lip. This, like the other mouth-organs, is broad. The outer lobes are set widely apart, with some rather conspicuous spinules on the inner part of the apical margin. The inner lobes are distinct at the inner apices, but have not the usual oval form, their outer margins being coalesced with the surface of the others. The mandibular processes have squared ends.

The emargination of the upper lip and also that of the telson is extremely slight.

Lat. 73° 5' N.	Long. 52° 14' E.	6 VIII. 1881. 36 Fath.
Lat. 77° 28' N.	Long. 55° 18' 9" E.	27 VIII 1881. 150 Fath.
Lat. 73° 57' 30" N.	Long. 51° 26' 3" E.	7 VIII 1882. 135 Fath.
Lat. 69° 48' 30" N.	Long. 54° 43' 28" E.	20 VII 1883. 57 Fath.
Lat. 70° 12' 22" N.	Long. 56° 38' 35" E.	11 VIII 1883. 68 Fath.
Lat. 70° 49' 52" N.	Long. 49° 34' 44" E.	6 VII 1883. 65 Fath.
Lat. 74° 31' N.	Long. 49° 8' 6" E.	13 VIII 1884. 100 Fath.
Lat. 75° 42' N.	Long. 19° 0' 4" E.	1 VII 1884. 45 Fath.

Various stations in the Kara Sea; Varna-expedition 1882—82.

ACANTHONOTOZOMA, Boeck, 1876.

1835. *Acanthonotus*, Owen, Ross's second voyage in search of a North-West Passage, Appendix, p. 90.

1876. *Acanthonotozoma*, Boeck, De Skand. og Arkt. Amph., p. 237.

1888. » Stebbing, Challenger Amphipodo, p. 162, etc.

***Acanthonotozoma serratum* (Fabricius).**

1780. *Oniscus serratus*, O. Fabricius, Fauna Groenlandica, N°. 237, p. 262.

1876. *Acanthonotozoma serratum*, Boeck, de Skand. og Arkt. Amph., p. 240.

1888. » » Stebbing, Challenger Amphipoda, p. 47, etc.

Loc. Lat. 73° 28' N. Long. 23° E. 1 VII 1880. 160 Fath.

Acanthonotzoma cristatum, (Owen).

1835. *Acanthonotus cristatus*, Owen, Ross's second voyage in search of a North-West Passage, Appendix, p. 90, pl. B. fig. 8—12.
 1876. *Acanthonotozoma cristatum*, Boeck, De Skand. og Arkt. Amph., p. 238.
 1888. » » Stebbing, Challenger Amphipoda, pp. 162, 318, etc.
 According to Boeck, 'the head also has a keel, which projects in a long, triangular, pointed rostrum'. The single specimen in the present collection does not exhibit this keel, the top of the head and of the long rostrum being flat. The rostrum is strongly keeled on the underside.
 Loc. Lat. 75° 14' N. Long. 44° 26' E. 23 VII 1880. 130 Fath.

Acanthonotozoma inflatum (Krøyer).

Plate 6.

1842. *Acanthonotus inflatus*, Krøyer, Naturhist. Tidsskr. R. 1. Bd. 4. p. 161.
 1857. » » Reinhardt, Fortegnelse over Grønlands Krebsdyr. N°. 51.
 1866. *Vertumnus inflatus*, Goës, Crust. amph. maris Spetsbergiam alluentis, p. 7, fig. 11.
 Öfversigt af K. Vet. Akad. Förhandlingar, 1865.
 1870. » » Boeck, Crust. amph. bor. et arct., p. 100 (180).
 1876. *Acanthonotozoma inflatum*, Boeck, De Skand. og Arkt. Amph., p. 242.
 1880. *Acanthonotosoma inflatum*, D'Urban, Ann. and Mag. Nat. Hist. ser. 5. vol. 6.
 1881. *Acanthonotozoma inflatum*, Miers, Ann. and Mag. Nat. Hist. ser. 5. vol. 7.
 1887. *Acanthonotosoma inflatum*, Hansen and Holm, Oversigt over de paa Dijnphna-Togtet indsamlede Krebsdyr, pp. 222, 495.
 1887. » » Hansen, Malacostraca marina Groenlandiae occidentalis, p. 127.
 1888. *Acanthonotozoma inflatum*, Stebbing, Challenger Amphipoda, pp. 200, 529, etc.

There is some uncertainty whether all the authors mentioned in the above synonymy are referring to one and the same species. Krøyer, contrary to his custom, instituted the species without any adequate description. He merely says that it is 'thick, tumid, with the back rounded and not at all dentate, in other respects almost agreeing with *Acanthonotus Serra*'. He owns that in a large number of specimens of the latter (*Acanthonotozoma serratum*) he had not found any intermediate forms that would link together that species and this. The wonder is that he should even have looked for them. Subsequently Goës gave some figures of what he supposed to be Krøyer's species, but without any accompanying description, and later Boeck gave a detailed description, but without any figures. Miers had a specimen from Franz-Josef-Land, in which he observed that the front margin of the fourth pair of side-plates was regularly rounded, not somewhat angulated as in the figure drawn by Goës, while the carina on the first three segments of the pleon was distinct, but not much elevated, as indicated by Goës, but not at all suitably described by the word *altissima* in Boeck's Latin description. Hansen found his specimens from the Kara Sea in good agreement with the figure published by Goës, but differing in two points from Boeck's description, namely, in much superior size, and in having the lower hinder angles of the first two pleon-segments acute instead of rounded.

It is obvious that under the scanty description given by Krøyer two or three closely approximate species might be included. The existing evidence does not seem sufficient, however, for separating the recorded specimens. The figures in Goës' work, though valuable up to a certain point, can scarcely be appealed to for establishing minute distinctions which have only recently been thought of. His figure of the animal represents it with a jointed rostrum, which may safely be rejected. The figure of the maxillipeds represents each of the inner plates drawn out into a horn-like process at the outer apex, a monstrosity which is probably due to an erroneous reproduction

of the spines or setae shown in the original drawing. Compared with these definite errors, the faintly discernible difference between a regular curve and the somewhat angulated one in the side-plates mentioned by Miers seems unimportant. The same may be said of the lower hinder angles of the expanded second joints in the two last pairs of peraeopods, which in Goës' figure are more rounded off than in our specimen. But as to this it must be mentioned that Boeck describes these corners as rounded off, just as Goës figures them. To Boeck's Latin description of the species it is probable that some accident has happened, for he begins it by saying, 'Dorsum carinatum', though in the vernacular account he says that 'the body is very thick, tumid, with round back', and does not mention the carina at all, even the slight one that does exist on the first three segments of the pleon. Also in the Latin he describes the third pleon segment as being on the hind margin 'parum insinuatum', which is difficult to reconcile with the Norwegian description that, 'the hinder margin on the third pleon-segment has two deep emarginations, whereby there are formed two backward-directed spines'.

The single specimen of the species in the present collection must now be described.

The rostrum is prolonged fully to the apex of the first joint of the upper antennae; the lateral angles of the head are produced in blunt lobes. The peraeon is dorsally broad, rounded, smooth except for the minute prickles spread over many parts of the integument, its first four segments having the postero-lateral angles rounded, the last three having these angles acute. The first three segments of the pleon have a slight median dorsal keel; the corners are squared in the first segment, with the hind margin serrate some way up; the postero-lateral angles of the second segment are tolerably acute, a little outdrawn and serrate; those of the third have the produced point rather blunt, both this and the upper lateral tooth being finely serrate; the fourth segment has a saddle-shaped depression and is scarcely keeled; the fifth is short, the sixth produced into an acute point on either side of the telson.

The eyes are rounded oval, placed on the projecting lobes of the head, and are black in the specimen long preserved in spirit.

The first antennae have the third joint nearly half the length of the first, the second intermediate in length between the other two, the flagellum consisting of twenty-three joints and scarcely as long as the peduncle. There is a microscopic rudiment of the secondary flagellum.

The second antennae are rather shorter than the first, with the first three joints of the peduncle short, the other two each about equal to the second joint in the first pair. The flagellum of fifteen joints is much shorter than the peduncle.

The upper lip is elongate, unsymmetrically bilobed, smooth.

The mandibles form an elongate triangle, with no trace of molar tubercle. The cutting edge is divided into six or seven unequal teeth; the secondary plate is denticulate, feebler on the right than on the left mandible, and accompanied on the latter by one or two spines, of which none could be perceived on the right mandible. The long palp is implanted rather in advance of the centre of the trunk, low down on the outer surface; the third joint is shorter than the second, curved, and fringed with numerous short spines.

The lower lip is elongate, with the outer lobes rather narrow, well furred apically. Boeck observes that this lip is without any trace of inner lobes. It should perhaps rather be said that the inner lobes are apically coalescent with the surface of the outer ones. The mandibular processes are long and prominent.

The first maxillae have the inner plate long, triangular, fringed on the inner margin with twenty-four plumose setae; the outer plate has eleven spines, most of which are strongly denticulate, while the outermost appears to be quite smooth; the palp has an unusually long first joint, and the second tipped with several slender spines.

The second maxillae have an extremely oblique apex to the inner plate, which is fringed with a row of thirty-two feathered or serrate setae of considerable size, accompanied by another series of less magnitude; the outer plate overtops the inner, but has a less oblique apex, fringed in a similar manner, except that the furniture is rather more spine-like.

The maxillipeds have the inner plates elongate, with numerous plumose setae on the protuberant inner margins, and several accompanying the three spine-teeth on each apical border; the outer plates have the inner margins quite smooth, but on the surface at some distance from the edge are planted several couples of strapshaped spines, while on the apical border there is a crowded fringe of longer spines, some twenty in number, the outermost taking the shape of feathered setae. The second joint of the palp is rather shorter than the first, and the third than the second.

The first gnathopods have the side-plates apically serrate and pointed but not acutely. The second joint carries many long smooth setae; the fourth is apically acute; the fifth is narrow, smooth, shorter than the second, but longer than the sixth, which is also very narrow and elongate, slightly tapering, and almost unarmed, but for two setules and a seta at the extremity; the apex of the hand leaves no palm, but is occupied by the base of the short and peculiar finger. The finger is only slightly curved; along its inner margin there are nine or ten setae microscopically serrate, and one or two with some setules on the opposite margin; the inner border itself is cut into eleven backward directed teeth, the series ending in a stout curved nail; over this nail and projecting much beyond it is a flexible tapering setuliferous appendage with finely pectinate edge, the object of which must be supposed to be, not protective, but sensitive, since it is of far more delicate structure than the nail which it covers.

Second Gnathopods. The side-plates are longer than the preceding pair and more regularly triangular; the sides are serrate below. The branchial vesicles are as long as the second joint of the limb, and not very much broader. The marsupial plates are as long as the whole limb and twice the width of the branchial vesicles; the fringing setae are numerous. The fourth joint has an oblique apex, fringed with numerous serrate spines; the fifth joint is much shorter than the second, and at the same time longer than the sixth; it is stouter but shorter than the corresponding joint in the first gnathopods, and armed along the hind margin and apex with a crowd of serrate spines; the hand is similarly armed, but has also groups of spines near the front margin; it tapers to a narrow apex, which is without palm, and is occupied by the short and stout finger, which ends in a stalwart uncapped nail, and has on the inner margin some setules and nine forward directed teeth.

First Peraeopods. The side-plates, branchial vesicles and marsupial plates are nearly as in the preceding pair, but the side-plates are a little longer. The second joint does not reach beyond the apex of the side-plate; the fourth joint (as is correctly shown in Goës' figure) is as long as the sixth, longer than the fifth, produced downwards at the front apex, armed only with a few setules; the two following joints have short spines along the hind margin; the finger is curved, much shorter than the sixth joint.

Second Peraeopods. The broad and deep side-plates are deeply incised above, so as to form a prominent tooth or process behind, connected by a shallow curve with the much less advanced, almost acute, lower angle; the lower margin forms a distinct angle with the front one, but the angle itself is completely rounded off. The limb scarcely differs, if at all, from that in the preceding pair.

Third Peraeopods. The side-plates are broad, with the hind lobe strongly produced downwards. The marsupial plates are much smaller than the front pairs. The second joint of the limb is not deeper than the side-plate and much less broad; the hinder expansion is squarely produced at the back of the short third joint; the remaining joints are similar to those of the two preceding pairs, but larger.

Fourth Peraeopods. The side-plates have the front lobe less developed than in the preceding pair, the hind lobe produced downwards rather more squarely, the joints of the limb similar but larger.

The fifth peraeopods have the side-plates almost simple-lobed, the second joint rather larger than in the preceding pair, the third and fourth similar to the corresponding joints in that pair; the others were missing from the specimen.

The first uropods have slender elongate rami, the inner ramus a little shorter than the outer which equals the peduncle in length; there are numerous spines along the edges. The second pair have

the peduncle unarmed, shorter than the outer ramus, which is considerably shorter than the lanceolate inner one, this latter being equal in length to that of the first pair. The third pair are shorter than the second, and do not reach so far back, but the proportions of the peduncle and rami to one another are similar.

The telson is about once and a half as long as its breadth, the triangular emargination opening widely, and extending for a quarter of the depth.

Coiled up, the specimen measured less than four-tenths of an inch, extended it measured without the antennae seven tenths of an inch or 17.5 mm.

Krøyer gives the length of his specimen as 5". Boeck the length of his as 6½ mm. Goës draws a line which, as Hansen states, represents a length of 13.4 mm., and Hansen's own largest specimen measured 18.5 mm.

Loc. Lat. 70° 48' N. Long. 38° E. 12 VII 1880. 115 Fath.

GENUS ATYLUS, Leach, 1815.

1815. *Atylus*, Leach, The Zoological Miscellany, vol. 11. p. 21.

1888. » Stebbing, Challenger Amphipoda, pp. 89, 907, etc.

Atylus Smitti (Goës).

1866. *Paramphithoë Smitti*, Goës, Crust. amph. maris Spetsbergiam alluentis, p. 8. fig. 14.

1870. *Atylus Smitti*, Boeck, Crust. amph. bor. et arct. p. 110 (190).

1874. » *Smittii*, Buchholz, Die zweite deutsche Nordpolarfahrt, Bd. 2. p. 361.

1875. » *Smitti*, Lütken, Crustacea of Greenland, Admiralty Manual, N°. 78.

1876. » » Boeck, De Skand. og Arkt. Amph. p. 326.

1882. » » Hoek, "Willem Barents" Crustaceen, p. 53.

1882. » » Sars, Oversigt af Norges Crustaceer, p. 26.

1886. » » Sars, Den norske Nordhavs-Exped. Crust. II. p. 54.

1887. » *Smittii*, Hansen, Dijnphna Togtet Krebsdyr, p. 223.

1887. » » Hansen, Malac. mar. Groenl. occid. p. 129.

1888. » *Smitti*, Stebbing, Challenger Amphipoda, pp. 356, etc.

The species is on the whole well described by Boeck, although in his latin account he says that the eyes are elliptical, and that the telson is twice as long as the breadth at the base, while in the vernacular he states that the eyes are round and that the telson is not twice as long as broad. These opposing statements may be true if applied to different individuals. The species certainly shows some variability. The rostrum sometimes extends not almost but quite to the end of the first joint of the upper antennae, and the third uropods which sometimes, as Goës observes, reach much beyond the two preceding pairs, in some instances extend beyond them only very slightly. Boeck says that the lower hinder angle of the third pleon segment is rounded, but it appears rather to be a right angle or some times a slightly obtuse one.

Loc. Lat. 71° 6' N. Long. 63° 16' E. 3 VII 1883. 70 Fath. (Varna).

Lat. 70° 12' 22" N. Long. 56° 38' 35" E. 11 VIII 1883. 68 Fath.

Lat. 74° 31' N. Long. 49° 8' 6" E. 1884. 100 Fath.

Lat. 76° 59' N. Long. 18° 21' E. 1884. 60 Fath.

GENUS CALLIOPIUS, Lilljeborg, 1865.

1856. *Calliope*, Sp. Bate, Brit-Assoc. Report, meeting 1855.

1865. *Calliopius*, Lilljeborg, on the *Lysianassa magellanica*, p. 19.

1888. » Stebbing, Challenger Amphipoda, p. 1669.

Calliopius laeviusculus, (Kröyer).

1838. *Amphithoe laeviuscula*, Kröyer, Grönlands Amphipoder, p. 281. pl. 3. fig. 13.

1870. *Calliopius laeviusculus*, Boeck, Crust. amph. bor. et arct. p. 117 (197).

Many specimens with transversely reniform eyes, often very large, sometimes rather small, were taken along with numerous specimens of the next form.

Vardö. Busse Sund. 1881.

Calliopius grandoculis (Sp. Bate).

1862. *Calliope grandoculis*, Sp. Bate, Brit. Mus. Catal. Amph. Crust. p. 149, pl. 28, fig. 4.

It may be proper to make this name a synonym of *Calliopius laeviusculus* (Kröyer), but it is a curious circumstance that in northern specimens the great eyes covering a large portion of the head and reaching often to the hind margin of it are so frequently found, while in specimens from the southern shores of England the eyes are very large only exceptionally and then their shape is transversely reniform in stead of longitudinally.

Vardö. Busse Sund. 1881.

GENUS AMPHITHOPSIS, Boeck, 1860.

1860. *Amphithopsis*, Boeck, Forhandl. ved. de Skand. Naturf. 8de Möde, p. 661.

1870. » Boeck, Crust. amph. bor. et arct., p. 118 (198).

1876. » Boeck, De Skand. og Arkt. Amph., p. 349.

1887. » Hansen, Malacostraca marina Groenlandiae occidentalis, p. 138.

1888. » Stebbing, Challenger Amphipoda, pp. 324, 924, etc.

My opinion that *Amphithopsis* should be regarded as a synonym of *Pherusa*, Leach, must now be withdrawn, since I am persuaded that Leach's *Pherusa fucicola* is identical with the species subsequently called *Gammarella brevicaudata* by Milne-Edwards. Boeck's definition of *Amphithopsis* does not suit all the species included under it. His statement, that the body is not carinate does not suit *Amphithopsis latipes*. He says that the feathered setae on the inner plate of the first maxillae are few; but in *Amphithopsis longimana* they are numerous, in *Amphithopsis glacialis* they are nine in number. According to the definition the maxillipeds have the inner margin of the outer plate armed with slender spines, but *Amphithopsis longimana* has the whole inner border armed with close set short teeth. *Amphithopsis glacialis*, differs from the generic character, as Hansen points out, in having the first antennae not longer but shorter than the second, and, it may be added, in having the hand of the second gnathopods not stronger than that of the first. Nevertheless the agreement of this species with Boeck's type, *Amphithopsis longicaudata*, is so great that it does not seem desirable to place it in a separate genus.

Amphithopsis glacialis, Hansen.

1887. *Amphithopsis glacialis*, Hansen, Malac. mar. Groenl. occid. p. 137, pl. 5. fig. 6—6c.

The species is evidently very fragile, in accordance with Hansen's experience. In the present collection only one specimen had the flagella of the antennae and even these were broken, and only one (but a different) specimen had the third uropods. In the first antennae there were twenty-four joints to the flagellum, in the second thirty-three.

The upper lip has the convex margin furred with long cilia. The mandibles have five or six teeth on the cutting plate, two on the secondary plate, a spine-row of six serrate spines, strong molar tubercle, and the third joint of the palp blunt-ended, equal in length to the second joint. The outer lobes of the lower lip are strongly furred. The first maxillae have a sharply pointed apex to the inner plate, the inner margin of which carries eight or nine feathered setae; the

denticulate spines of the outer plate are slender, unequal, seven in number on one maxilla and eight on the other; the second joint of the palp is distally dilated and carries some slender spines and spine-like setae. The maxillipeds have the inner plates distally very broad, with the three apical teeth wide apart; the outer plates do not nearly reach the apex of the large second joint of the palp, and have spine-like setae on the inner margin but no teeth; the fourth joint of the palp has a minute spine-like nail on the blunt tip.

The limbs have been described by Hansen. It may be mentioned that in the first two peraeopods the sixth joint is shorter than the fourth. The finger in the peraeopods is short and broad, with an acute curved tip.

Loc. Matotschkin Schar. Nova-Zembla. Aug. 1883.

GENUS DEXAMINE, Leach, 1814.

1814. *Dexamine*, Leach, Edinburgh Encyclopaedia, vol. 7. p. 433. Art. Crustaceology.
1888. » Stebbing, Challenger Amphipoda, p. 945, etc.

Dexamine thea, Boeck.

1880. *Dexamine thea*, Boeck, Forh. ved de Skand. Naturf. 8de Møde, p. 658.
1888. » » Stebbing, Challenger Amphipoda p. 1697 etc.
Loc. Hammerfest, in the harbour and on shore. 23 Sept. 1881.

GENUS RHACHOTROPIS, S. I. Smith, 1883.

1870. *Tritropis*, Boeck, Crust. amph. bor. et arct., p. 78 (158).
1883. *Rhachotropis*, S. I. Smith, Proc. U. S. Nat. Mus., pp. 222, 229.
1888. » Stebbing, Challenger Amphipoda, p. 954, etc.

Rhachotropis aculeatus (Lepechin).

1780. *Oniscus aculeatus*, Lepechin, Acta Petrop., p. 247, pl. 8. fig. 1.
1883. *Rhachotropis aculeata*, S. I. Smith, Proc. U. S. Nat. Mus. pp. 222, 229.
1888. *Rhachotropis aculeatus*, Stebbing, Challenger Amphipoda, pp. 48, 954, etc.

Some of the specimens measured an inch and three fifths or 40 mm. from the tip of the rostrum to the extremity of the uropods.

Loc. Lat. 75° 13' N.	Long. 15° 46' E.	12 VII 1881.	175 Fath.
Lat. 70° 49' 7" N.	Long. 50° 47' 3" E.	26 VII 1881.	62 »
Lat. 70° 30' N.	Long. 49° 41' E.	29 VII 1881.	54 »
Lat. 73° 5' N.	Long. 52° 14' E.	6 VIII 1881.	36 »
Lat. 72° 36' N.	Long. 21° 57' E.	28 VI 1881.	140 »
Lat. 70° 24' 50" N.	Long. 45° 29' 51" E.	6 VII 1882.	55 »
Lat. 69° 55' N.	Long. 58° 54' E.	16 VIII 1882.	43 »
Lat. 70° 49' 52" N.	Long. 49° 34' 44" E.	6 VI 1883.	65 »
Lat. 69° 45' 12" N.	Long. 54° 34' 26" E.	18 VII 1883.	31 »
Lat. 69° 48' 30" N.	Long. 54° 43' 28" E.	20 VII 1883.	57 »
Lat. 69° 51' 33" N.	Long. 57° 23' 48" E.	31 VII 1883.	25 »
Lat. 69° 32' 56" N.	Long. 59° 9' 7" E.	6 VIII 1883.	15 »

Rhachotropis Helleri (Boeck).

1870. *Tritropis Helleri*, Boeck, Crust. amph. bor. et arct. p. 79 (159).

1874. *Amphithonotus aculeatus*, Buchholz (pars), Die zweite deutsche Nordpolarfahrt, Bd. 2. p. 317.
1875. *Tritropis Helli*, Metzger, Nordseefahrt der Pommerania, Crust. et Mollusca, p. 299.
1876. » » Boeck, de Skand. og Arkt. Amph., p. 513, pl. 20. fig. 6.
1880. » » W. S. M. D'Urban, Ann. and Mag. Nat. Hist. Ser. 5. vol 6.
1882. » » Hoek, Die Crustaceen gesammelt während der Fahrten des "Willem Barents" in den Jahren 1878 u. 1879. p. 58.
1887. » » Hansen, Overs. over de paa Dijnphna-Togtet inds. Krebsdyr, p. 224.

In the Bibliography of the Amphipoda (1888) I accepted the statement of Buchholz that this species was founded on the young of *Rhachotropis aculeatus*. Now that I have been able to compare specimens, I have convinced myself that this is a complete mistake. Though *Rhachotropis Helli* attains the length of nearly an inch, it is a much smaller species than *aculeatus*, but there is not the smallest reason for supposing that it is only a juvenile form. On the contrary, in the specimen which I have examined the marsupial plates are of great size, fringed with long setae. Moreover the antennae are fringed with calceoli, not only on the flagella, but on the last two joints of the peduncle in both pairs.

The differences which separate *Helli* from *aculeatus* are many and well marked. It has a very little rostrum instead of a very large one; the third joint of the first antennae, instead of being short, is elongate, more than half the length of the second, and has a row of twenty calceoli, the row on the second joint numbering twenty-eight.

The second joint in the last three pairs of peraeopods, instead of being strongly emarginate behind and sharply pointed at the lower angle, has the serrate hind margin curved in an ordinary manner. Besides these marks of discrimination there are various others which can be traced in Boeck's descriptions. It may be noted that Boeck in his latin account says that *Rhachotropis Helli* has the segments of the pleon centrally devoid of teeth. In the vernacular account he correctly states that on the first four segments of the pleon the keel projects on the middle of the hind margin in a backward-directed tooth. Of the telson Boeck says that the apices are rounded. In our specimen they are tolerably acute.

Loc. Various stations in the Kara-Sea. Varna. Expedition. 1882/83.

ROZINANTE, n. g.

This genus agrees with *Rhachotropis* in having the upper antennae shorter than the lower, the side-plates of the peraeon small and the first pair produced forwards at the infero-anterior angle, in having the peraeopods very long and slender, and also in having the front part of the pleon triply carinate. It is distinguished from *Rhachotropis* by having no cephalic rostrum and a very short telson; in the upper antennae the second joint of the peduncle is sometimes not longer than the third; in the mandibles the third joint of the palp is not sensibly longer than the second; in the lower lip the outer lobes are more closely approximate, and the mandibular processes more developed, the first maxillae have on the inner plate four plumose setae instead of two, on the outer plate eleven instead of nine furcate or serrate spines, and the second joint of the palp not distally narrowed but widened, and fringed with numerous short spines in addition to some slender ones; the second maxillae are rather more elongate; in the maxillipeds the inner plates are longer and the outer reach further along the second joint of the palp, the finger of which is attached some way below the abruptly narrowed apex of the third joint; the gnathopods, instead of having "a tolerably large, ovate hand, long finger, and short wrist produced in the postero-inferior angle," have a narrow hand, short finger, elongate wrist not produced in the postero-inferior angle.

The name of the genus is taken from that of Don Quixote's famous charger.

The type species is *Paramphithoë fragilis*, Goës.

Rozinante fragilis (Goës).

1866. *Paramphithoë fragilis*, Goës. Crust. amph. maris Spetsbergiam alluentis, p. 8, fig. 16.
 1870. *Tritropis fragilis*, Boeck, Crust. amph. bor. et arct. p. 80 (160).
 1874. » » Buchholz, Die zweite deutsche Nordpolarfahrt, Bd. 2. p. 320. pl. 3. fig. 1.
 1875. » » Lütken, Crustacea of Greenland, n°. 80.
 1876. » » Boeck, De Skand. og Arkt. Amph. p. 515.
 1882. » » Hoek, Die Crustaceen gesammelt während der Fahrten des "Willem Barents" in den Jahren 1878 u. 1879. p. 59.
 1887 » » Hansen, Oversigt over de paa Dijnphna-Togtet indsamlede Krebsdyr, p. 224.
 1888. *Rhachotropis fragilis*, Stebbing, Challenger Amphipoda, p. 356, etc.

In placing this species in the genus *Paramphithoë*, Bruzelius, Goës assigned it to a division of that genus which he regarded as synonymous with "*Atylus* Leach — S. Bate". Within this division he spoke of the species itself as a form akin to *Amphithonotus*. Buchholz agreed with Goës in placing Lepechin's *Oniscus aculeatus* in Costa's genus *Amphithonotus*, but that name is untenable, having lapsed as a synonym of the earlier *Atylus* and *Dexamine*. Boeck instituted the genus *Tritropis* for Lepechin's species and included in it also his own new species *Tritropis Helli*, and *Tritropis fragilis* (Goës). Buchholz perceived that this last species was generically distinct from the other two, but does not seem to have been aware that *Tritropis* was a preoccupied name. Now that I have had the opportunity of examining specimens of Goës' species, I have not the least hesitation in withdrawing it from the genus *Rhachotropis*, from which it differs in numerous details of the mouth-organs as well as in several of the easily observed superficial characters. As pointed out above, the character of the gnathopods is completely in opposition to the account given of those limbs in Boeck's own definition of the genus *Tritropis*.

Goës states that the infero-posterior angle of the third pleon segment is obtuse; Boeck calls it rounded; in our specimens it is, as Buchholz says of his, nearly a right angle. The telson, according to Goës, is slit for a third or fourth of the length, Boeck says a third; Buchholz about a fourth; in our specimens the slit is scarcely a sixth part of the length.

The species attains a length of nine-tenths of an inch from the front of the head to the extremity of the third uropods; of these the long lanceolate serrate branches are entirely clear of the telson, and reach much further back than either of the other pairs. The specific name *fragilis* is very appropriate to the character of the delicate and slender appendages and to the integument in general.

Loc. Lat. 71° 19' N. Long. 63° 34' E. 19 VI 1883. 66 Fath. (Varna).

GENUS GAMMARUS, J. C. Fabricius, 1775.

1775. *Gammarus*, Fabricius, Systema Entomologiae, n°. 129.
 1888. » Stebbing, Challenger Amphipoda, p. 1673, etc.

Gammarus locusta (Linn.)

1761. *Cancer locusta*, Linnaeus, Fauna Svecica, Ed. 2. n°. 2042.
 1775. *Gammarus locusta*, J. C. Fabricius, Systema Entomologiae, 418. 1.
 1888. » » Stebbing, Challenger Amphipoda, p. 1701, etc.
 1889. » » Hoek, Crust. Neerlandica, Tijdsch. der Ned. Vereen. R. 2. Deel 2. p. 37. pl. 10. fig. 10', pl. 7. fig. 10''.

Dr. Hoek in the work above cited, pp. 37 to 52, has elaborately discussed the characters of *Gammarus locusta* and its varieties.

Loc. Vardö. Busse Sund.		1881.
Nova-Zembla. Matotschkin-Schar.	10—12 VIII	1881.
Nova-Zembla. Seals-bay, in brackish water.	13 VIII	1881.
Hammerfest, in the harbour and on shore.	23 IX	1881.
Vardö.	VI	1882.
Nova-Zembla. Matotschkin-Schar.	24 V and 27 VIII	1883.
Lat. 73° 52' N. Long. 36° 14' E.		1884. 145 Fath.

GENUS MELITA. Leach, 1813/14.

- 1813/14. *Melita*, Leach, Edinburgh Encyclopaedia, Art. Crustaceology, vol. 7.
 1888. » Stebbing, Challenger Amphipoda, p. 1676.

Melita dentata (Kröyer).

1842. *Gammarus dentatus*, Kröyer, Naturhist. Tidsskr. R. 1. Bd. 4. p. 159.
 1862. *Megamaera dentata*, Sp. Bate, Brit. Mus. Catal. Amph. Crust. p. 225, pl. 39. fig. 4.
 1870. *Melita dentata*, Boeck, Crust. amph. bor. et arct. p. 131 (211).
 1888. » » Stebbing, Challenger Amphipoda, p. 1710. etc.
 Loc. Lat. 70° 24' 50" N. Long. 45° 50' 51" E. 6 VII 1882. 55 Fath.

GENUS GAMMARACANTHUS, Sp. Bate, 1862.

1862. *Gammaracanthus*, Sp. Bate, Brit. Mus. Catal. Amph. Crust., p. 201.
 1888. » Stebbing, Challenger Amphipoda, p. 1673 etc.

Gammaracanthus loricatus (Sabine).

1821. *Gammarus loricatus*, Sabine, Parry's Voyage, N°. X of the appendix, p. 53, pl. 1. fig. 7.
 1862. *Gammaracanthus loricatus*, Sp. Bate, Brit. Mus. Catal. Amph. Crust., p. 202, pl. 36, fig. 2.
 1888. » » Stebbing, Challenger Amphipoda, p. 1699, etc.

Boeck gives the length of this fine and striking species as 40 mm., a measurement which it sometimes exceeds.

Loc. Nova-Zembla. Matotschkin Schar. 13 VIII 1881.

GENUS AMATHILLA, Bate and Westwood, 1862.

1837. *Amathia*, Rathke, Beitrag zur Fauna der Krym, Mem. Acad. St. Petersbourg, vol. 3. p. 291.
 1862. *Amathilla*, Bate and Westwood, Hist. Brit. Sessile-eyed Crust., vol. 1. p. 359.
 1888. » Stebbing, Challenger Amphipoda, p. 1667, etc.

Amathilla homari, (J. C. Fabricius).

1779. *Astacus Homari*, J. C. Fabricius, Reise nach Norwegen, p. 247.
 1780. *Oniscus arenarius*, O. Fabricius, Fauna Groenlandica, n°. 234.
 1798. *Gammarus Homari*, J. C. Fabricius, Supplementum Ent. Syst. p. 418.
 1819. *Gammarus Sabini*, Leach, Appendix to Ross' Voyage, vol. 2. p. 178.
 1862. *Amathia Sabinii*, Sp. Bate, Brit. Mus. Catal. Amph. Crust., p. 197, pl. 35, fig. 9.
 1862. *Amathilla Sabini* Bate and Westwood, Hist. Brit. Sessile-eyed Crust., p. 361.

1888. *Amathilla homari*, Stebbing, Challenger Amphipoda, pp. 33, 1686, etc.

Bruzellius and Buchholz have called attention to the very considerable differences between the young and adults of this species. The *Grayia imbricata* of Spence Bate is probably only a young form of *Amathilla homari*.

Vardö, Busse Sund. 1881.

Some specimens of *Amathilla angulosa* (Rathke) from Vardö, Busse Sund, 1881, and Cap Sozonowa — Cap Orloff. 15—18 VI 1883, were named by Dr. Hoek, but only two or three damaged specimens reached me.

GENUS WEYPRECHTIA, Stuxberg, 1880.

1880. *Weyprechtia*, Stuxberg, Evertbratfaunan i Sibiriens Ishaf. Bihang till K. Svenska Vet.-Akad. Handlingar. Bd. 5. n°. 22. p. 27.

In instituting the genus Stuxberg gives no distinguishing characters, but leaves then to be inferred from the description of the type species. He says that the genus is very conspicuous among its neighbours, and unlike any of the genera in the same family except *Amathilla*. In point of fact it is almost impossible to separate it from *Amathilla* without making a change in the existing contents of that genus. I propose then to define *Weyprechtia* as — like *Amathilla*, but with the body not carinate, the postero-lateral margins of the third pleon-segment bidentate, the cutting edge of the mandibles single toothed. With this definition the genus will contain two species both of them arctic, namely, 1. Kröyer's *Gammarus pinguis*, which was with hesitation transferred to *Amathia* by Spence Bate, and accepted by Boeck and Buchholz as belonging to *Amathilla*, and 2. Stuxberg's *Weyprechtia mirabilis*, of which the correct name is probably *Weyprechtia Heuglini* (Buchholz). Should Buchholz's *Amathilla Heuglini* prove to be distinct from *Weyprechtia mirabilis*, there would then be three species in the genus instead of two. The species described by Buchholz and Stuxberg has a very striking feature in the twofold excavation of the fourth pair of side-plates which is not found in Kröyer's species, but this is not enough alone to constitute generic difference.

Weyprechtia Heuglini (Buchholz).

1874. *Amathilla Heuglini*, Buchholz, Die zweite Deutsche Nordpolarfahrt, Bd. 2. p. 345.

1888. » » Stebbing, Challenger Amphipoda, p. 425.

1880. *Weyprechtia mirabilis*, Stuxberg, Evertbratfaunan i Sibiriens Ishaf, p. 28.

1888. » » Stebbing, Challenger Amphipoda, p. 523.

Buchholz had only a single specimen at command, obtained by Herr von Heuglin at Spitzbergen. He noticed its great resemblance externally to *Amathilla pinguis*, which he has himself described in much detail, and had he been able to examine the mouth-organs he would have found them in equally close agreement with those of the older species. I shall take the liberty of translating the descriptions given by both the authors named in the synonymy. Buchholz says: —

“The body is rather deep, large, with thick epidermis, as though in a coat of armour, tumid at the centre, with the back rounded and broad. The eyes are black, of moderate size, reniform. The upper antennae are a little shorter than the lower, equalling almost a third of the body's length; the accessory flagellum of moderate size, four-jointed.

“The anterior side-plates are of moderate size, the fourth much broader, produced behind into a very strong acute horizontal spine. The side-plates of the pleon-segments: the second and third at the hinder angle produced into a sharp tooth, the first rounded, the third furthermore on the hind margin produced into a sharp upward-directed tooth. The telson elongate, undivided, at the apex emarginate with a very small median incision. The third uropods with the rami equal, compressed, not longer than the preceding pairs.

The colour pale yellow. Total length 36 mm.”

Stuxberg says: —

"Form of the body robust, obese; the cephalocorm rounded, not carinate, of almost the same width and depth; the pleon compressed, with the depth twice as great as the breadth. The upper antennae a third part shorter than the lower: The primary flagellum twice as long as the peduncle, of 30—32 joints; the accessory flagellum scarcely half the length of the peduncle, of 6—7 joints. The lower antennae with a flagellum twice as long as the peduncle, of 50—59 joints. The head has a very short rostrum; and its length is a little less than its breadth (= 4:4.5). The eyes are reniform, shining, black. The first to the fourth side-plates are deeper than broad; the first with the lower angle acuminate, the second and third with it rounded truncate; the fifth and sixth broader than deep, with the lower margin incised. The hind margin of the fourth side-plate strongly incised above and below, furnished in the middle with a great, strong, sharp, transverse; downward-curved horn, the lower hinder angle subacute — so that the hind margin seems to be two-horned. The first and second segments of the pleon with side-plates acute at the hinder angle; the third bidentate, with the teeth subacute and produced upwards; the fourth with the transverse saddle-shaped depression not deep. The uropods biramous, the rami subequal in length, lanceolate, the margins serrate and setiferous. The telson a third longer than broad, extending beyond the apex of the peduncle of the last uropods, curved a little upwards, not cleft, having on the hind margin three shallow emarginations, of which the middle one is broad, the lateral narrow, carrying a seta a piece.

"The integuments of the cephalocorm and pleon are shining, with crowded round impressed points. Length of the body 51 mm., greatest breadth 17.5 mm., greatest depth 11 mm. Length of the upper antennae, of the peduncle 5 mm., of the primary flagellum 10 mm., of the accessory flagellum 3.3 mm. Length of the lower antennae, of the peduncle 7.5 mm., of the accessory flagellum 17 mm.

"Habitat in the glacial sea of Siberia between Cape Vankarema and Bering Strait on a sandy bottom, at a depth of 46 fathoms."

The two descriptions quoted agree together and with the specimens in the present collection, except that Buchholz speaks of the telson as elongate, and that Stuxberg describes the first pair of side-plates as having the lower angle acuminate, the sixth as broader than deep, and speaks in a general manner of the uropods as having the rami subequal. The telson in our specimens is not intrinsically very elongate, but it is considerably longer than the breadth at the base, and between two and three times as long as the apical breadth. The first side-plates when seen in position have not, or scarcely have, an acuminate appearance, yet when separated from the body and flattened out they show a blunted angle. The sixth side-plates appear to be of equal breadth and depth. The rami of the first and third uropods are subequal, but in the second pair the inner ramus is considerably longer and much broader than the outer.

To the earlier descriptions the following details may be added. In the specimen figured the principal flagellum of the first antennae has twenty seven joints, the secondary six joints; in the second antennae the first three joints of the peduncle are all equally short; the first has a projecting point, not unlike the glandcone of the second; the fourth and fifth joints are equal in length; the flagellum consists of rather more than forty joints.

The upper lip has a broadly and rather unsymmetrically truncate furred margin.

The mandibles have the cutting edge in the shape of a long and rather broad single tooth, these organs agreeing in this and most other respects with the account which Buchholz gives of the mandibles of *Amathilla pinguis*. The secondary plate on the left mandible has a row of four blunt teeth along its edge, on the right mandible it forms a group, not a row, of four sharp and very unequal teeth. There are ten spines in the spine-row. The molar tubercle is strongly denticulate and carries a plumose seta at one corner. There is a strong prominence near the base of the palp. The second joint of the palp is dilated distally, the third is as long as or rather longer than the first and second joints combined.

The lower lip has the outer lobes broad, the mandibular processes well-developed.

The first maxillae have about thirty plumose setae along the margin of the inner plate, eleven denticulate spines on the apical border of the outer, and the second joint of the palp distally widened and fringed with several slender spines and setae.

The second maxillae have an oblique surface row of thirty long plumose setae, and setae and spines along the inner and apical margins; the outer plate has the inner margin smooth, the apical fringed with spines.

The maxillipeds have the inner and apical borders of the inner plates crowded with plumose setae, with the usual three spine-teeth at the apex; the outer plates do not nearly reach the distal end of the palp's second joint; the apical margin is crowded with plumose setae, passing over gradually into serrate spines along the inner margin near to which there are also numerous setae. The second joint of the palp is little longer than the first or third; the fourth joint has a slender acute nail.

The first gnathopods. The fourth joint has an acute apex; the fifth is narrow, considerably longer than the hand and like it beset on the hind margin and inner surface with numerous slender spines; the hand is long and narrow, with the palm small and indistinct, rounded off; the finger is not half the length of the hand, but projects much beyond the palm, its outer margin very convex, the inner faintly serrate, nearly straight, as far as the curved acute nail. The second gnathopods are very similar to the first, but the fourth joint is rather larger, the wrist is more widened and the hand is larger, being but little shorter than the wrist; the palm is even more indistinct than in the first pair. The branchial vesicles are very broad.

In all the peraeopods the fourth and following joints, including the fingers, are elongate. The side-plates of the sixth pair form a very little lobe in front and a large one behind, the depth of this making the side-plate of equal depth and breadth. The specimen measured rather more than an inch from the rostrum to the dorsal apex of the third pleon segment, and just under half an inch from that point to the extremity of the third uropods.

Loc. Lat. $69^{\circ} 32' 56''$ N. Long. $59^{\circ} 9' 7''$ E. 6 VIII 1883. 15 Fath.

GENUS MICRODEUTOPUS, Costa, 1853.

1853. *Microdeutopus*, Costa, Rend. Soc. Borbon. Acad. sci. Nap. vol. 3. p. 171.

1888. » Stebbing, Challenger Amphipoda, p. 1082, etc.

Microdeutopus arcticus, Hansen.

1887. *Microdeutopus arcticus*, Hansen, Oversigt over de paa Dijnphna-Togtet indsamlede Krebsdyr, p. 231. pl. 22, fig. 3.

A female specimen, with the marsupial plates incompletely developed, measured an inch and one tenth. A second, incomplete, specimen showed no marsupial plates, but the segment carrying the fifth peraeopods was wanting, and the sex remains indeterminate. The species may have to be transferred to a new genus, since the outer plates of the maxillipeds are much smaller than is usual in species either of *Microdeutopus* or *Autonoe*. The mandibles of the present species have the third joint of the palp considerably longer than the second. As noticed by Hansen the third uropods have the inner ramus a little longer than the outer. It was perhaps this circumstance that prevented him from assigning the species to *Autonoe*, in which according to Boeck the outer ramus is longer than the inner, but that particular seems to be of little importance.

Loc. Lat. $69^{\circ} 45' 12''$ N. Long. $54^{\circ} 34' 26''$ E. 18 VI 1883. 31 Fath.

GENUS AMPHITHOE, Leach, 1814.

1814. *Amphithoe*, Leach, Edinburgh Encyclopaedia, vol. 7. p. 432. Art. Crustaceology.

1888. *Amphithoe*, Stebbing, Challenger Amphipoda, pp. 1688, etc.

Amphithoe rubricata (Montagu).

1808. *Cancer Gammarus rubricatus*, Montagu, Linn. Trans. vol. 9. p. 99, pl. 5. fig. 1.
 1814. *Amphithoe rubricata* Leach, Edinburgh Encyclopaedia, vol. 7. p. 432. Art. Crustaceology.
 1843. *Amphithoe podoceroides*, Rathke, Fauna Norwegens, Leopold.-Carol. Akad. Bd. 20.
 Abth. 1. p. 79. pl. 4. fig. 4.
 1846. *Amphithoe albomaculata*, Kröyer, Naturhist. Tidsskr. R. 2. Bd. 2. p. 67.
 1846. » » Kröyer, in Gaimard's Voyages en Scandinavie etc. pl. 11. B. fig. 1.
 1856. *Amphithoe littorina*, Spence Bate, Brit. Assoc. Report 1855.

Except in points of colouring there seems little to distinguish the forms to which the above-mentioned names have been given. There is probably some variation in the comparative lengths of fingers of the gnathopods and in the shape of the telson, the variation depending rather on age, size, or other individual character than on specific difference. Spence Bate says that the telson of *Amphithoe rubricata* is "short, subtriangular;" that of *littorina* "obtusely triangular". Rathke figures the telson of *podoceroides* as narrow, with rounded end, and the sides rather sinuous. Boeck says that the telson of that species has a breadth at the base nearly equal to the length, that it is narrower towards the end, which is straightly truncate (ret afskaaret). Kröyer says the same of the apex of his species (Enderanden lige afskaaren), but figures it broadly rounded with a projecting point at either side. This figure gives a good idea of the ordinary form, though the spine-bearing points are sometimes less prominent and sometimes higher up, while the curve of the apical margin is occasionally a little emarginate.

Loc. Vardö. Busse Sund. 1881.

GENUS PODOCERUS, Leach, 1814.

1814. *Podocerus*, Leach, Edinburgh Encyclopaedia, vol. 7. p. 433. Art. Crustaceology.
 1888. » Stebbing, Challenger Amphipoda, p. 1129, etc.

Podocerus angvipes, (Kröyer).

1838. *Ischyrocerus angvipes*, Kröyer, Grönlands Amphipoder, p. 283, pl. 3, fig. 14.
 1859. *Podocerus angvipes*, Bruzelius, Skand. Amph. Gamm. p. 21.
 1888. » » Stebbing, Challenger Amphipoda, p. 1718, etc.
 Loc. Vardö. Busse Sund. 1881.

Podocerus megacheir, Boeck.

1870. *Podocerus megacheir*, Boeck, Crust. amph. bor. et arct. p. 167 (247).
 1888. » » Stebbing, Challenger Amphipoda, pp. 396, 570.

The two specimens in the present collection are rather imperfect. They show that the secondary flagellum of the upper antennae has a minute second joint, that the setae of the large hands of the second gnathopods are many and plumose, and that the outer branch of the third uropods has a serration of five upright points just over the insertion of its little terminal spine.

Loc. Vardö. Busse Sund. 1881.

Podocerus tuberculatus, Hoek.

1882. *Podocerus tuberculatus*, Hoek, Die Crustaceen, gesammelt während der Fahrten
 des "Willem Barents". Nied. Arch. für Zool. Suppl. Bd. 1. p. 64. pl. 3. fig. 32.
 1888. » hoeki, Stebbing, Challenger Amphipoda, p. 1136, pl. 120.

The single specimen described by Dr. Hoek was taken in 1879 in Lat. $71^{\circ} 23' N.$, Long. $49^{\circ} 38' E.$, from a depth of 67 fathoms. Other specimens were obtained on Sept. 6, 1881, in Lat. $77^{\circ} 7' N.$, Long. $49^{\circ} 37' E.$, from a depth of 170 fathoms. An examination of these has shown that the fingers of the gnathopods precisely agree in dentation with those of the specimen described in the "Challenger" Report under the name of *Podocerus hoeki*. That specimen was taken in the neighbourhood of New Zealand, July 8, 1874, in Lat. $40^{\circ} 28' S.$, Long. $177^{\circ} 43' E.$, and was supposed to come from a depth of 1100 fathoms. But though its habitat is separated by so vast a distance from the Arctic localities, there does not seem to be a single feature which can be relied on for distinguishing it from the species to which Dr. Hoek had earlier given a name.

GENUS ERICTHONIUS, Milne-Edwards, 1830.

- 1830 *Erichthonius*, Milne-Edwards, Ann. des Sciences nat. vol. 20. p. 383.
1888. » Stebbing, Challenger Amphipoda, p. 1672, etc.

Erichthonius Hunteri (Sp. Bate).

1862. *Cerapus Hunteri*, Sp. Bate, Brit. Mus. Catal. Amph. Crust. p. 264. pl. 45. fig. 3.
1880. *Erichthonius difformis*, S. I. Smith, Trans. Connecticut Acad. vol. 4. p. 278.
1888. » » Stebbing, Challenger Amphipoda, pp. 336, 396.

In the bibliography of the Amphipoda I acquiesced in Professor Smith's opinion that this species is a synonym of *Erichthonius difformis*, Milne-Edwards, but upon examination of a specimen in this collection I now hesitate to endorse that view. The tuberculation of the hand of the second gnathopods in the male is different from what is met with in British specimens, and the latter have, at least often, a double tooth to the wrist, when the hand is tubercled, (the *Cerapus abditus* form of Bate and Westwood), whereas the tooth of the wrist in *Erichthonius Hunteri* is simple. Moreover in this species the ramus of the third uropods is longer in proportion to the peduncle than in *Erichthonius difformis*.

Loc. Lat. $73^{\circ} 21' 45'' N.$ Long. $34^{\circ} 19' 26'' E.$ 9 VI 1882. 125 Fath.

GENUS HYPEROCHE, Bovallius, 1887.

1887. *Hyperoche*, Bovallius, Bihang t. K. Sv. Akad. Handl. Bd. 11. N°. 16. p. 17.
1888. » Stebbing, Challenger Amphipoda, p. 1398, etc.
1889. » Bovallius, Mon. Amph. Hyperideia, p. 83.
1890. » Sars, Crustacea of Norway, vol. 1. pt. 1. p. 8.

Hyperoche medusarum (Kröyer).

1838. *Metoecus Medusarum*, Kröyer, Grönlands Amphipoder. Danske Vid. Selsk. Afhandl. VII, p. 288. tab. 3. fig. 15.
1870. *Tauria abyssorum*, Boeck, Crust. amph. bor. et arct. p. 6 (86).
1882. » *medusarum*, Sars, Oversigt af Norges Crustaceer, p. 75.
1885. *Hyperia Kröyeri*, Bovallius, Bihang t. K. Sv. Vet. Akad. Handl. Bd. 10. N°. 14. p. 17.
1887. *Hyperoche Kroeyeri*, Bovallius, Bihang t. K. Sv. Vet. Akad. Handl. Bd. 11. N°. 16. p. 18.
1887. » *abyssorum*, » » » » » » » p. 19.
1887. » *Luetkeni*, » » » » » » » p. 19.
1887. » *medusarum*, Hansen, Malacostraca marina Groenlandiae occidentalis, p. 58.
1888. » » Stebbing, Challenger Amphipoda, p. 1399. etc.
1889. » *Kroeyeri*, Bovallius, Mon. Amph. Hyperideia, p. 87.
1889. » *abyssorum*, Bovallius, » » » » » p. 94.

1889. *Hyperoche Luetkeni*, Bovallius Mon. Amph. Hyperideae, p. 97.

1890. » *Kröyeri*, Sars, Crustacea of Norway, vol. 1. pt. 1. p. 9. pl. 4.

A single specimen of this species was taken at a depth of 52 fathoms in Long. 70° 30' 5" N. Lat. 49° 41' 5" E. 29 VII, 1881.

In the above synonymy I am merely accepting the latest opinion of Professor Sars that Kröyer's species is distinct from the *Oniscus medusarum* of O. Fabricius, and identical with the *Tauria abyssorum* of Boeck and the *Hyperoche Kroeyeri* and *Hyperoche Luetkeni* of Bovallius. If the *Metoecus medusarum* of Kröyer belonged at the outset both to a new genus and a new species, the specific name should be maintained, though the generic one as being preoccupied has to be displaced. In 1889 Bovallius discusses very minutely the distinctions between the specimens which he has allotted to three separate species. To his elaborate work the reader must be referred for a full account of the merits of the question.

GENUS EUTHEMISTO, Bovallius, 1887.

1825. *Themisto*, Guérin, Encycl. Méthod. vol. 10. Art. Uroptera.

1887. *Euthemisto*, Bovallius, Bihang t. K. Sv. Vet. Akad. Handl. Bd. 11. N°. 16. p. 21.

1888. » Stebbing, Challenger Amphipoda, p. 1407, etc.

1889. » Bovallius. Mon. Amph. Hyperideae, p. 275.

1890. » Sars, Crustacea of Norway, vol. 1. pt. 1. p. 11.

Euthemisto libellula (Lichtenstein, in Mandt).

1822. *Gammarus libellula*, Lichtenstein, in Mandt's Obs. Hist. nat. itin. Groenlandico, p. 32.

1887. *Euthemisto* » Bovallius, Bihang t. K. Sv. Akad. Handl. Bd. 11. N°. 16 p. 22.

1888. » » Stebbing, Challenger Amphipoda, p. 1699, etc.

1889. » » Bovallius, Mon. Amph. Hyperideae, p. 281. pl. 13. fig. 1—31.

1890. » » Sars, Crustacea of Norway, vol. 1. pt. 1. p. 13. pl. 6. fig. 1.

Loc. Vardö, Busse Sund. 1881.

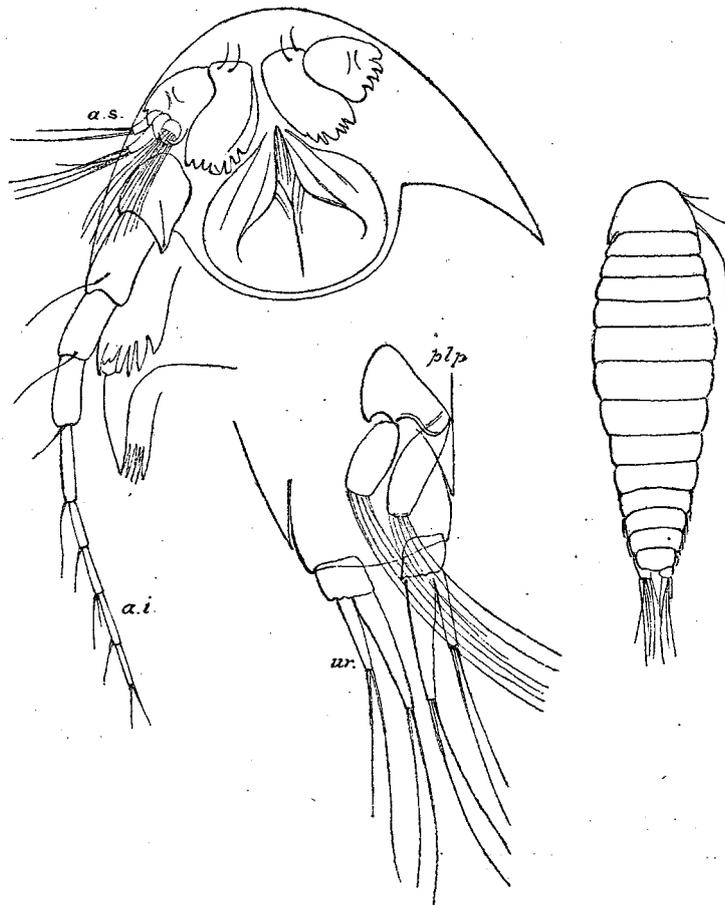
On the surface of the Barents-Sea. 1883.

Loc. Lat. 72° 34' N. Long. 48° 6' E. 5 VIII 1884. 140 Fath.

A PARASITIC ISOPOD.

The specimen of *Onisimus plautus* (Kröyer) noticed on page 10 contained thirteen eggs. Among them, and much smaller than any of them, was a little Isopod of the tribe *Epicaridea*. It corresponds very closely with that described and figured by M. M. Giard and Bonnier in their paper on *Probopyrus* and *Palaegyge*, p. 18, pl. 6, 1888, under the title of "Stade cryptoniscien". In the present specimen the first antennae appear to be quite distinct from one another at their bases. The first joint as seen from below is an elongate slightly curved plate, much broader than long, with two setules on the upper lateral margin, and the lower cut into seven moderately strong teeth, of which the central one is the broadest. The second joint is also laminar, smaller than the first, the distal border directed more outwards than downwards and cut into four inward-directed teeth with an appearance of some additional teeth showing through from the upper surface; near this border it carries two setules. Within the distal margin

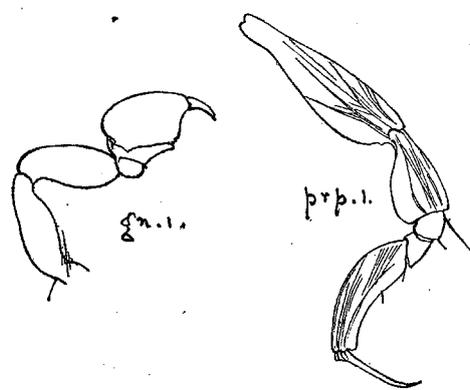
of the second joint are the three one-jointed branches, the uppermost carrying two setae much longer than itself, the median one which is longer carrying, as it seems, four setae of which



two are very long. The lowest branch is very short and carries perhaps twenty very long, slender, transparent hyaline rods. According to M.M. Giard and Bonnier these rods in their specimen were attached to a lobe of the second joint. In the present specimen they seem undoubtedly to arise from the small branch. The second antennae are ninejointed, the five joints of the flagellum being slender and rather long, each with a couple of apical setae; the second joint of the peduncle has a subapical seta; the third and fourth joints have each an apical one. The mouth-organs form a closely united rounded-triangular mass, with a sharp pair of points in position to protrude from the apex in front. The ventral plate folding over the base of each of the trunk-limbs has its edge cut into five teeth.

The two pairs of gnathopods have the third joint rather long and broad, though shorter than the second; the fourth joint is small, the fifth short but broad; the sixth joint is rather massive, having on the

hind margin two very short broad spines with their distal border serrate, against which the short curved finger can close down. The three terminal joints are described as seen in the first pair only; from the second they were broken off. The pereopods appear to be in close agreement with those of the specimen figured by M.M. Giard and Bonnier, and the pleopods differ little, except that the branches set wide apart are more elongate; the outer branch is here also considerably longer



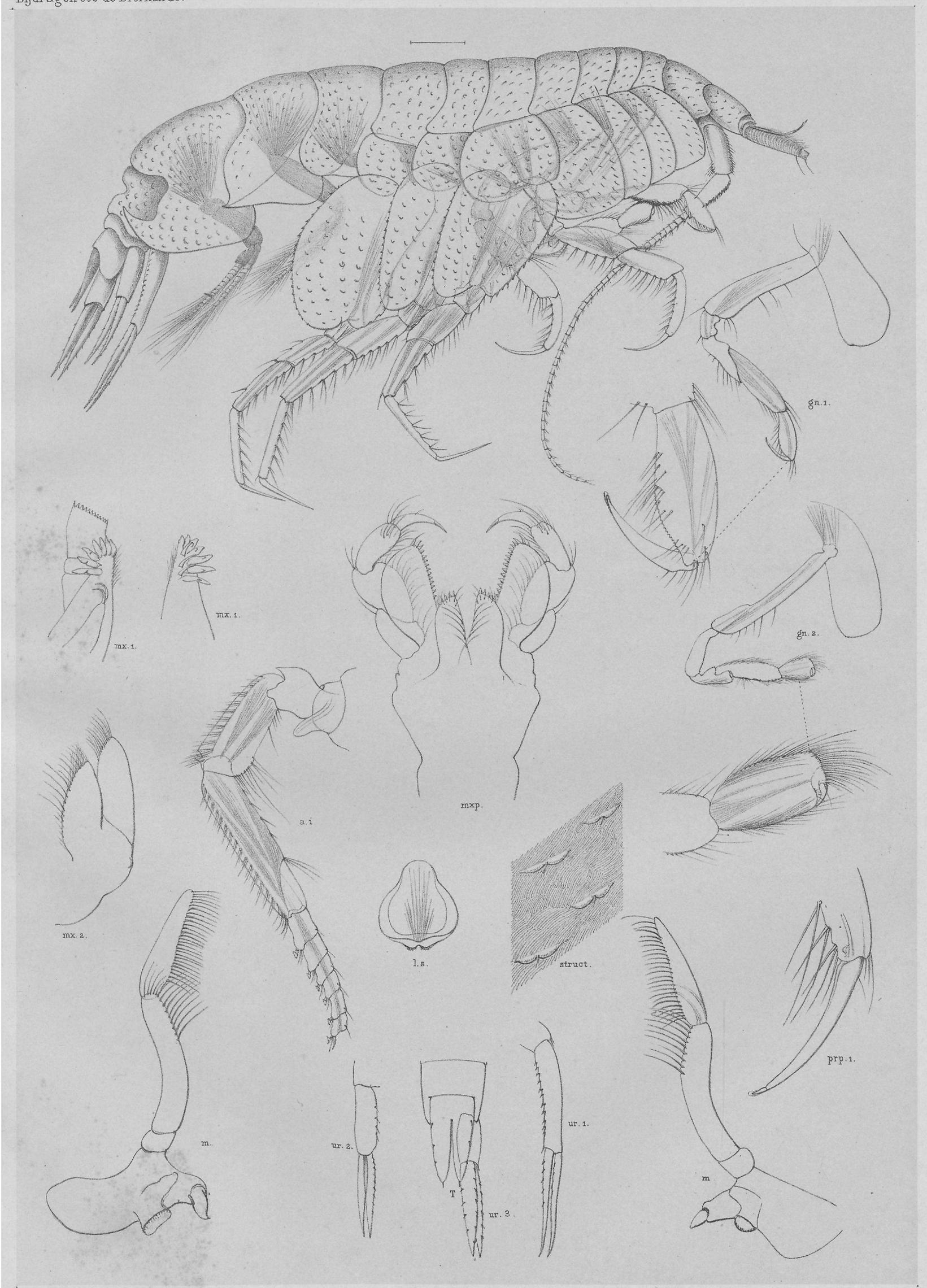
than the inner. The uropods have short peduncles and slender rami, the inner much longer than the outer, each tipped with two long setae. The semicircular head, the peraeon increasing in width to the fifth segment and diminishing to the seventh, and the six segments of the tapering pleon, agree with the specimen compared, but whereas that specimen is described as having two large eyes each furnished with a rounded crystalline surrounded by a zone of black pigment, there is in the present specimen no appearance of eyes. M.M. Giard and Bonnier are inclined to suppose that their specimen may belong to the genus *Palaegyge*, of which they describe a species found in the left branchial cavity of

Palaemon dispar. A very similar form has been described by Buchholz as *Hemioniscus balani*. The circumstances under which the present specimen was found make it possible that it is the cryptoniscian stage of one of the Cabiropsidae. The characters given will make it available for future recognition, but, until the adult forms are discovered, it seems scarcely possible to determine the family to which an animal in the cryptoniscian stage should be assigned.

EXPLANATION OF THE PLATES.

The lettering is uniform throughout the Plates, and is based on the initial letters of the words indicated:

- a. s. Antenna superior, or first antenna.
- a. i. Antenna inferior or second antenna.
- l. s. Labium superius, labrum or upper lip.
- l. i. Labium inferius, or lower lip.
- m. Mandible.
- mx.1. First maxilla.
- mx.2. Second maxilla.
- mxp. Maxillipeds.
- gn.1., gn.2. First, and Second gnathopods.
- prp.1. 2. 3. 4. 5. First, second, third, fourth and fifth peraeopods.
- Pl.s. Pleon segment.
- plp. Pleopod.
- ur.1. 2. 3. First, second, and third uropods.
- T. Telson.
- ♂ male. ♀ female.

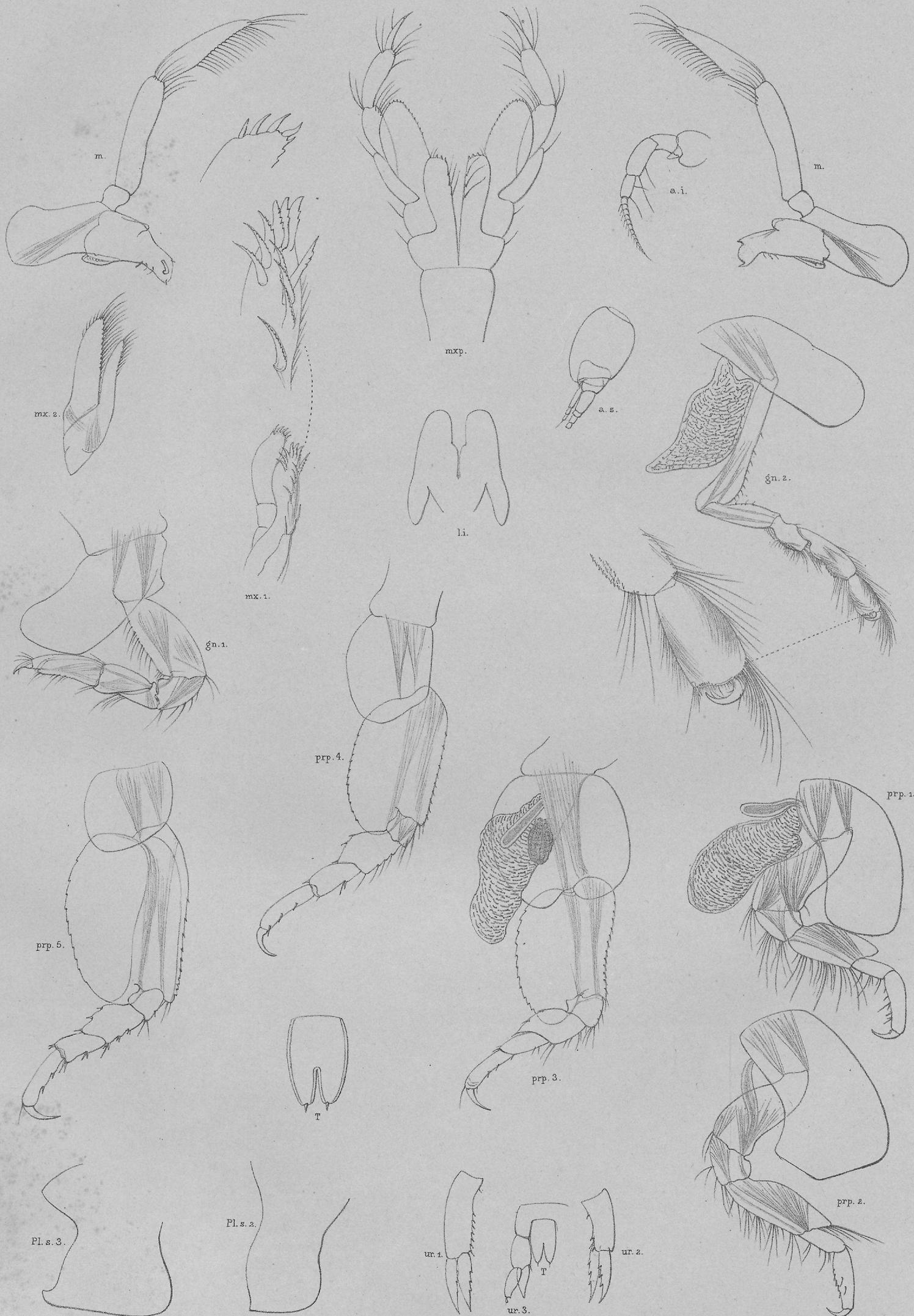


T.R.R. Stebbing del.

F.W.M. Trap impr.

A.J. Wendel lith.

Hippamedon squamosus, n.sp.

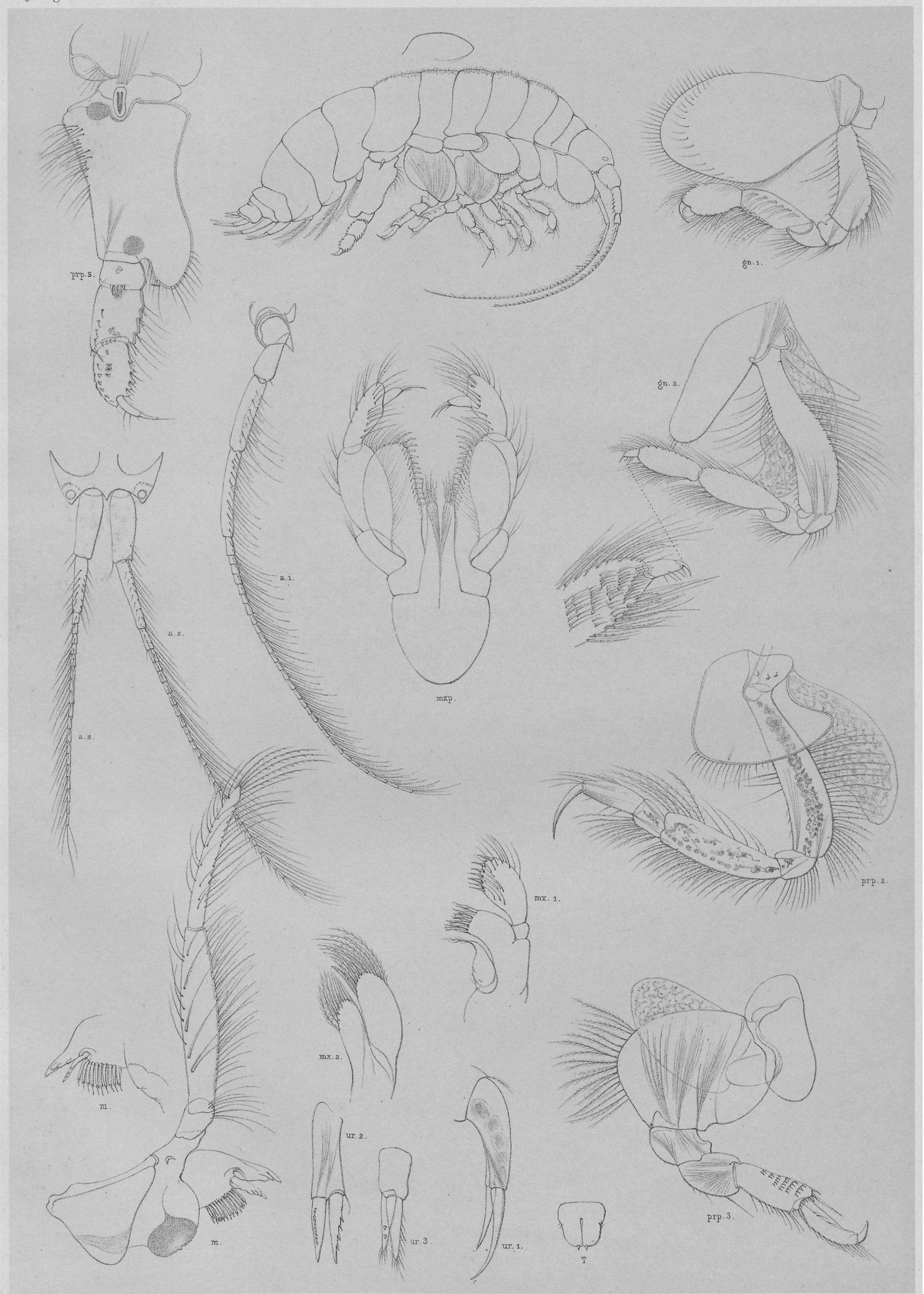


T.R.R. Stebbing del.

P.W.M. Trap impr.

A.J. Wendel lith.

Paronesimus Barentsi, n. sp.

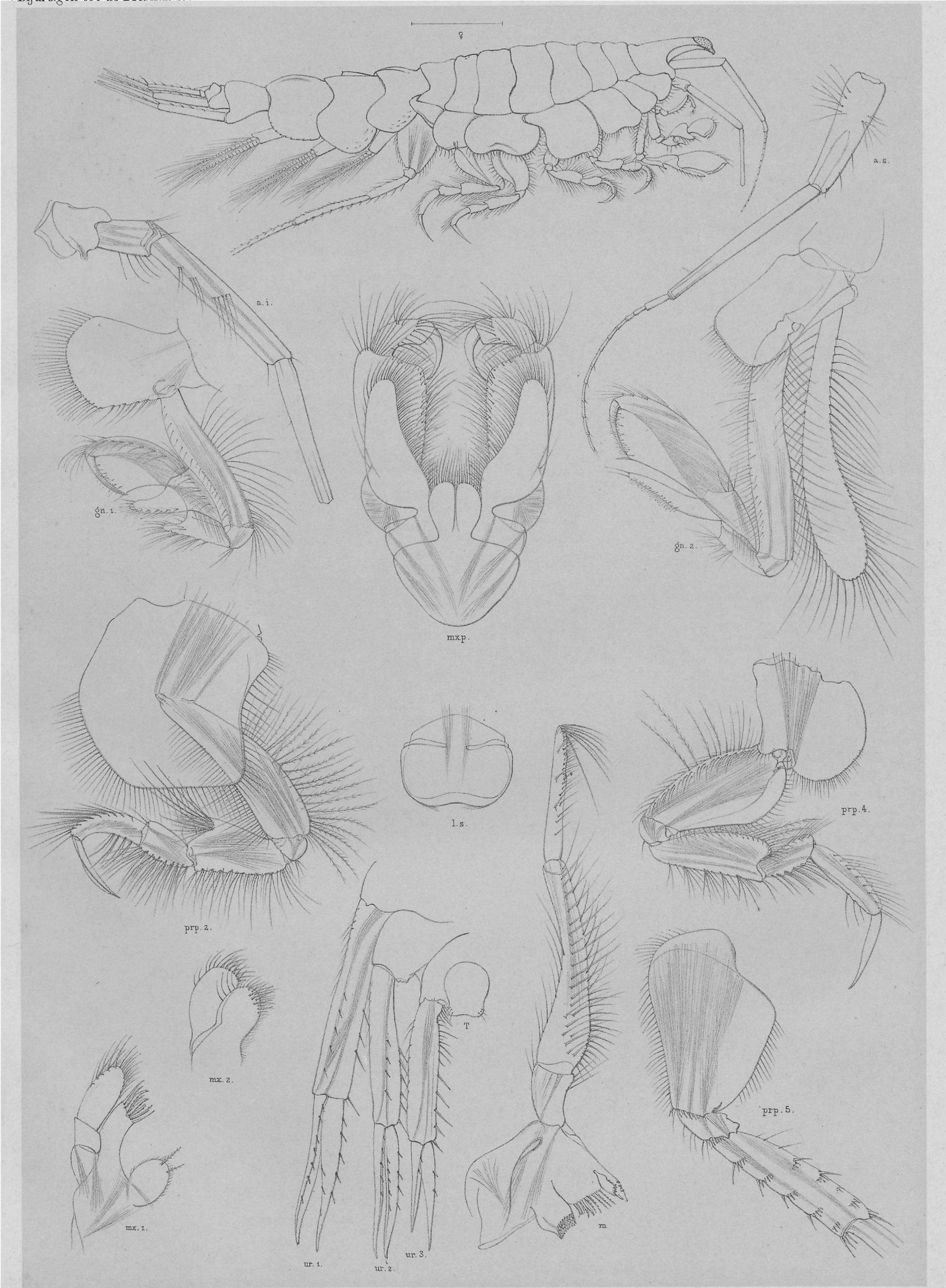


T.R.R. Stebbing del.

F.W.M. Trap impr.

A.J. Wendel lith.

Haploops laevis, Hoek.

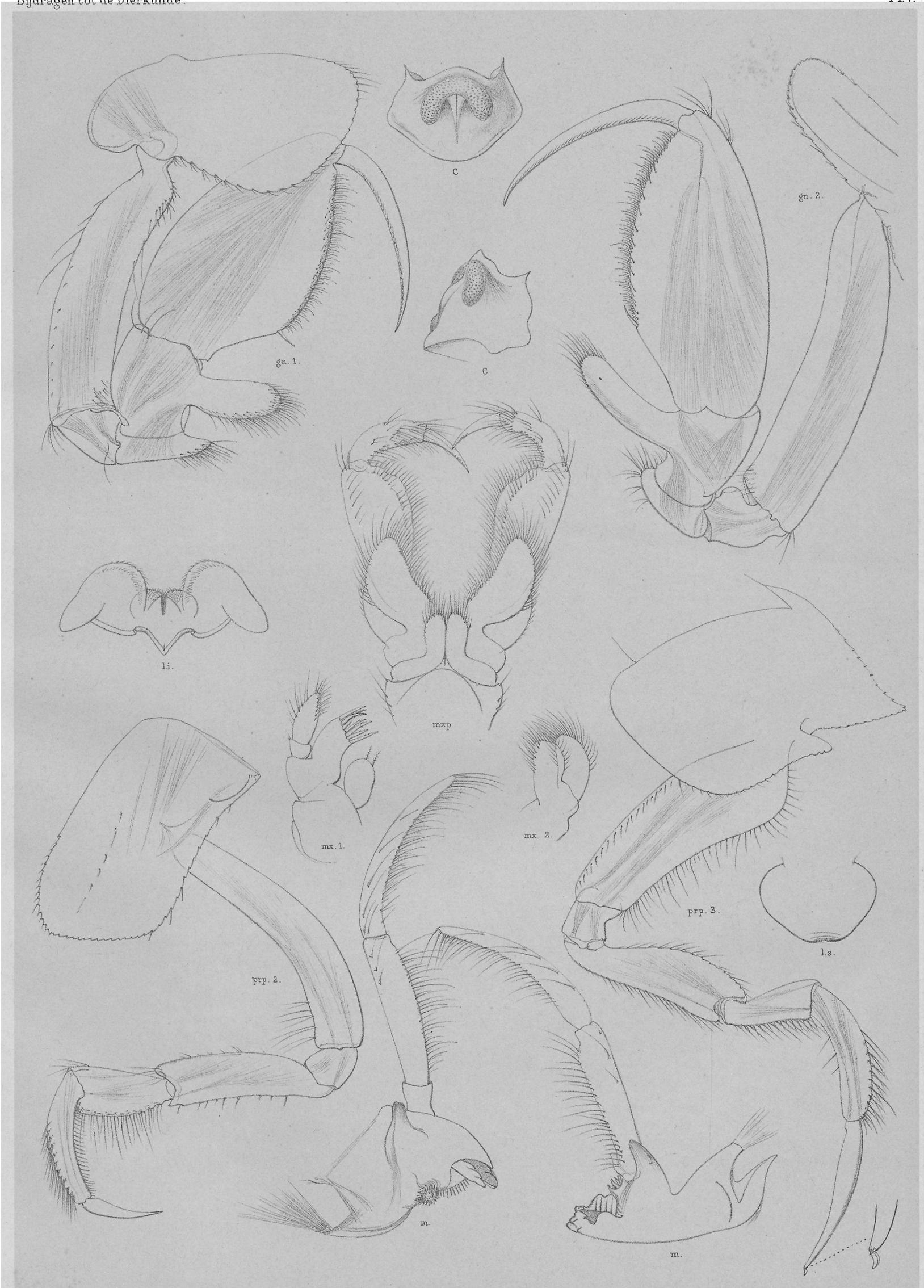


T.R.R. Stebbing del.

E.W.M. Trap impr.

A.J. Wendel lith.

Monoculodes Hanseni, n. sp.

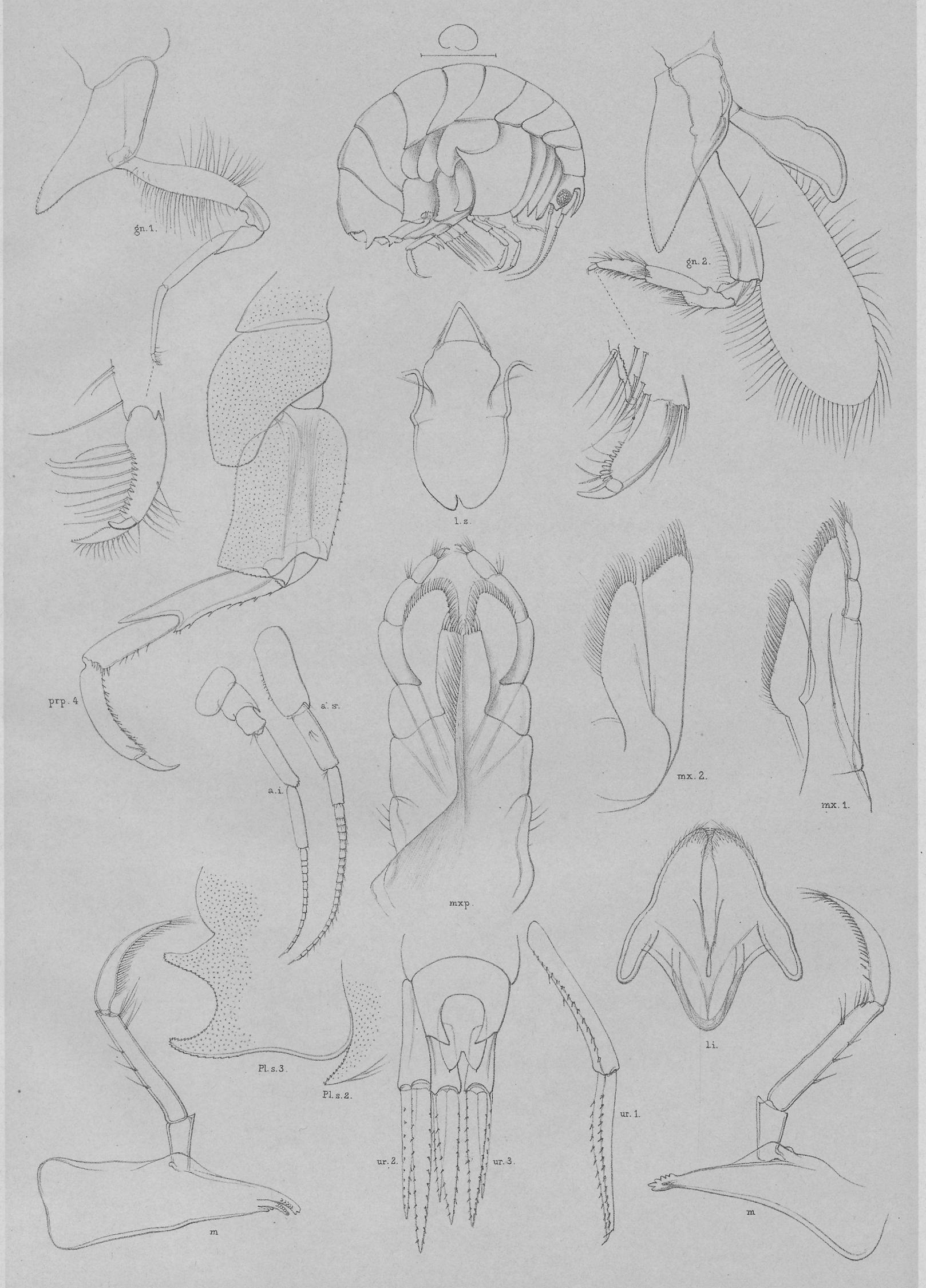


T.R.R. Stebbing del.

F.W.M. Trap impr.

A.J. Wendel lith.

Barentsia Hoeki, n.g. et sp.

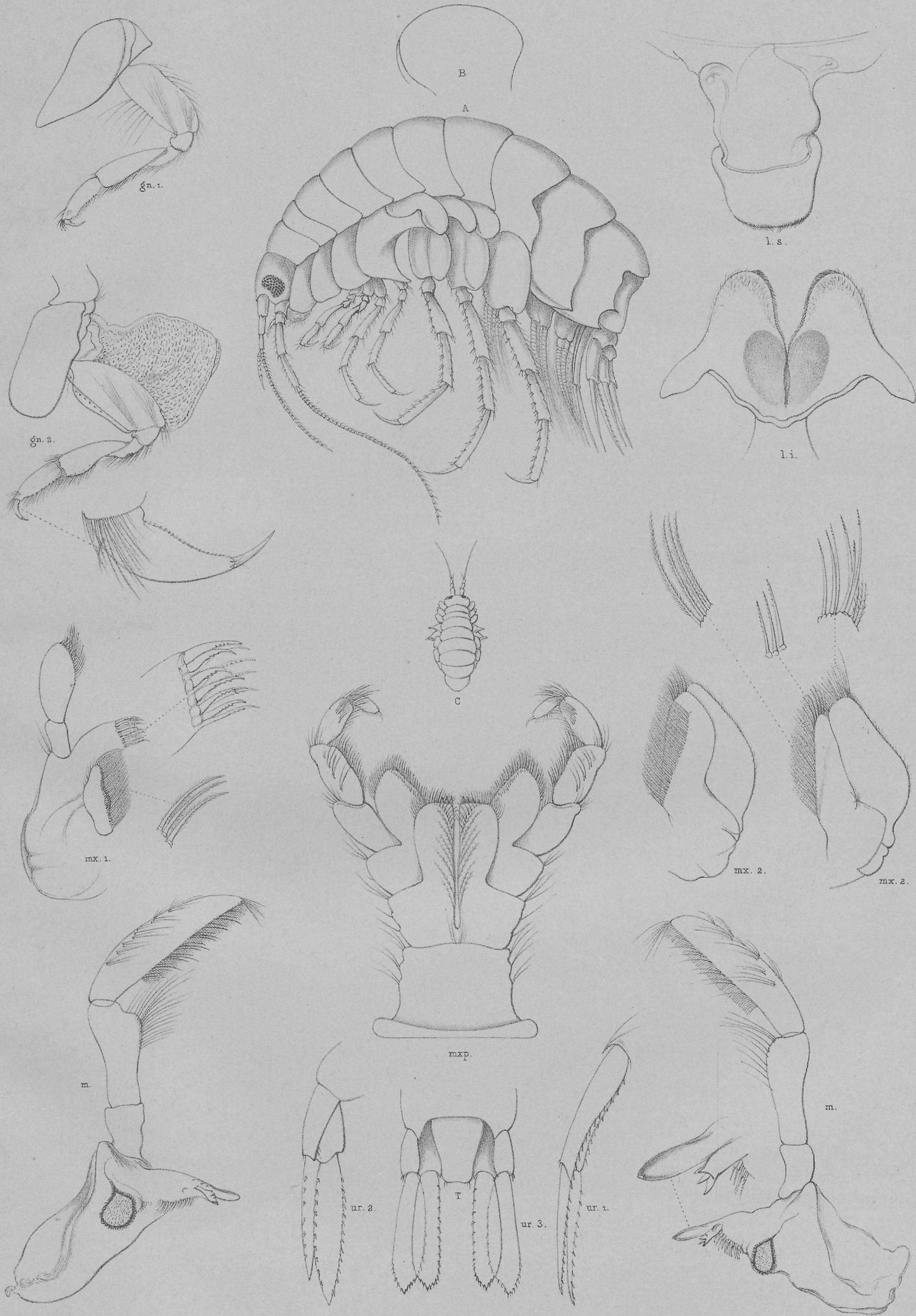


T.R.R. Stebbing del.

P.W.M. Trap impr.

A.J. Wendel lith.

Acanthonotozoma inflatum, (Kröyer).



T.R.A. Stebbing del.

P. W.M. Trap impr.

A.J. Wendel lith.

Weyprechtia Heuglini. (Buchholz).