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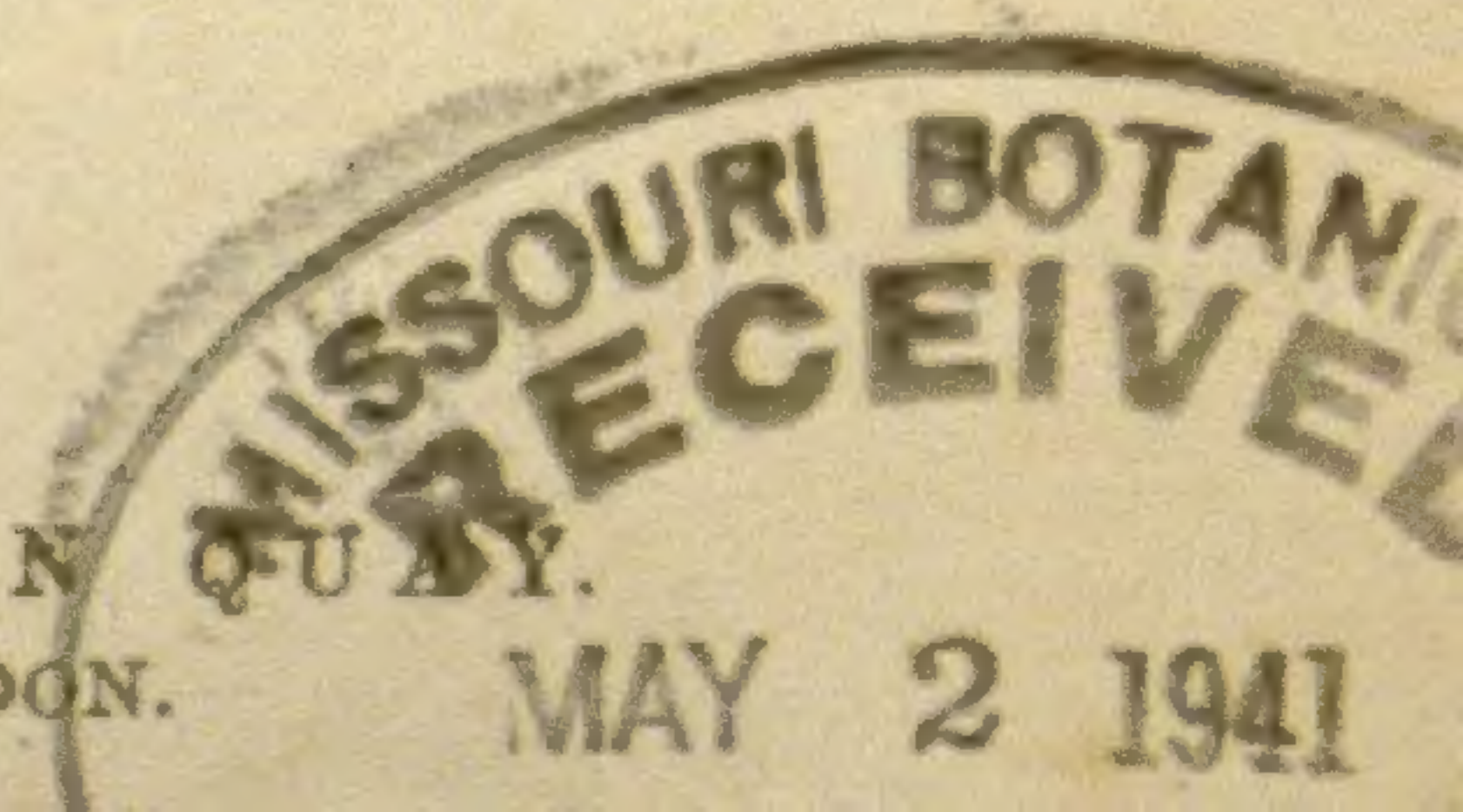
BY

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I propose for this insect the name of *Diapria coccophaga*.

In colour the insect, to the naked eye, is black; under the microscope the vertex of the head is green, the eyes red, the thorax and abdomen brown with green streaks; the whole body diapered with spots. The posterior wings are furnished with two minute hooks. The antennæ are moniliform, with from 12 to 15 joints; elbowed at the third joint, the last three being soldered together. The head is transverse, the eyes faceted, the mandibles forcipate. The tarsus is five-jointed; the anterior pair of legs has a sharp curved spur with three points at the end of the tibia.

#### DESCRIPTION OF PLATE IX.

Fig. 1. Outline of test of *Ctenochiton perforatus*, with enclosed pupa of *Diapria*.

Fig. 2. Pupa of *Diapria coccophaga*.

Fig. 3. 1, Head of *D. coccophaga*, magnified 25 diams.

2, Posterior wing,                    ,,    25    ,,

3, Antenna,                             ,,    55    ,,

4, Anterior leg, with spur,         ,,    55    ,,

5, Mandible,                           ,,   200    ,,

Fig. 4. Female insect,                ,,    10    ,,

Fig. 5. Ovipositor, retracted        ,,    60    ,,

#### ART. XVIII.—*New Zealand Crustacea, with Descriptions of New Species.*

By GEORGE M. THOMSON.

[Read before the Otago Institute, 13th August, 1878.]

#### Plate X.

THE publication of a Catalogue of the New Zealand Crustacea by Mr. Miers, of the British Museum, under the auspices of the Government of this colony, fills up a wide gap in our records of local zoology, and enables others to work up the subject, on the spot, with a much greater degree of certainty. The catalogue enumerates altogether 140 species, of which no less than 62 sp. are *Brachyura* (Crabs); while of *Anomoura*, 13 sp.; *Macroura*, 18 sp.; *Stomapoda*, 2 sp.; *Isopoda*, 28 sp.; *Anisopoda*, 2 sp.; and *Amphipoda* 15 sp. are described. I now propose to add 22 species to the above, of which 19 are new to science. Of these, 2 species belong to *Macroura*, 6 to *Isopoda*, and 14 to *Amphipoda*. Type specimens of all of these are lodged in the Otago Museum.

I would here desire to express my thanks to Professor Hutton for the great assistance he has given me, and particularly for handing over for my inspection the collection of Crustacea in the Otago Museum, together with his own valuable notes and manuscript descriptions.

**Decapoda macroura.**

*Sub-tribe* Caridea. *Fam.* I. Crangonidae.

*Crangon, Fabricius.*

Internal antennæ dilated at the base, the peduncle short, and terminated by two filaments. External maxillipeds pediform, the terminal joint obtuse and flattened. Anterior legs sub-didactyle, stronger and thicker than the others; the hand flattened, the moveable finger inflexed upon the hand, and meeting a rudimentary thumb; second and third pairs very slender, the second didactyle; two last pairs shorter and thicker. Abdomen large and rounded.

1. *Crangon australis*, Hutton, MS. Cat. Fig. A.1.

Carapace with five longitudinal rows of spines, the outer with three from the base of the moveable plate, the next with five from the outer margin of the orbit, and the median with two. Moveable plate extending beyond the peduncle of the outer antennæ. Inner antennæ short, hardly passing the external maxillipeds. Anterior legs extending beyond the tip of the moveable plate; second pair about half the length of the first; the third much longer. Abdomen smooth, not keeled, suddenly contracted at the second and third segments from the end, posterior segment nearly cylindrical. Length  $1\frac{1}{2}$  inches. Common.

Cook Straits, Dunedin, and Stewart Island. (Allied to *C. spinosus*, of Britain).

*Palæmon.*

*Sub-genus* Leander, *Miers' Cat.*, p. 85.

2. *Leander fluviatilis*, nov. sp. Fig. A.2.

*Palæmon fluviatilis*, Hutton, MS. Cat.

Beak narrow, slender, nearly straight, with from nine to fifteen teeth on the upper margin, which are more or less separated into three groups, the posterior of which consists of two, or rarely three, situated behind the orbit; the middle of four to six, in front of the orbit; and the anterior of three to six, much smaller and situated near the apex; four to six teeth on the lower margin. Anterior margin of carapace with one spine, and another over the inner angle of the orbit. Anterior feet short, but rather stout, reaching to the end of the peduncle of the outer antennæ; second pair very slender, longer, but not reaching to the tip of the moveable plate. Length  $1\frac{1}{2}$  inch.

Waikato River (Professor F. W. Hutton); Taieri River, and lagoons in Taieri plain.

**Edriophthalmata.**

## Tribe I.—ISOPODA.

*Sub-tribe I. Idoteidea. Genus Idotea.*

*Idotea affinis*, Miers' Cat., p. 93.

In the description given of this species the flagellum of the antennæ is said to be about 20-jointed, and the length  $1\frac{3}{4}$  inch. The species is said also to "vary slightly in the number of the joints of the external antennæ."

In a great number examined by me, I found the length to vary from 1 inch to over  $2\frac{1}{2}$  inches, and the number of joints in the flagellum from sixteen up to thirty-two.

*Sub-tribe II. Oniscoidea.*

*Fam. II. Oniscidæ. Miers' Cat., p. 98.*

*Sub-Fam. I. Oniscinæ. Genus Oniscus.*

3. *Oniscus punctatus*, nov. sp. Fig. A.3.

Body rather convex, oval, minutely granulated over the entire surface. Head short and broad; eyes small, round and black. Antennæ finely hirsute, fifth joint the longest, equalling the last three. First segment of thorax wider than those succeeding; last segment produced acutely backwards. Abdomen not much narrower than thorax, but falling away rather abruptly; two anterior segments narrower than the others, and not produced into exserted lateral angles; three succeeding segments subequal, with their latero-posterior margins acutely produced; last segment short and rounded. Caudal stylets short, external branch the longest, narrow-cylindrical, minutely hirsute, with two or three short setæ at the extremities.

Colour light brown, with darker markings. Length .3 inch.

Dunedin.

*Sub-Fam. III. Ligiinæ.*

*Genus Ligia, Miers' Cat., p. 103.*

4. *Ligia quadrata*, Hutton, MS. Cat. Fig. A.4.

Oval, sub-depressed, with minute granulations on the back, but free from hairs. Three posterior segments of thorax acutely prolonged backwards on either side. Abdomen considerably narrower than thorax, last segment sub-quadrate, the angles hardly projecting. Outer antennæ two-thirds the length of the animal, fourth and fifth joints much the longest; flagellum from 15-to 23-jointed, minutely setose. Base of caudal stylets about half as long as abdomen; rami slightly unequal, shorter branch with a long slender seta, which reaches beyond the extremity of the longer branch. Colour yellowish-olivaceous closely speckled with black. Length .5 inch.

Dunedin.

This species lives among loose stones on the beach, and runs with great rapidity.

*Sub-tribe III. Cymothoidea.**Fam. I. Cymothoidæ.**Genus Ceratothoa, Miers' Cat., p. 104.*5. *Ceratothoa trigonocephala.**Cymothoa trigonocephala, M. Edw. Hist. Nat. Crust., iii., p. 272.*

Head small, triangular, having the antero-lateral margins very concave above the antennæ, and the front narrow but obtuse, and projecting a little beyond the base of the inner antennæ. Eyes very distinct. Outer antennæ considerably longer than the inner. Anterior margin of the first thoracic segment produced a little at the corner upon the head so as to give rise to a tooth upon the median line; antero-lateral prolongations of medium size, narrowing in front, but rounded and not reaching to the base of the outer antennæ. First segment of the abdomen about a third less than the second, which exceeds on each side the margin of the last thoracic segment. Posterior margin of the fifth segment very sinuous, and presenting a deep, median indentation. Sixth segment large, but gradually narrowing from the base, rounded posteriorly, and not nearly so far extended as the terminal plates of the lateral appendages. Length 1.6 inch. (My specimens are about 1 inch long).

Dunedin.

This species is also found in the Australian and Chinese Seas.

*Fam. III. Sphæromidæ. Miers' Cat., p. 109.**Genus Amphoroidea, M. Edw., Hist. Nat. Crust., iii., p. 222.*

Body convex, somewhat oval and flexible. Head quadrilateral, broader than long; eyes small, occupying the lateral margin; anterior margin of the head with five small teeth. Basal joint of inner antennæ very large, lamellate, quadrilateral, broader in front than behind, horizontal, and in contact with its fellow; second joint small, inserted at the side of the first, near its posterior angle; the rest almost moniliform. Outer antennæ inserted under the inner and directed forwards; the peduncle cylindrical, terminal joint longer than that of the inner antennæ. Abdomen broader than thorax; last joint large, scutiform and deeply excavated below.

6. *Amphoroidea falcifer, Hutton, MS. Cat. Fig. A.5.*

Smooth, sub-depressed, rounded on the back. Head broader than long, the anterior margin three-lobed, the middle one pointed and acute; lateral margins hollowed; posterior margin straight, sub-sinuated, produced posteriorly on either side into a truncated lobe. Basal joint of inner antennæ longer than broad, the anterior margin convex, the outer side straight, the posterior side bilobed, fitting into the lobes of the head. Outer antennæ reaching to the middle of the third thoracic segment. Last segment of the tail triangular, bidentate at the tip. Outer ramus of

appendages long, projecting considerably beyond the tail, falciform, acute, curved inwards; the inner much shorter, sub-rectangular, longer than broad, truncated at the apex. Claws short, subequal, hooked. Reddish brown. Length .6 inch. Kaikoura Harbour and Stewart Island.

NOTE.—Since writing the foregoing description, I have seen, through favour of Dr. Haast, the Atlas of the Crustacea described by Dana in the Zoology of the U.S. Exploring Expedition. From the figures alone (not having been able to obtain a description), I think that this species may prove to be identical with *A. australiensis*, Dana.

Genus *Cymodocea*, Miers' Cat., p. 113.

Sub-genus *Dynamena*, Leach, Dict. Sc. Nat., t. 12., p. 343.

Terminal segment of the abdomen simply notched, but without a median lobe. Rami of caudal appendages lamellate, as in *Sphæroma*.

7. *Dynamena huttoni*, nov. sp. Fig. A.6.

Moderately convex, nearly smooth, marked with numerous minute granulations. Head small, twice as broad as long, with small obtuse frontal lobe. Segments of thorax subequal, the three last slightly produced backward at their infero-posterior margins, the last with a slightly rounded lobe, just overlapping the edge of the abdomen. First segment of abdomen with four lines of articulation, the last of which has a tooth on each side on its posterior margin. Last segment triangular, swollen above, ending in two short acute teeth, with a rounded sinus between them. Rami of caudal lamellæ equal, oval-oblong, obtuse. Orange-yellow colour. Length .5 inch.

Dunedin.

I have named this species after Professor Hutton who collected it.

Genus *Nesea*, M. Edw., Hist. Nat. Crust., iii., p. 216.

Body not very flexible, and incapable of being rolled into a ball. External ramus of the caudal lamellæ projecting, thick and rounded, incapable of being folded beneath the inner. Inner rami united to the inferior margin of the abdomen and carried transversely underneath it, so as to be easily mistaken for it.

8. *Nesea caniculata*, nov. sp. Fig. A.7.

Body very convex; roughly granulated, particularly towards the abdomen. Head prominently rounded. Eyes black, triangular, received into a deep indentation in the margin of the first thoracic segment; an intra-marginal groove extending between the eyes round the front of the head. Frontal lobe small, obtuse. Basal joint of inner antennæ large, and adhering rigidly to the head, second joint short and rounded, third slender. Outer

antennæ springing from underneath the base of the inner, half as long again, and slender. Segments of the thorax directed backwards at their posterolateral margins; first segment broader than others; succeeding segments subequal, each with a flattened granulated ridge on its posterior margin, giving the back a transversely grooved appearance. First segment of abdomen produced posteriorly into a flattened truncate expansion, with a slight median indentation; last segment placed almost underneath the former, triangular in shape, with a pyramidal tubercle on each side, its apex united to the internal rami of the caudal lamellæ. External rami thick, angular, and two-jointed. Legs fringed on their inferior margins with short, thick hair. Colour dark brown. Length .6 inch.

Dunedin.

Collected by Prof. Hutton.

### Tribe III.—AMPHIPODA.

#### *Division Normalia. Family I. Orchestidæ.*

*Talitrus? novæ-zealandiæ*, Dana, (*Orchestoidea? novi-zealandiæ*).

This species is certainly the female of *Talorchestia quoyana*, and therefore ought to disappear from the catalogue. I have repeatedly found the two together, and in fact have seldom collected the one without the other. The males of the *Talitrus*, and the females of the *Talorchestia*, have never yet been described as such.

#### *Genus Nicea.*

*Nicea*, Nicolet, Gay's Chili, Vol. III., p. 237. 1849.

*Galanthis*, Spence Bate, Ann. Nat. Hist. 1857; and Cat. Amphip. Crust. Brit. Mus., p. 51. 1862.

This genus is defined as follows:—"Superior and inferior antennæ subequal, scarcely longer than the cephalon. The rest of the animal generally resembling *Allorchestes*, except the telson, which is deeply cleft."

It in reality includes all those Crustaceans which would range under *Allorchestes*, but for the cleft telson.

#### 9. *Nicea novæ-zealandiæ*, nov. sp. Fig. B.1.

Eyes reniform. Inferior antennæ about one-fourth as long as body; flagellum slightly longer than base, with 13 or 14 articulations, which are minutely setose. Superior antennæ reaching to middle of flagellum of inferior; flagellum 14-jointed. Gnathopoda of first pair small; carpus produced inferiorly to a rounded lobe, furnished with a bundle of setæ; propodos sub-quadrangle, inferior margin excavate about the middle and furnished with a bunch of setæ, palm transverse, defined by two stout spines, setose; a bunch of setæ at the articulation of the dactylos. Propodos of second gnathopoda large, ovate (almost pyriform) in male, palm very oblique, occupying nearly all the under surface, furnished with a double row of stiff setæ, and defined by two stout spines; dactylos long, slender,

arcuate. Same organ smaller in female, with the palm more transverse, and dactylos relatively shorter. First, second and third pairs of pereopoda subequal; fourth and fifth longer; all with crests of short setæ at the joints. Telson deeply cleft, smooth. Colour yellowish, marbled with red. Length .5 inch.

Rock pools at Taiaioa Head (Otago Harbour).

10. *Nicea fimbriata*, nov. sp. Fig. B.2.

Eyes round. Inferior antennæ about one-third as long as body; peduncle more than half as long as flagellum, penultimate joint crowned with a ring of short setæ, ultimate with a dense fringe of long, slender hairs on its inferior margin; flagellum from 17–22-jointed, each articulation with a dense bunch of long hairs on its inferior margin, diminishing towards the extremity. Superior antennæ half as long as inferior; flagellum 13–15-jointed, slender, minutely setose. First pair of gnathopoda with the carpus dilated; propodos broadly oblong, the palm very oblique, furnished with numerous setæ, and defined by two stout teeth. Gnathopoda of second pair large; propodos ovate, tapering to the extremity, lower margin densely fringed with long hairs, an excavation marking the very oblique and not well-defined palm. Pereiopoda subequal, second and third pairs rather the shortest. Telson cleft almost to the base, minutely tuberculated. Colour pale yellow. Length .8 inch.

Dunedin.

11. *Nicea rubra*, nov. sp. Fig. B.3.

Eyes round. Inferior antennæ half as long as body; flagellum four times as long as peduncle, with over fifty articulations, sparingly and minutely setose. Superior antennæ nearly half as long as inferior; flagellum 18-jointed, joints slender, with their apices expanded, minutely setose. Gnathopoda of first pair with the carpus rounded; propodos oblong-quadrate, setose on the inferior margin, palm extending along half its length, obliquely transverse, defined by two teeth, and furnished with two rows of setæ. Gnathopoda of second pair with the propodos ovate, palm extending obliquely along half of its inferior margin, furnished with two rows of stout setæ, but without any defining spines; dactylos long and curved, with two tubercles at the joint. Fourth and fifth pairs of pereopoda longer than those preceding. Telson deeply divided into two acute, smooth lobes. Colour pink. Length .4 inch.

Dunedin.

Fam. II. Gammaridæ.

Genus *Lysianassa*, Edwards, Hist. Nat. Crust., iii, p. 20; Dana, U.S. Explor. Exped., p. 908; Spence Bate, Brit. Mus. Cat. Amphip., p. 64.

Superior antennæ pyriform, very short, stouter than the inferior, and furnished with a secondary appendage. Mandibles having an appendage;



the incisive edge not furnished with teeth; armed upon the anterior margin with a stout tubercle; secondary or moveable plate wanting. Maxillipeds with large squamiform processes attached to the third and fourth joints. First pair of gnathopoda not subchelate. The second pair subchelate, imperfectly developed, long, and membranous. Ischium and carpus long. Dactylos rudimentary. Coxæ of the gnathopoda and the two anterior pairs of pereopoda deeper than their respective segments of the pereion; those of the second pair of pereopoda produced inferiorly and posteriorly. Coxæ of the fourth pair much shorter than the third. Pereopoda subequal. Posterior pair of pleopoda double-branched. Telson single, squamiform, entire.

12. *Lysianassa kröyeri*, Spence Bate, Brit. Mus. Cat. Amphip., p. 65.

*Ehippiphora kröyeri*, White, Ann. and Mag. Nat. Hist., ser. 2, vol. i., p. 226, 1848; and Zool. Erebus and Terror, pl. 5.

Animal not much compressed, smoothly arcuate; a dorsal sinus in the fourth segment of the pleon. Eyes reniform. Superior antennæ having the first joint of the peduncle reaching scarcely beyond the ocular process of the cephalon, the second and third joints very short; the flagellum not longer than the peduncle. Inferior antennæ three times as long as the superior, the peduncle not extending beyond the peduncle of the superior flagellum. First pair of gnathopoda having the propodos nearly three times as long as the carpus, and armed upon the under side with a strong curved spine near the base of the dactylos. Second pair of gnathopoda having the propodos a little shorter than the carpus, and both inferiorly covered with minute denticles; the propodos furnished upon the superior margin with tufts of long hair, serrated on both margins; palm short, inferior angle produced into a tubercle; dactylos not so long as the palm. Coxæ of the second pair of pereopoda having the lower half of the posterior margin greatly produced. Posterior pair of pleopoda having the rami much longer than the basal articulation.

Dunedin.

This species was originally described from Tasmania, where it was obtained by Sir J. C. Ross. Its length is stated at 1 inch, but none of the specimens examined by me exceeded .3 inch.

*Genus* Dexamine, *Leach*, Edin. Encyc. vii., p. 433; *Sp. Bate*, Brit. Mus. Cat. Amphip. Crust., p. 130.

Antennæ long, subequal, slender; superior not appendiculated; peduncle consisting of only two joints, the third not being distinguishable from the first of the flagellum. Mandibles without an appendage. Gnathopoda subequal, feeble, subchelate. Coxæ of the third pair of pereopoda about half as deep as the preceding; dactyla of all the pereopoda generally

directed posteriorly. Posterior pair of pleopoda biramous. Telson simple, divided, squamiform.

13. *Dexamine pacifica*, nov. sp. Fig. B.4.

Cephalon without a rostrum, but produced into an acute tooth between the bases of the antennæ. Pereion smooth; segments of pleon dorsally and posteriorly three-spined, and with the inferior margin produced posteriorly into an acute tooth. Eyes ovate-reniform. Superior antennæ about as long as the body; basal joint stout, with a spine at its lower anterior margin; second joint about twice as long; flagellum 40-50-jointed. Inferior antennæ about two-thirds as long as superior, slender; basal joint very short; second joint as long as corresponding joint of upper antennæ; ultimate joint of peduncle just half as long; flagellum about 25-30-jointed. Gnathopoda of first pair larger than second, with the inferior margin of the carpus and propodos crenulated and hairy; palm oblique, dactylos nearly straight. Second gnathopoda similarly toothed and hairy; propodos shorter, dilated, with two spines at the base of the palm; dactylos curved. Pereiopoda slender, thickly setose, all having the dactylos directed posteriorly, except the last pair, which also are much the longest. Penultimate pair of pleopoda reaching to extremity of ultimate; antepenultimate much shorter. Telson bifid, apex of each division with two or three small teeth and a few short hairs. Length .25 inch. (No locality).

*Genus Atylus*, Leach, Zool. Miscel., ii., pl. 69; Edwards, Hist. des Crust., iii., p. 67; S. Bate, Brit. Mus. Cat. Amphip. Crust., p. 133.

*Iphimedia*, Dana, U. S. Explor. Exped., p. 926.

Animal compressed. Antennæ subequal; superior without a secondary appendage. Mandibles with an appendage. Maxillipeds unguiculate, having a squamiform plate developed from the bases and ischium. Gnathopoda subchelate. Pereiopoda subequal. Posterior pleopoda biramous. Telson single, squamiform, divided.

Differs from *Dexamine* in having the third joint of the peduncle of the upper antennæ distinguishable from the flagellum, and in having an appendage to the mandibles.

14. *Atylus dania*, nov. sp. Fig. C.1.

Cephalon produced into a short rostrum. Segments of the pleon slightly elevated posteriorly, fourth segment with a deep dorsal sinus, none prolonged into teeth; margins smooth. Eyes large, round, black. Superior antennæ about a third shorter than the inferior; joints of the peduncle short, subequal, produced into three teeth on the lower margin; flagellum with over 25 articulations, which are broader than long, every third or fourth joint produced on its inferior margin into a tubercle, bearing several long cilia and a crown of short hairs. Inferior antennæ half as long as

body, also with fascicles of hairs on the under surface of the peduncle; flagellum with between 40 and 50 articulations. Gnathopoda rather small, subequal; carpus somewhat produced on its inferior surface; propodos ovate, with several transverse rows of spines on the infero-posterior margin; palm imperfectly defined; dactylos slender, smooth. Three posterior pairs of pereopoda having the basa increasing in width. Antepenultimate pair of pleopoda reaching to the extremity of the penultimate, smooth; penultimate pair with a few spines; ultimate pair with the rami about twice as long as the peduncle, thickly studded with short spines and fringed with long cilia. Telson divided to nearly half its length, with a minute spine somewhat remote from the apex at each side. Length  $\cdot 3$  inch. Semi-transparent in colour, with dark blueish spots.

Rock pools, Dunedin.

(Named after Prof. Dana).

*Genus Pherusa, Leach, Edin. Encyc., vii., p. 432, etc.; Spence Bate, Brit. Mus. Cat. Amphip. Crust., p. 143.*

Antennæ subequal; superior without a secondary appendage. Mandibles with an appendage. Maxillipeds unguiculate, and furnished with a squamiform plate. Gnathopoda subchelate. Telson single, squamiform, entire.

15. *Pherusa novæ-zealandiæ*, nov. sp. Fig. C.2.

Cephalon produced into a small, acute rostrum between the bases of the superior antennæ. Eyes oblong-reniform. Two posterior segments of the pereion and two anterior segments of the pleon produced dorsally into two teeth. Antennæ about as long as body. Peduncle of the superior pair about one-fifth as long as the slender flagellum; basal joint very short, buried in front of the cephalon, second joint stout. Gnathopoda small. First pair very long and slender; carpus and propodos subequal, linear; dactylos minute, transverse. Second pair short; propodos expanded above, palm obliquely transverse, defined by a tooth. Three last pairs of pereopoda much longer than preceding; their coxæ with comblike teeth on their posterior margins. Third segment of pleon with the sides produced posteriorly, and ending abruptly in a serrated margin (almost smooth in young specimens). Posterior pair of pleopoda reaching to the extremity of the penultimate pair. Length about  $\cdot 3$  inch.

Dunedin.

*Genus Calliope, Leach, MS. Brit. Mus.; Spence Bate, Brit. Mus. Cat. Amphip. Crust., p. 148.*

Superior antennæ without a secondary appendage. Mandibles furnished with an appendage. Gnathopoda having the propoda in the second or both pairs largely developed, and the carpi inferiorly produced. Telson not divided.

16. *Calliope didactyla*, nov. sp. Fig. C.3.

Cephalon without a rostrum; the whole back of the animal smooth. Superior antennæ two-thirds as long as inferior; joints of the peduncle subequal; flagellum about 17-jointed, each articulation with an auditory cilium and a few short hairs. Lower antennæ with the peduncle extending to middle of flagellum of upper; basal joint very short, next two subequal; flagellum about 15-jointed. First pair of gnathopoda small; carpus produced posteriorly into a large acute projection; propodos subquadrate, bulged posteriorly, with an ill-defined palm, and bearing a *double-clawed dactylos*. Second pair of gnathopoda large, carpus triangular, acute, its inferior portion separated into a narrow, arcuate projection, ciliated on its lower margin, and curving slightly round the base of the propodos; propodos dilated, ovate, with an oblique and tolerably well-defined palm, marked by a double row of long teeth, and its base by two stout spines; dactylos arcuate, with a double row of very short, sharp, equi-distant teeth. First and second pairs of pereopoda slender; other pairs somewhat larger. Penultimate pair of pleopoda reaching slightly beyond the ultimate; rami of all the pleopoda spinose. Telson foliaceous, truncate, slightly produced at the apex.

*Female*. Both pairs of gnathopoda small, subequal; carpus developed posteriorly into an obtuse projection, which has a small fringe at its apex; propodos with a transverse palm; dactylos single and slightly toothed.

Whole body of a rich brown colour, with greenish grey eyes. Length, about  $\cdot 3$  inch.

Among kelp washed upon the beach at Taieri mouth.

(When preserved in spirits the body becomes yellowish-white in colour, and the eyes jet black.)

17. *Calliope fluviatilis*, nov. sp. Fig. C.4.

Cephalon without a rostrum. Body slender, compressed. Eyes large, black, rounded. Upper antennæ about one-fourth shorter than lower; peduncle—with apparently only two joints—not reaching to extremity of penultimate joint of peduncle of lower. First pair of gnathopoda rather smaller than second; carpus triangular, developed posteriorly into a rounded lobe, ciliated at the extremity; propodos oval, palm transverse, dactylos acute, nearly straight, half as long as propodos. Second pair of gnathopoda apparently reversed; carpus produced anteriorly (posteriorly) into a narrow obtuse lobe. Last pair of pereopoda much longer than preceding. Pleopoda long and slender; antepenultimate and penultimate pairs reaching to extremity of the ultimate. Telson squamiform, rounded, entire. Colour greyish, more or less marked with dark spots, and frequently covered with circular, wart-like markings. Length  $\cdot 2$  inch.

Common in fresh water round Dunedin.

*Paramoera tenuicornis*, Miers, Cat. N. Z. Crust., p. 127. Fig. C.5.

This species, of which I have examined perfect specimens, must be replaced in the genus proposed by its original describer Dana, viz., *Melita*. It differs from *Paramoera* in having the superior antennæ furnished with an appendage, and from *Moera*—in which it is placed by Spence Bate in the British Museum Catalogue—in having the posterior pair of pleopoda very unequal, with the inner ramus quite rudimentary, and not subfoliaceous.

There are several points in connection with the specific description which require amending. Thus the flagellum of the *inferior antennæ only* is terete, that of the upper pair having the joints wider at the apex than at the base; the appendage to this pair consists of 4 joints, and springs from the apex of the last joint of the peduncle. The fifth segment of the pleon is furnished on the dorsal posterior margin with a crest of spinose setæ. The antepenultimate and penultimate pairs of pleopoda only reach to the extremity of the peduncle of the ultimate. The external ramus of the last pair is very long, while the internal is a mere rudiment.

The specimens examined by me were taken in the Taieri River in fresh water, but they had probably come up with the tide, which is felt 15 miles from the mouth.

Genus *Gammarus*, *Fabricius*, Ent. Syst. ii., p. 514.; *Spence Bate*, Brit. Mus. Cat. Amphip. Crust., p. 203.

(The generic characters are taken from the latter authority quoted).

Slender, laterally compressed. Cephalon not produced into a rostrum. Pereion and pleon subequal in length. Three posterior segments of the pleon having each two or more fasciculi of short stiff spines. Eyes reniform, oval or linear. Antennæ long, slender, filiform, having the peduncle subequal with the peduncle of the inferior, and carrying a secondary appendage. Mandibles having an appendage. Maxillipeds having a squamiform plate, arising from the basos and ischium. Gnathopoda subequal, not largely developed. Pereiopoda subequal; coxæ of the three posterior pairs much shorter than those of the anterior. Posterior pair of pleopoda biramous. Telson double.

18. *Gammarus barbimanus*, nov. sp. Fig. D.1.

Segments of the body smooth. Eyes small, oblong, with dark coloured blotches between and posterior to them. Superior antennæ with the peduncle longer than the flagellum; basal joint with a spine on its inferior margin; appendage 5-jointed, less than half as long as the flagellum, which is about 10-jointed. Inferior antennæ somewhat shorter than superior, but stouter; peduncle extending to the extremity of the peduncle of the upper antennæ; flagellum stout, short, about 6-jointed. Maxillipeds with a dense

fringe of hairs on the lower surface. First pair of gnathopoda with carpus and propodos subequal, straight, and densely clothed with long, feathery hairs. Second pair with the carpus long, straight, and flat on the under surface, which is fringed with a double row of similar plumose hairs; propodos tapering and hairy; dactylos minute. Fourth and fifth pairs of pereopoda longer and stouter than preceding pairs. Antepenultimate and penultimate pairs of pleopoda reaching to extremity of ultimate; all three pairs fringed with short spines. Telson short, reaching to extremity of peduncle of ultimate pleopoda, and furnished with a few short spines.

(No locality). Length .3 inch.

*Sub-tribe. Hyperidea.*

*Fam. I. Hyperidæ, Spence Bate, Brit. Mus. Cat. Amphip. Crust. p. 287.*

Superior antennæ, with a peduncle of three joints, and a variable flagellum. Inferior antennæ, with a five-jointed (?) peduncle, and multi-articulate flagellum. Gnathopoda more or less complexly subchelate. Four anterior pairs of pereopoda subequal, normal. Three anterior pairs of pleopoda normal; three posterior pairs, broad, flat, and biramous. Integument thin and free from hairs.

*Genus Themisto, Guérin-Méneville, Mém. de la Soc. d'Hist. Nat. de Paris, iv., 1828; Edwards, Hist. des Crust., iii., p. 84; Spence Bate, Brit. Mus. Cat. Amphip. Crust. p. 311.*

Cephalon transversely ovate. Pereion not largely distended. Pleon slender. Eyes occupying the entire cephalon, dorsally separated. Antennæ subequal, as long as the cephalon is deep; superior pair having the flagellum not articulated; inferior pair having the flagellum more or less articulated. Mandible having an appendage. First pair of gnathopoda short, tolerably robust; carpus not having the anterior margin inferiorly produced; second pair having the carpus on the inferior angle anteriorly produced. First pair of pereopoda having the carpus dilated; propodos narrow, and capable of being inflected against the carpus; second pair like the first; third pair twice the length of the second; carpus very long; propodos longer than the carpus, fringed along the anterior margin with a comb-like series of teeth, and capable of impinging against the anterior margin of the carpus; fourth and fifth pairs subequal, of the same form as the third, but not more than half the length. Three posterior pairs of pleopoda subequal, the last being the longest; rami double, lanceolate. Telson small, squamose.

The above description is taken from Spence Bate's catalogue, and from the examination of a great number of specimens I can vouch for its correctness as far as females are concerned, from which indeed all the descriptions appear to have been taken. The males, however, differ in the

superior antennæ in a very striking manner, this being furnished in this sex with a multi-articulate flagellum of about 13 joints.

19. *Themisto antarctica*, Dana, U.S. Explor. Exped., p. 1005, pl. 69, fig. 1; Spence Bate, Brit. Mus. Cat. Amphip. Crust. p. 312.

*Male.* Eyes reddish. Superior antennæ with the peduncle 3-jointed; second joint extremely short; third long, slightly arcuate, tapering to the extremity, fringed on the lower margin with fine comb-like teeth and numerous hairs; flagellum of twelve or thirteen articulations, which lengthen towards the extremity. Inferior antennæ half as long again as the superior; peduncle 3-jointed; flagellum of seventeen slender articulations, basal one long, those succeeding short, but lengthening to the extremity. First pair of gnathopoda with a broad carpus, fringed posteriorly with numerous hairs; propodos about half as broad as carpus, tapering to the extremity, furnished on the anterior margin with a row of stiff cilia. Second pair of gnathopoda having the carpus infero-anteriorly produced nearly to the extremity of the propodos, with the inferior margin furnished with a few hairs; propodos slightly tapering, and furnished with a few hairs on the superior margin; dactylos short and straight. First pair of pereopoda twice as long as the gnathopoda, having the meros short, expanded below; carpus stout, with a few hairs on the infero-posterior margin; propodos as long as carpus, slender, arcuate, inner margin double, the most prominent, and fringed with closely-set, straight, minute cilia, the outer with long straight hairs; dactylos subulate. Second pair of pereopoda resembling the first, but having the carpus slightly larger. Third pair of pereopoda nearly twice as long as first two; basos stout; meros short; carpus long, and furnished on its anterior margin with equi-distant comb-like teeth, and minute, close-set thick cilia between; propodos long, slightly curved and slender, similarly furnished on its anterior margin; dactylos short, slender, sharp, and slightly curved. Fourth pair of pereopoda about half the length of the third, and resembling it in form: fifth pair like the fourth, but not armed with fine teeth along the anterior margin of the propodos. Ultimate pair of pleopoda having the peduncle more than four times the length of the telson, and the rami half as long as the peduncle, with the margins scarcely serrated; penultimate pair reaching a little beyond the extremity of the peduncle of the ultimate; antepenultimate reaching a little further than the extremity of the penultimate. Telson lanceolate.

*Female.* Superior antennæ with the basal joint of the peduncle nearly covering the second; terminal joint (flagellum, according to Sp. Bate) elongated, tapering to the point, which is curved like a hook, furnished on its lower margin with a row of comb-like teeth. Other characters as above.

Length about  $\frac{3}{4}$  of an inch.

The young, taken from the incubatory pouch of the female, differ somewhat from the adult. The back is smooth and rounded, whereas in the adult it is sharply keeled, and the segments of the pereion are produced posteriorly into teeth. The pereion is very broad and expanded. Antennæ subequal; superior stout and conical, three-jointed, terminal joint with a few short setæ at the extremity and two longer ones projecting at right angles from near the middle of the inferior margin; inferior pair somewhat more slender, and with very minute setæ. Some of the appendages also are either wanting or are not fully developed, probably the first or second pair of gnathopoda. Pleopoda normally developed.

These minute creatures approach in form and general appearance to *Hyperia cyanea* much more than *Themisto*. Every adult female had several of them in the incubatory pouch under the pereion.

Frequently washed up on Ocean Beach, Dunedin.

*Fam. III. Platyscelidæ.*

Cephalon round. Eyes large. Antennæ attached to the inferior surface. Epistoma probosciform; oral appendages rudimentary. Gnathopoda complexly subchelate. First two pairs of pereopoda simple; two succeeding pairs having the basa largely dilated; fifth pair imperfectly developed. Posterior pleopoda foliaceous.

*Genus Platyscelus, Spence Bate,*

*Brit. Mus. Cat. Amphip. Crust., p. 329.*

Cephalon transversely ovate. Pereion distended; first segment narrower than the cephalon. Pleon much narrower than the pereion, having the fourth and fifth segments coalescing, the fifth and sixth pairs of pleopoda being attached to the posterior margin; sixth segment and telson fused together, the posterior pair of pleopoda being attached to the under surface near the middle of the segment. Superior antennæ short, consisting of a peduncle and a flagellum. Inferior antennæ not longer than the cephalon, consisting of four joints, concealed beneath the cephalon, not folded. Mandibles without an appendage. Third pair of pereopoda having the basos largely dilated, and the remaining joints shorter than the basos; fourth pair having the basos twice as large as the third, the remaining joints not half so long as the basos; fifth pair membranous, a small tubercle representing the remaining joints. Three posterior pairs of pleopoda biramous, foliaceous, submembranous. Telson obtusely triangular.

20. *Platyscelus intermedius*, nov. sp. Fig. D.4.

Cephalon rounded in front. First two segments of pereion very narrow; succeeding broader, subequal. Eyes very large, occupying nearly the whole cephalon, with a large triangular red pigment spot on the outside of each. Epistoma triangular. Antennæ placed quite underneath the epistome.



Superior pair consisting of a stout peduncle, bearing a crown of cilia and a small tuberculate appendage, with a flagellum of two long slender articulations. Inferior antennæ four-jointed; first three joints subequal, with numerous cilia; fourth joint very short and furnished with a few long hairs at its extremity. First pair of gnathopoda with the carpus antero-inferiorly produced to an acute point almost to the extremity of the propodos, serrated on both margins, with numerous slender spines surrounding it near the base of the propodos; propodos narrow-oblong, serrated on both margins, with a small dactylos which antagonises with the extremity of the carpus. Second pair of gnathopoda similar to first, but rather larger, and with the carpus produced slightly beyond the extremity of the propodos. First two pairs of pereopoda with the basos somewhat dilated; meros, carpus and propodos diminishing uniformly in size and quite smooth; dactylos very small, acute. Third pair with the margin of the basos quite smooth, and the distal extremity sub-acute; ischium articulating subapically within the posterior margin; remaining joints about half as long as the basos; meros and carpus quite smooth; propodos slender, slightly longer than the preceding joints, and serrated on the posterior margin only. Fourth pair of pereopoda with the basos posteriorly arcuate and anteriorly excavate, rounded at the extremity; ischium articulating within the posterior margin near the centre; remaining joints about one-third as long as basos; meros very small; carpus long; propodos half its length, both serrated on the posterior margins; dactylos long, nearly straight, sub-acute. Fifth pair of pereopoda membranous; basos curved forward nearly to a right angle; remaining joints represented by a small tubercle. Three last pairs of pleopoda foliaceous; ante-penultimate pair having a short peduncle, the rami somewhat unequal, margins smooth; penultimate pair with a long peduncle and rami subequal, outer ramus finely serrate on its outer margin; ultimate pair with the peduncle rather short and rami very unequal; external ramus minute, lanceolate, with smooth margins; internal ramus oblong, oblique, finely serrate on the distal half of both margins. Telson triangular, obtusely pointed.

Colour yellow, nearly transparent, with small red spots. Length .5 inch. Can roll itself almost into a ball.

Washed up on the Ocean Beach at Dunedin.

I have named this species as above, from the fact that it is almost intermediate between the only two species hitherto described—*P. rissoinæ*, Bate, and *P. serratus*, Bate.

Spence Bate remarks of this genus:—"It appears to me to be not improbable that *Platyscelus* may prove to be the female of *Typhis* (*Thyropus*), from which it differs, only in the form of the superior and length of the inferior antennæ."

*Group* ABERRANTIA.

Coxæ of the pereopoda not squamiformly developed, some, or all, being fused to their respective segments. One or more segments of the pleon absent.

*Fam.* Caprellidæ.

Pleon rudimentary. Oral appendages normally developed. Coxæ fused with the pereion. Branchial sacs attached to the first two or three segments of the pereion.

*Genus* I. *Caprella*, *Lamarck*, *Syst. des. Anim. sans Vert.*, p. 165;

*Edwards*, *Hist. Nat. Crust.*, iii., p. 105; *Spence Bate*, *Brit. Mus.*

*Cat. Amphip. Crust.*, p. 353.

Body cylindrical. Cephalon and first segment of the pereion confluent. Pleon rudimentary. Gnathopoda subchelate. First two pairs of pereopoda represented by the branchiæ attached to their respective segments only; three posterior pairs of pereopoda subequal. First and second pairs of pleopoda rudimentary in the male; the rest obsolete.

21. *Caprella caudata*, nov. sp. Fig. D.5.

*Female.* Body rather robust. Cephalon smooth, not toothed nor tuberculate, short; four succeeding segments of pereion subequal. Eyes round. Superior antennæ more than half as long as body; first joint of peduncle with an acute spine on the antero-superior margin; second joint longest; flagellum about 15-jointed (first few fused together), as long as peduncle, and spinose at the articulations. Inferior antennæ more than half as long as the superior; two basal joints short and smooth; the rest fringed on their lower margin with long hairs. Maxillipeds well developed, unguiculate, ciliate on the lower margin, with the carpus distended. First pair of gnathopoda small and fringed with hairs; carpus with a deep transverse incision; propodos ovate, dactylos long and slender. Second pair of gnathopoda large; propodos narrow-ovate, with the palm extending along the greater part of the lower margin, with a large tooth surmounted by two spines to receive the point of the dactylos, and two smaller teeth nearer the hinge corresponding to two indentations in the dactylos; dactylos stout, curved. Branchiæ narrow-oblong. Ovigerous pouches nearly circular, thickly ciliated on their inner margins. Three last pairs of pereopoda increasing in size posteriorly, similar in shape; in all the propodos is narrow, excavate along its anterior margin to receive the slender curved dactylos, point of impingement of which is marked by two serrated spines. First pair of pleopoda rudimentary, represented by minute tubercles. Pleon prolonged into a slender flat expansion.

Dunedin, in rock pools. Length .4 inch.

*Genus Caprellina, nov. gen.*

Body cylindrical. Cephalon confluent with first segment of pereion. Pleon rudimentary. Gnathopoda sub-chelate; branchiæ attached to second pair. First two pairs of pereiopoda represented by the branchiæ attached to their respective segments; third pair feebly developed; two posterior pairs well developed, subequal. First and second pairs of pleopoda rudimentary in the male, rest obsolete.

This genus appears to be intermediate between *Cercops* and *Caprella*. From the former, it differs in not having the pleopoda developed, but agrees with it in having branchiæ attached to the second gnathopoda. In respect to this latter character it differs from its nearer ally *Caprella*, and also in having the third pair of pereiopoda feebly developed.

The genus contains only the following species:—

22. *Caprellina novæ-zealandiæ*, nov. sp. Fig. D.6.

Body slender. Second and third segments of pereion shorter than the three following; last segment very short. Superior antennæ nearly half as long as animal; basal joint of peduncle stout, two succeeding joints long and slender; flagellum setose, semi-articulate at the basal end, ending in about ten articulations. Inferior antennæ very short, reaching to middle of penultimate joint of peduncle of superior. First pair of gnathopoda with the propodos ovate, the palm extending along the inferior margin, fringed with cilia, and with two spines at the base; dactylos sparingly ciliated on inner margin. Second pair of gnathopoda much larger than first, and having the basos very long. Propodos long, narrow ovate, palm extending along half the inferior margin, hollowed out, and with two or three small spines at the denticulation which receives the point of the dactylos, and a tooth near the hinge; dactylos slender, arcuate. Third pair of pereiopoda very small, but with well-developed carpus, propodos and dactylos. Fourth and fifth pairs of pereiopoda long; propoda well-developed, narrow-ovate, with slightly excavated palms fringed with strong spines; dactylos minutely ciliate on inner margin. Two pairs of pleopoda present, one-jointed, filiform, fringed with minute, comb-like cilia. Colour pale red, with dark spots and markings. Length .8 inch.

Dunedin, in rock pools.

## DESCRIPTION OF PLATE X.

Fig. A (all enlarged)—

1. *Crangon australis*: (a), head viewed from above, magn. 2; (b), leg of first pair, magn. 6; (c), leg of second pair, magn. 3.
2. *Leander fluviatilis*, magn. 1½: (a), rostrum, magn. 4.
3. *Oniscus punctatus*, magn. 2: (a), caudal stylet, magn. 10.
4. *Ligia quadrata*, magn. 1½: (a), tail and caudal stylets, magn. 4.

5. *Amphoroidea falcifer*, magn. 2.
6. *Dynamena huttoni*, magn. 2.
7. *Nesea caniculata*, magn.  $1\frac{1}{2}$ : (a), abdomen viewed from below, magn.  $2\frac{1}{2}$ .

## Fig. B (all enlarged)—

1. *Nicea novæ-zealandiæ*, magn. 2: (a), superior antennæ, magn. 22; (b), inferior antennæ, magn. 22; (c), first gnathopod, magn. 11; (d), second gnathopod (female), magn. 11; (e), second gnathopod (male), magn. 11; (f), telson, magn. 11.
2. *Nicea fimbriata*, magn. 2: (a), superior antennæ, magn. 22; (b), inferior antennæ, magn. 22; (c), first gnathopod, magn. 11; (d), second gnathopod, magn. 11; (e), telson, magn. 11.
3. *Nicea rubra*, magn. 2: (a), superior antennæ, magn. 22; (b), inferior antennæ, magn. 22; (c), first gnathopod, magn. 11; (d), second gnathopod, magn. 11; (e), telson, magn. 11.
4. *Dexamine pacifica*, magn. 4: (a), segment of pleon viewed dorsally, magn. 11; (b), first gnathopod, magn. 11; (c), second gnathopod, magn. 11; (d), telson, magn. 22.

## Fig. C (all enlarged)—

1. *Atylus danai*, magn. 3: (a), portion of superior antennæ, magn. 22; (b), first gnathopod, magn. 22; (c), telson and posterior pleopoda, magn. 22.
2. *Pherusa novæ-zealandiæ*, magn. 3: (a), first gnathopod, magn. 11; (b), second gnathopod, magn. 11; (c), telson, magn. 11.
3. *Calliope didactyla*, magn.  $2\frac{1}{2}$ : (a), first gnathopod (female), magn. 11; (b), second gnathopod (female), magn. 11; (c), first gnathopod (male), magn. 11; (d), second gnathopod (male), magn. 11; (e), telson, magn. 11.
4. *Calliope fluviatilis*, magn. 4: (a), first gnathopod, magn. 11; (b), second gnathopod, magn. 11; (c), telson and pleopoda, magn. 11.
5. *Melita tenuicornis*: posterior segments of pleon, magn. 11.

## Fig. D (all enlarged)—

1. *Gammarus barbimanus*, magn. 3: (a), superior antennæ, magn. 11; (b), inferior antennæ, magn. 11; (c), maxillipeds, magn. 11; (d), first gnathopod, magn. 11; (e), second gnathopod, magn. 11; (f), telson and pleopoda, magn. 11.
2. *Themisto antarctica*: superior antennæ, magn. 11, (a) male, (b) female.
3. Young of *Themisto antarctica*, magn. 11: (a), superior antennæ, magn. 37; (b), inferior antennæ, magn. 37.
4. *Platyscelus intermedius*, magn. 2: (a), under-surface of epistome, with superior antennæ, magn.  $7\frac{1}{2}$ ; (b), inferior antennæ, magn.  $7\frac{1}{2}$ ; (c), first gnathopod, magn.  $7\frac{1}{2}$ ; (d), second gnathopod, magn.  $7\frac{1}{2}$ ; (e), first (and second) pereopoda, magn.  $7\frac{1}{2}$ ; (f), third pereopoda, magn.  $1\frac{1}{2}$ ; (g), fourth pereopoda, magn.  $1\frac{1}{2}$ ; (h), fifth pereopoda, magn.  $7\frac{1}{2}$ ; (i), telson and pleopoda, magn.  $2\frac{1}{2}$ .
5. *Caprella caudata*, magn. 4: (a), superior antennæ, magn. 11; (b), inferior antennæ, magn. 11; (c), first gnathopod, magn. 11; (d), second gnathopod, magn. 11; (e), posterior pereopoda, magn. 11; (f), pleon, magn. 20.
6. *Caprellina novæ-zealandiæ*, magn.  $1\frac{1}{2}$ : (a), first gnathopod, magn.  $7\frac{1}{2}$ ; (b), second gnathopod, magn.  $7\frac{1}{2}$ ; (c), third pereopod, magn.  $7\frac{1}{2}$ ; (d), pleopoda (1, last segment of pereion; 2, basos of posterior pereopoda; 3, pleon), magn. 15.



CRUSTACEA