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CRUSTACEA collected by W. A. HERDMAN, F.R.S.,
in PUGET SOUND, PACIFIC COAST of
NORTH AMERICA, September, 1897.

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

With Plates XV. and XVI.

[Read May 13th, 1898.]

THE collection of Malacostraca made by Prof. Herdman in Puget Sound, on the occasion of his visit to Canada with the British Association, in September, 1897, consists of 33 species, as specified below. Of these the large proportion of 7 appear to be new to science, and of the others 4, viz., *Leucothoë spinicarpa* (Abild.), *Melita dentata* (Kröyer), *Ischyrocerus minutus*, Lillje., and *Podocerospis excavata* (Sp. Bate) have not, to my knowledge, been previously recorded from the Pacific, so that nearly one-third of the total number of species are new to the fauna of the west coast of North America. This large proportion can only be attributed to the long experience of Prof. Herdman in dredging operations, the trained eye being able to detect small species, as well as to see the difference between similar, but not identical, species in the larger forms.

The geographical distribution of the European species of Amphipoda in the collection presents some interesting points. *Leucothoë spinicarpa* has been found from Green-

land, in lat. $68^{\circ} 8' N.$, long. $58^{\circ} 47' W.$ (Hansen) to the Azores (Barrois). *Melita dentata*, on the other hand, appears to be a strictly northern species, having been recorded from Spitzbergen (Goes), Greenland (Hansen), Grand Manan (Stimpson), Labrador (Packard), and as far south as Denmark (Meinert), the coast of Northumberland (Norman), and Halifax, Nova Scotia (S. J. Smith). It has not been recorded from the West Coasts of the British Isles. *Ischyrocerus minutus* [= *I. isopus* (Walker)] again, which has sometimes been confounded with the nearly allied *I. anguipes*, Kröyer, has been recorded from Baffin's Bay, lat. $72^{\circ} 8' N.$ (Ohlin), and is abundant on the coast of North Wales. I have also a specimen from Valentia, West Coast of Ireland. On the other hand, *Podocerospis excavata* (Sp. Bate), which is fairly common in Liverpool Bay, and occurs on the French and Norwegian coasts, does not appear to have been recorded on the last named further north than lat. 64° (Sars). Negative evidence, however, in a class of marine animals that has been so little studied, is almost worthless.

Besides the species in the collection that are absolutely identical with British species, the resemblance between others is very remarkable. Thus, *Eupagurus kennerlyi* only differs from *E. cuanensis* in being larger and having the sixth joint of the walking legs relatively shorter. *Crangon affinis* only differs from *C. vulgaris* in being slightly shorter and wider, and closely resembles *C. allmani* in the carinæ of the sixth abdominal segment. Similar slight differences separate the other species in the annexed list from their representatives in the British Seas.

The type specimens are in the Museum of Zoology at University College, Liverpool.

REPRESENTATIVE SPECIES.

West Coast of America.	British Isles.
<i>Oregonia gracilis</i> , Dana.	<i>Macropodia longirostris</i> (Fabr.).
<i>Scyra acutifrons</i> , Dana.	<i>Hyas coarctatus</i> , Leach.
<i>Eupagurus kennerlyi</i> , St.	<i>Eupagurus cuanensis</i> (Thompson).
<i>Crangon affinis</i> , De Haan.	{ <i>Crangon vulgaris</i> .
<i>C. munitus</i> , Dana. }	{ <i>C. allmani</i> .
<i>C. munitellus</i> , Walker. }	<i>C. fasciatus</i> , Risso.
<i>Spirontocaris brevirostris</i> , (Dana).	<i>Spirontocaris pusiola</i> (K.).
<i>S. lamellicornis</i> (Dana). }	<i>S. spinus</i> (Sowerby).
<i>S. prionota</i> (Stimpson). }	<i>Pandalus montagui</i> , L.
<i>Pandalus danæ</i> , Stimp.	<i>Heteromysis formosa</i> , Smi.
<i>Heteromysis odontops</i> , Walk.	<i>Idotea linearis</i> (Linn.).
<i>Idotea resecata</i> , Stimp.	<i>Janira maculosa</i> , Leach.
<i>Janira occidentalis</i> , Walk.	<i>L. spinicarpa</i> (Ab.).
<i>Leucothöe spinicarpa</i> (Ab.)	<i>Paramphithöe assimilis</i> , S.
<i>Paramphithöe pacifica</i> , Walk.	<i>M. dentata</i> (Kr.).
<i>Melita dentata</i> (Kröyer).	{ <i>Aora gracilis</i> ♀, Bate.
<i>Aoroides columbiæ</i> ♀, Walk.	{ <i>Microdeutopus anoma-</i> <i>lus</i> ♀ (Rathke).
<i>Podoceroopsis excavata</i> (Sp. Bate).	<i>P. excavata</i> (Sp. Bate.).
<i>Amphithöe rubella</i> , Dana.	<i>Amphithöe rubricata</i> (M.).
<i>Ischyrocerus minutus</i> , Lill.	<i>I. minutus</i> , Lill.

Crustacea collected by Dr. W. A. HERDMAN, F.R.S.,
in Puget Sound, September, 1897:—

BRACHYOCERA.

Family CANCRIDA.

Genus *Trichocarcinus*, Miers, 1879.

Trichocera, De Haan, Fauna Japon., Crust., p. 16, 1833.

Trichocera, Dana, Crust. U.S. Expedn., p. 299, 1852.

Trichocarcinus oregonensis, (Dana), Pl. XV., fig. 2.

Two adult males and two young; the largest measures 31 mm. long by 42 mm. wide. In the adult the regions are very strongly defined; the teeth on the antero-lateral margin are very granulose, and have lost the alternately spined character described by Dana.

Trichocarcinus recurvidens (Sp. B.). Pl. XV., figs. 1—1b.

Platycarcinus recurvidens, Sp. Bate, P.Z.S. 1864. p. 663, Ann. and Mag. Nat. Hist., 3rd Series, vol. XV., p. 488, June, 1865.

Carapace 19 mm. long by 23 mm. wide divided into a number of prominent areolæ of which the surfaces are flattened and granulated; they are separated by deep interspaces. The two gastric lobes are the most prominent, between these is an irregularly shaped small tubercle, and on each side of them a somewhat crescent shaped areola. Behind these are 2 small and a row of 8 moderately large areolæ reaching across the carapace; behind these are a number of small areolæ. The antero- and postero-lateral margins are ill defined; the former has 10 teeth (including the orbital) which are convex on the upper surface, widening distally, and inclined upwards, whence probably the specific name. The frontal margin is 3 mm. wide and 3-lobed, the centre lobe smaller than the

others; a granulated ridge runs backwards from the lateral lobes.

Inner antennæ longitudinal; outer rather long and hairy with the 2 last joints of the peduncle projecting beyond the margin of the carapace, sub-equal in length, the penultimate cordate.

Eye-stalks short with a bifid calcareous appendage on the upper and inner side.

Abdomen 6-jointed, reaching to the base of the outer maxillipedes, very hairy.

Chelipedes robust; carpus and propodos with longitudinal lines of tubercles which increase in size towards the upper margin, the largest being at the base of the moveable finger; merus joint smooth, as long as the carpus.

Ambulatory legs hairy, the propodos shorter than the carpus, dactylus small.

Differs from *T. oregonensis* (Dana) in the flatter, more sharply defined areolæ, in the distal expansion of the teeth of the antero-lateral margin, and in the different form of the calcareous ocular appendage.

Colour of areolæ bright red; chelipedes and legs flesh colour, fingers black. One male.

I have great hesitation in referring Prof. Herdman's single specimen to Sp. Bate's species, as his imperfect description would apply quite as well to *T. oregonensis*; in short I only do so because he calls it a "pretty species," which applies much more to this specimen than to the dull coloured *T. oregonensis*.

The genus *Trichocarcinus* was founded by Miers in place of the pre-occupied genus *Trichocera*, De Haan, in Proc. Zool. Soc., 1879, p. 34, when he called attention to its

affinity with *Cancer*, and again in the Brachyura of the "Challenger" Voyage, p. 210.

It is difficult to see why De Haan, and after him Dana, should have placed it in Corystidæ, the latter author making a family *Trichoceridæ*, consisting of this genus alone. I propose to abolish this family and to place *Trichocarcinus* next to *Cancer*, from which it differs in its more strongly defined regions of the carapace.

Family CORYSTIDÆ, Dana.

Genus *Telmessus*, White, 1846.

Telmessus cheiragonus (Tilesius).

Two specimens. Length 22 mm. Width, including lateral spines, 25 mm.*

For description and synonymy see Benedict's excellent Memoir in Proc. U.S. National Museum, vol. XV., p. 223, Pls. XXV. and XXVI. (1892).

CATOMETOPA.

Family GRAPSIDÆ, Dana.

Genus *Heterograpsus*, Lucas, 1849.

Heterograpsus nudus (Dana).

Two specimens. Length 25 mm., width 29 mm.

For synonymy, &c., see Kingsley's Synopsis of the Grapsidæ, Proc. Acad. Nat. Sci., Philadelphia, 1880, p. 208. As, however, Ortmann (Zool. Jahrbuch, Syst. VII., 1894, p. 715) rejects this author's identification of *H. nudus* with *H. sanguineus* (De Haan), I have retained Dana's name.

* In all cases, unless otherwise stated, the largest specimens have been measured. Measurements include rostrum and, except in Brachyura, caudal appendages.

Family INACHIDÆ, Miers.

Genus *Oregonia*, Dana, 1852.

Oregonia gracilis, Dana.

Two males. Length 40 mm. (of which the rostrum is 18 mm.). Width 20 mm.

Genus *Pugettia*, Dana.

Pugettia gracilis, Dana.

Fourteen specimens. Length of largest female 44 mm. Width, including antero-lateral teeth, 30 mm.

Family MAIDÆ, Miers.

Genus *Scyra*, Dana.

Scyra acutifrons, Dana.

Two males. Length 20 mm. Width 14 mm.

ANOMURA.

Family PAGURIDÆ.

Genus *Eupagurus*, Brandt, 1851.

Eupagurus tenuimanus (Dana).

One large and one small specimen. Length and width of carapace 6 mm. Width of propodos of right chelipede 16 mm.

Eupagurus kennerlyi, Stimpson.

One specimen. Length of carapace 19 mm., width 11 mm. Very near *E. cuanensis* (Thompson), the principal difference being that the dactyli of the ambulatory legs in *E. kennerlyi* are shorter than the propodi, while in *E. cuanensis* they are longer and more curved.

Genus *Paguristes*, Dana.*Paguristes turgidus*, Stimpson.

One specimen. This species inhabits a hairy shell, in which its equally hairy chelipedes are difficult to see.

MACRURA.

Family CRANGONIDÆ.

Genus *Crangon*, Fabr., 1798.*Crangon munitus*, Dana.

One specimen. Length 45 mm.

Wrongly placed under *Sclerocrangon*, by Ortmann (Proc. Acad. Nat. Sci., Phil., 1895, p. 173). The shape of the rostrum alone shows it not to belong to Sars' genus, as defined in Crust., Norwegian N. Atlantic Expdn., p. 14.

Crangon vulgaris (Linn.), var. *affinis*, De Haan,
= *C. nigricauda*, Stimpson.

Three specimens. Length 42 mm. Width of carapace 7 mm.

I quite admit the differences between *C. nigricauda* and *C. vulgaris* given by Stimpson, but they do not appear to me to be of specific value.

Crangon munitellus, n. sp. Pl. XVI., fig. 1.

Two females with ova. Length 25 mm.

Carapace depressed and sculptured; median carina, with two teeth; *two parallel short carinæ on each side terminating in a tooth*; a curved ridge running from the outer side of the outermost of these teeth to the orbital margin on which is a strong tooth; a strong tooth on the branchial region. Antero-lateral angles acute. Rostrum concave above, rounded at the extremity, as long as the eyes.

Inner antennæ. Peduncles about half the length of the antennal scale.

Outer antennæ. Scale short and broad, with the inner margin thickened, and a strong central rib. Peduncles reaching nearly to the end of the scale, the last joint longer than the others together.

Outer maxillipes reaching beyond the end of the antennal scales.

First pair of feet as long as the second, reaching beyond the end of the antennal scales.

Second and third pair of feet sub-equal. Abdomen tapering abruptly from the 4th segment; 6th segment darker coloured than the others; a dark transverse band on the caudal appendages.

Near *C. munitus*, Dana, but differs in its much smaller size and in the second carina from the median terminating in a tooth half way to the orbital margin, while in *C. munitus* it reaches the margin and has no tooth.

Family HIPPOLYTIDÆ.

Genus *Spirontocaris*,* Sp. Bate, 1888.

Spirontocaris grœnlandica (Fabr.).

Hippolyte aculeata (M. Edw.).

H. armata, Owen.

H. cornuta, Owen.

One specimen. Length 35 mm.

I have seen Owen's type specimens from Kamtschatka at the Museum of the Royal College of Surgeons. They are three or four times as large as Dr. Herdman's specimen, but agree in other respects.

Spirontocaris brevirostris (Dana).

Several specimens. Length 50 mm.

* I use this genus in respect to the 7-jointed carpus of the second pair of legs only, without reference to other characters.

Spirontocaris lamellicornis (Dana).

Eight specimens. Length 40 mm.

Very variable in the number and form of the teeth of the rostrum and dorsal carina, but the latter always begins at the hinder margin of the carapace instead of before the middle ("antice ultra medium") as in *Hippolyte ochotensis*, Brandt. From *S. spinus* (Sowerby) it differs in having two post-ocular spines instead of one.

Spirontocaris prionota (Stimpson, Proc. Acad. Nat. Sci., Phil., 1864, p. 153).

Six specimens. Length 35 mm.

Easily distinguished by the serrate margin of the dorsal teeth

Spirontocaris cristata (Stimpson, l. c., 1860, p. 33).

Four specimens. Length 18 mm.

Spirontocaris herdmani, n. sp. Pl. XVI., fig. 2.

One female with ova. Length 30 mm.

Carapace smooth; a strong tooth below the eye and a small one at the lower anterior angle; no post-ocular spine. Dorsal carina beginning rather in front of the middle; rostrum horizontal with sub-parallel margins reaching a little beyond the end of the peduncle of the inner antennæ; upper margin with five teeth, of which two are on the thorax, the 2nd, 3rd, and 4th close together, the distance from the 5th to the point equal to the length from the 2nd to the 4th. Lower margin with one tooth near the point.

Inner antennæ with a spine on each joint of the peduncle.

Outer antennæ. Scale broad at the base, narrowing distally, with a strong spine, half as long again as the sub-equal antennal and antennular peduncles.

Outer maxillipedes reaching considerably beyond the end of the antennal scale.

First pair of legs rather long, reaching beyond the end of the antennal scale; propodos as wide and more than twice as long as the carpus.

Second pair of legs with 7-jointed carpus.

Third pair of legs with three spines on the distal third of the merus joint.

Abdominal segments having the lower margin rounded in the first four, acute in the fifth.

Family PANDALIDÆ.

Genus *Pandalus*, Leach, 1814.

Pandalus danæ, Stimpson (Jour. Boston Soc. Nat. Hist., vol. VI. (1857), p. 62, Pl. XXI., figs. 6 and 7.

Many specimens. Length of largest 80 mm.

SCHIZOPODA.

Family MYSIDÆ.

Genus *Heteromysis*, S. J. Smith, Rep. U.S. Com. of Fisheries, Part I., p. 553, 1874.

Heteromysis odontops, n. sp. Pl. XV., Figs. 3—6.

Four males, four females with ova. Length of latter 11 mm.

Body rather slender.

Rostrum sub-acute, barely half the length of the eyes.

Eyes short and stout, with a prominent distal tooth on the inner margin.

First legs, merus longer than the carpus and propodos united, as 10 : 7, the last small and ill-defined; on the carpus of the right leg 7 spines, viz., a single one and 3 pairs; on the left leg of the same specimen only 3

spines could be seen, but in another specimen there were 7 on both legs.

Second legs, tarsus 4-jointed.

Remaining legs, tarsus 8-jointed.

Telson, lateral margin with about 24 spines extending the whole length, slightly concave, and not incurved near the tip; two terminal spines on each apex, the outer twice as long as the inner; cleft with straight sides armed with about 30 rather long spines.

Uropods, the inner considerably shorter than the outer, with 4 spines at the proximal end of the inner margin.

This species is distinguished from *H. (Chiromysis) microps* (Sars),* *H. formosa*, S. J. Smith,† and *H. norvegica*, Sars‡ (the two last species are united by Norman§), by the teeth on the ocular peduncles, the shorter carpus of the first and the different jointing of the remaining legs, and by the entire lateral margins of the telson being armed with spines instead of the distal portion only. The specific name is from *οδος*, a tooth, and *οψ*, an eye.

ISOPODA.

Family IDOTEIDÆ.

Genus *Idotea*, Fabricius, 1798.

Idotea resecata, Stimpson.

Six specimens. Length of largest 55 mm.

Genus *Edotia*, Guérin-Méneville, 1829—44.

Edotia bicuspidata (Owen).

One specimen. Length 7 mm.

* Middelhavets Mysider, Arch. f. Math. og. Naturvidenskab, 1877, p. 49, Pls. XIX. and XX.

† Report of U.S. Commissioner of Fisheries, Part I., p. 553 (259), 1874.

‡ Oversigt af Norges Crustacea, Christ. Vidensk. Selsk. Forhandl, 1882, p. 54, Pl. I., figs. 21 and 22.

§ Ann. and Mag. Nat. Hist. Ser. 6, vol. IX., 1892, p. 158, Pl. IX. figs. 6—11.

Family ASELLIDÆ.

Genus *Janira*, Leach, 1814.*Janira occidentalis*, n. sp. Pl. XV., figs. 7—10.

Four specimens. Length of female with ova 6·5 mm.

Head rather larger than the first segment, front 3-lobed, the centre lobe sub-acute, rather longer than the others.*Side plates* produced into lobes on each side projecting as far as the central lobe and edged with short spines.*First segment* with two lateral lobes,* the anterior acute and curved forward.*Second and third segments* 4-lobed.**Fourth segment* 3-lobed.**Fifth and sixth segments* 2-lobed,* the anterior much the wider.*Seventh segment* with the marginal lobe acute and directed backwards.*Telson* wider than long, ovate, the lateral margins simple and produced into an acute posterior tooth; the posterior margin wider than the length of each lateral margin, and having an obtuse central lobe.

The lateral margins of all the segments are sparsely fringed with rather short setæ.

Inner antennæ (antennules) with the first joint large; flagellum reaching a little beyond the middle of the penultimate joint of the peduncle of the outer antennæ.*Outer antennæ* as long as the entire animal; a well-developed scale on the 3rd joint; a group of 3 spines on the middle of the inner margin of the penultimate joint, which is about as long as the last peduncular joint.*First pair of legs*; propodos rather shorter and much narrower than the carpus; its hind margin finely serrate

* It is difficult to distinguish between the lobes of the actual segment and those of the epimeral plates; I have therefore taken them together.

on the proximal third; carpus swollen, with a few scattered spines on its hind margin.

Remaining parts much as in *J. maculosa*, Leach.

Colour yellowish, freckled with dull red.

AMPHIPODA.

Family LEUCOTHOIDÆ.

Genus *Leucothoë*, Leach, 1814.

Leucothoë spinicarpa (Abildgaard).

One young specimen. Length 3 mm.

I can see no difference between this specimen and those from the British seas, except that the antennæ are relatively shorter and thicker.

Family PARAMPHITHOIDÆ.

Genus *Paramphithoë*, Brugelius, 1859 (part).

Paramphithoë pugettensis (Dana).

Iphimedia pugettensis, Dana.

One specimen. Length 6 mm. Colour orange.

Paramphithoë pacifica, n. sp.

One specimen. Length 4 mm.

Head as long as the first 2 segments.

Eyes oval, dark.

Coxal plates of first two segments about as deep as the segments; no teeth on the lower margin.

Pleon segments without dorsal teeth; posterior angle of the 3rd slightly upturned and sub-acute.

Upper antennæ rather more than half the length of the body; peduncle shorter than the head, the joints progressively decreasing in length and thickness.

Lower antennæ about three-fifths of the length of the upper; the peduncle longer than the head, and reaching

to the end of the 1st joint of the flagellum of the upper antennæ.

Gnathopods feeble, and nearly alike; in the first the front margins of the carpus and propodos are about equally long, in the second the former is rather the shorter; very like the same limbs in *P. assimilis*, G. O. Sars.

Peræopods, the 1st joint of the last 3 pairs wide oval, the hind margins smooth.

Third uropods rather stouter than in *P. assimilis*.

Telson rounded oblong as in *P. assimilis*.

Colour yellowish white.

Very near *P. assimilis*, G. O. Sars, but differs in having no teeth on the lower margins of the first 3 coxal plates, in the smooth margins of the 1st joint of the peræopods, and in the different form of the hind margin of the third pleon segment.

Family GAMMARIDÆ.

Genus *Melita*, Leach, 1814.

Melita dentata (Krøyer).

Seven males, two females. Length of largest male 8 mm.

A widely distributed northern species, ranging from Spitzbergen to Grand Manan on the coast of New Brunswick (lat. 44°-40°). It has been taken by Canon A. M. Norman on the coast of Northumberland, but not, as far as I know, on our west or south coasts, or hitherto on the west coasts of America.

Genus *Mæroides*, n. gen.

Like *Mæra*, Leach, as restricted by G. O. Sars, except—

1. The mandibular palp is very strong, the terminal joint rather shorter than the preceding, but

wider and truncate at the tip, which is setose.

This member is very like that of a *Podocerus*.

2. The two pairs of antennæ are of equal length.
3. The last two pair of peræopoda are of equal length.
4. The last pair of uropoda scarcely projects beyond the second pair.

Mæroides thompsoni,* n. sp. Pl. XVI., figs. 3—6.

Two males. Length 10 mm.

Head, lateral angle acutely lobate.

Body, coxal plates of the three anterior segments about as deep as the body, margins smooth and rounded; third pleon segment with the posterior and lower margins convex, the latter with a single tooth some distance in front of the posterior angle, which is sub-acute; fourth and fifth pleon (1st and 2nd urosome) segments with two teeth on their posterior margins, a seta at the base of each lateral tooth.

Eye large, dark, long-oval, running into the lateral lobe.

Upper antennæ, 1st and 3rd joints of equal length, the 2nd nearly twice as long; the flagellum about as long as the peduncle; accessory appendage 7-jointed.

Lower antennæ as long as the upper, *i.e.*, about half the length of the body, the peduncle and flagellum also being sub-equal; last joint of peduncle the longest.

First gnathopod, 1st joint as long as the carpus and longer than the propodos, which is oval and setose.

Second gnathopod very powerful, the 1st joint longer than the carpus or propodos, the anterior margin of the latter rather longer than the former; the margins of the propodos almost parallel, the anterior slightly concave;

* Named after my friend and fellow-worker in the Crustacea, Mr. Isaac C. Thompson, F.L.S., of Liverpool.

palm almost transverse, concave and defined by an angular prominence, a double tooth in the centre and a larger one at the base of the dactylus, across which it projects a pointed lobe on the outer side. The carpus expands distally till it is as wide as the hand. The posterior margins of both are densely setose.

Peræopods strong, the 4th and 5th of equal length, their first joint broad at the base and narrowing distally, the hind margin slightly serrate.

Uropods all reaching about the same distance behind, the peduncle of the third pair nearly as long as the rami, which are equal and spinous.

Telson reaching to less than half the length of the peduncle of the last uropods, widely but not deeply cleft, a spine and a seta at the end of each division.

Colour yellowish, densely freckled with grey on the back, and with darker spots on the 1st joints of the peræopoda.

The equal upper and lower antennæ, the comparative shortness of the last uropoda, and the length of the wrist in the 2nd gnathopods are obvious distinctive characters of this species.

Family PHOTIDÆ.

Aoroides, n. gen.

Characters (of female) as in *Microdeutopus* and *Aora*, except as follows:—

Mandibular palp very slight and without setæ, except 3 at the tip of the last joint and 1 near the end of the penultimate; these two joints sub-equal, 1st joint very short; cutting edges of mandible 4-toothed.

Upper antennæ without even a rudimentary accessory appendage.

Aoroides columbiae, n. sp. Pl. XVI., figs. 7—10.

Nine females. Length 5 mm.

Resembles the female of *Microdeutopus anomalus* (Rathke) in all respects except as above and the following:—

Anterior coxal plates with the lower margins rounded.

First joints of the last 3 pairs of peræopods wider than in *M. anomalus*.

First uropods extending a little beyond the second, and these a little beyond the third; peduncle of the third as long as the two equal rami; 2 or 3 spines at its distal end; inner ramus with one spine about the middle of the inner margin; outer ramus with terminal spines only.

It is unfortunate that there was no male among the specimens collected; in this group there is a very close resemblance between the females of the different genera and species, while the males are easily distinguished by their powerful and highly-specialized first gnathopods. The genus, however, is easily distinguished by the entire absence of an accessory appendage to the upper antennæ, and the very slight mandibular palp.

Podoceropsis excavata (Sp. Bate).

One male (both pairs of antennæ wanting). Length 5.5 mm.

As far as can be judged in the absence of the antennæ, there is no difference between this specimen and a young male of about the same size from Liverpool Bay, except a very slight one in the sculpturing of the palm of the second gnathopods.

Family PODOCERIDÆ.

Genus *Amphithoë*, Leach.

Amphithoë rubella, Dana.

One specimen. Length 13 mm.

Upper antennæ as long as the body ; lower about half as long.

Genus *Ischyrocerus*, Krøyer, 1838.

Ischyrocerus minutus, Lilljeborg.

Three females with ova. Length 4 mm.

As far as can be judged in the absence of males (always rare in this species) these specimens agree in every respect with those that occur on the British coasts.

EXPLANATION OF PLATES.

PLATE XV.

Fig. 1. Carapace of *Trichocarcinus recurvidens* (Sp. B.).

Fig. 1a. Eye of same.

Fig. 1b. Under side of front.

Fig. 2. Eye of *T. oregonensis* (Dana).

Figs. 3—6. *Heteromysis odontops*, n. sp.

Fig. 3. Head ; fig. 3a, base of antennules enlarged.

Fig. 4. First and second legs (a—b).

Fig. 5. Last leg.

Fig. 6. Telson.

Figs. 7—10. *Janira occidentalis*, n. sp.

Fig. 7. Head and first segment.

Fig. 8. Telson and part of previous segment.

Fig. 9. First leg.

Fig. 10. Third leg.

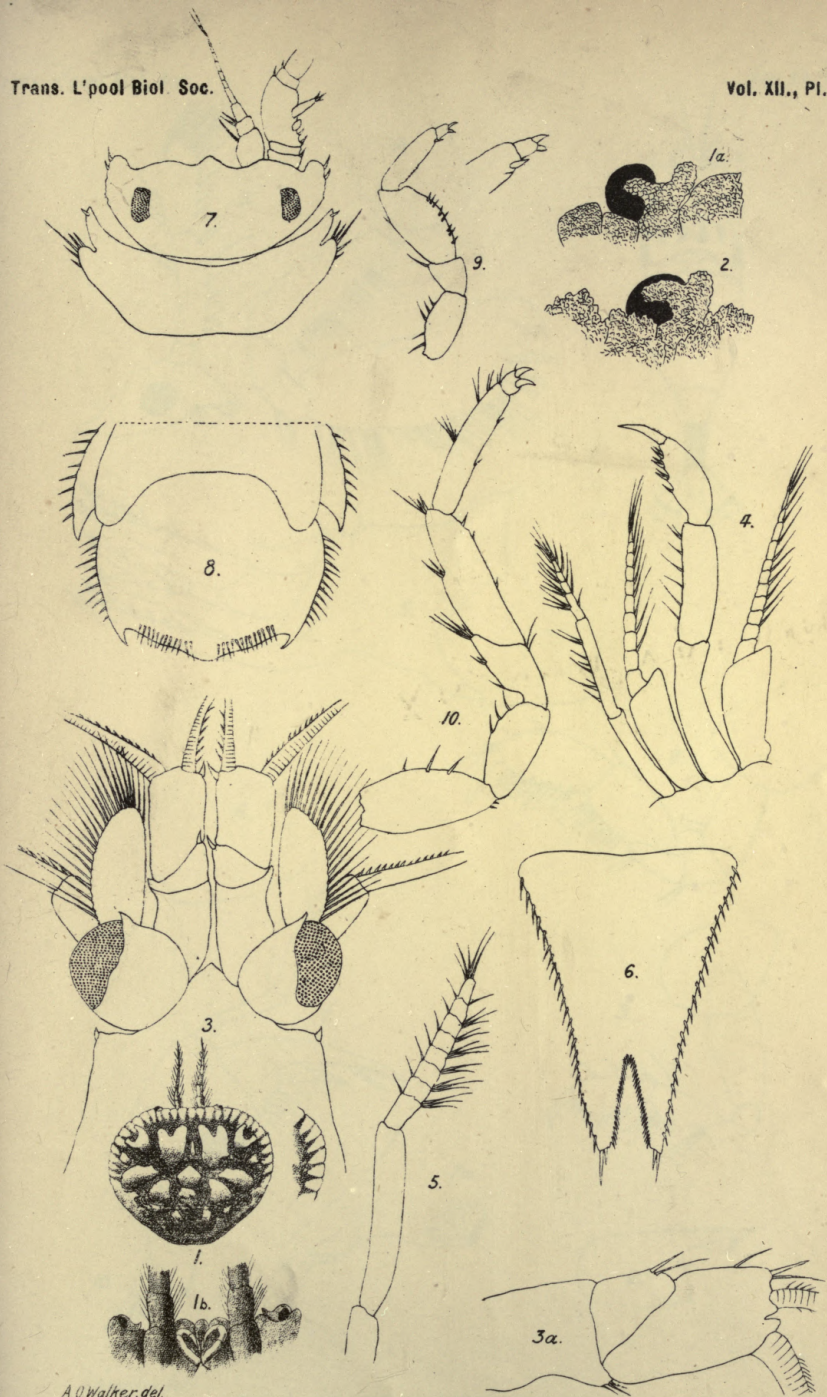
All drawn with 2 in. objective, except 3a, 5, 6, and 10 with 1 in. 1 natural size.

PLATE XVI.

Fig. 1. *Crangon munitellus*, n. sp. Twice the natural size.

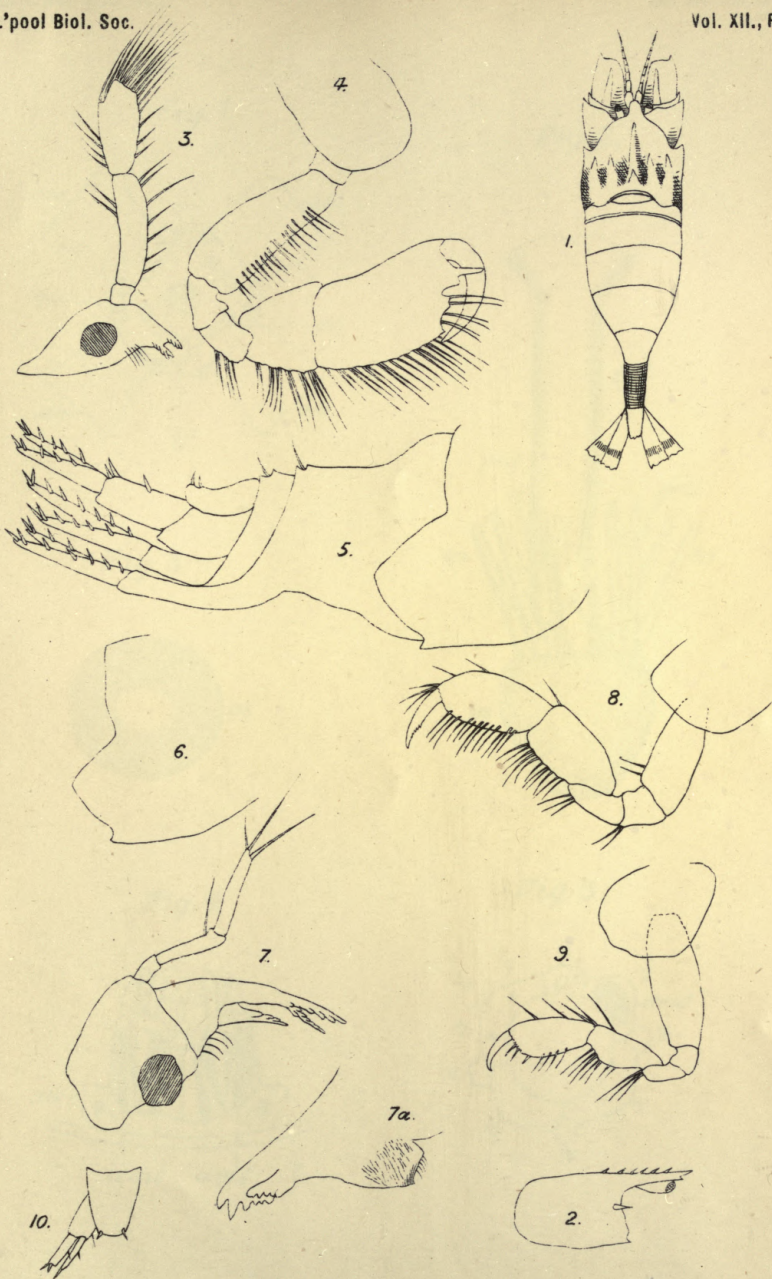
- Fig. 2. *Spirontocaris herdmani*, n. sp. Carapacè. Twice the natural size.
- Fig. 3. Mandible. *Mæroides thompsoni*, n. gen. & sp.
- Fig. 4. Second gnathopod from inside.
- Fig. 5. Urosome.
- Fig. 6. Third pleon segment.
- Figs. 7—10. *Aoroides columbiæ*, n. gen. & sp. ♀.
- Fig. 7. Mandible.
- Fig. 7a. Another mandible (part) showing cutting edges.
- Fig. 8. First gnathopod.
- Fig. 9. Second gnathopod.
- Fig. 10. Telson and third uropod.

Figs. 3, 8, 9, 10 drawn with 1 in., figs. 4, 5, 6 with 2 in., figs. 7a, 7, with $\frac{1}{2}$ in. objectives.



A. O. Walker, del.

Fig. 1, 1a, 1b.—TRICHOCARCINUS RECURVIDENS.
Fig. 2.—TRICHOCARCINUS OREGONENSIS.
Fig. 3-6.—HETEROMYSIS ODONTOPS.
Fig. 7-10.—JANIRA OCCIDENTALIS.



A.O. Walker del.

Fig. 1.—CRANGON MUNITELLUS.
Fig. 2.—SPIRONTOCARIS HERDMANI.
Fig. 3-6.—MÆROIDES THOMPSONI.
Fig. 7-10.—AOROIDES COLUMBIÆ.