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Colonial Museum and Geological Survey Department.

JAMES HECTOR, M.D., C.M.G., F.R.S.,

DIRECTOR.

INVERTEBRATE  
ZOOLOGY  
Crustacea

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CATALOGUE

OF THE

STALK- AND SESSILE-EYED

CRUSTACEA

OF

NEW ZEALAND.

BY

EDWARD J. MIERS, F.I.S.,

ASSISTANT IN THE

ZOOLOGICAL DEPARTMENT OF THE BRITISH MUSEUM.

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National Museum

LONDON:

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## P R E F A C E.

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THIS CATALOGUE has been compiled for the use of students and collectors in New Zealand, with the object of affording a classified list, with short descriptions of the families, genera, and species of Stalk- and Sessile-Eyed Crustacea, which have already been found in the Colony.

Like former Zoological Catalogues issued by the New Zealand Government, through the Geological Survey and Museum Department, this must only be considered as a provisional attempt to gather into a convenient form what is known on the subject, as a preliminary to the collection of more ample materials. The only special list of the New Zealand Crustacea previously published, given in Dieffenbach's "New Zealand," in 1843, mentions only nineteen species of Stalk- and Sessile-Eyed Crustacea; nearly forty are recorded from New Zealand by Dana, in his work descriptive of the collections made during Wilke's Exploration of the South Seas in 1838-42, while the list has been still further increased through the results obtained by the French Corvettes "Astrolabe and Zélée," under the command of M. J. Dumont d'Urville; and during the short visit to New Zealand of the Austrian Frigate "Novara." There still remain, nevertheless, a considerable proportion of the 140 species enumerated in this Catalogue which have been recognized as belonging to the

New Zealand Fauna through a critical examination of the rich materials in the Collection of the British Museum, which the Author has been allowed to make specially for this work by Dr. Günther, V.P.R.S., Keeper of the Zoological Department.

The Crustacea are not of the same economic importance in New Zealand as in many other countries, where the conditions are apparently not more favorable for the development of a variety of forms adapted for the food of man. Thus, considering the character of the coast, with its deep water-inlets, and sheltering islands covered with kelp and other sea-weeds, it is remarkable that only one, (or perhaps two), species of marine cray-fish, (*Palinurus*), reach a sufficient size to be worth catching; the crab, (*Cancer novæ-zealandiæ*), and prawns, (*Palaemon*), indigenous to the Colony, not being used as articles of food. These large cray-fish, called by the natives *Koura*, are, however, extremely abundant at some seasons, and largely sold in the markets. Their capture is effected by round hand nets, baited and hauled up rapidly from time to time, or by the ordinary lobster-pots. The only other Crustacean used as food is the small fresh-water cray-fish, also called *Koura* in Maori, (*Paranephrops planifrons*), which abounds in all streams and lakes, but especially in the lakes of the hot spring district of the North Island, where it forms a chief part of the food of the natives. They are captured by sinking large fascines of brushwood, enclosing bait, to attract the cray-fish; which, becoming entrapped by the twigs, are hauled up to the surface in enormous numbers.

JAMES HECTOR.

LONDON, 6th April, 1876.

## INTRODUCTORY REMARKS.

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THE system of classification followed in this Catalogue is that proposed by Professor J. Dana, and adopted by him in his great work on the Crustacea of the U.S. Exploring Expedition under Commodore Wilkes (2 vols. 4to, 1852 and 1853, and Atlas). The characters of the families, sub-families, &c., are generally from his volumes, with such slight alterations and additions as seemed desirable for the purpose of this Catalogue. The descriptions of the genera and species are compiled from many different authors, the former being in part original, the latter often abbreviated or modified to ensure the necessary uniformity and accuracy throughout.

Whenever the description of a species has been taken, either verbatim or in substance, from another author, this is indicated by the capital letters placed within brackets at the end of the description, which are the initials of the name of the author.

It is scarcely necessary to refer here to all the authors whose works have been consulted; the principal, besides M. H. Milne Edwards and Prof. Dana, are, M. A. Milne Edwards, for the *Brachyura*, Mr. C. Spence Bate, F.R.S., for the *Amphipoda*, Dr. C. Heller, (Reise der Novara), M. de Haan, (Crustacea of the Fauna Japonica of Siebold), Mr. A. White, (in Dieffenbach's

New Zealand, &c.), and M. M. Jacquinot and Lucas, (Crustacea of the Voyage au Pôle Sud).

By the kind permission of Dr. Günther, I have been enabled to amend, where necessary, the descriptions of White and other authors from the type specimens, and to describe the new or undescribed species in the National Collection, to indicate those which are at present desiderata, and to add some remarks on the geographical range of each species. The measurements are often made from specimens in the British Museum Collection, and can only be taken as indicating the ordinary size of the species, as many of the higher Crustacea increase very greatly in size after becoming adult.

The following summary, necessarily very imperfect, will serve to indicate the principal geographical affinities of the New Zealand Crustacea, so far as they are at present known.

New Zealand is situated almost on the southern line of demarcation between the two great geographical regions, which Dana has called the Oriental and Antarctic Kingdoms, the former including the whole of the Eastern coast of Africa, the South and East of Asia, Australia, and certain islands of the Pacific; the latter, the Southern extremity of the American continent, the islands adjacent, Southern New Zealand, and the lands and islands of the Antarctic Seas. Thus we find species inhabiting its shores, which are properly characteristic of either of these regions.

I. THE ORIENTAL KINGDOM:—Some of the species of the *Decapoda*, (especially the *Brachyura*), included in this Catalogue, are found throughout the whole or nearly the whole extent of this vast region; instances are:—*Actaea granulata*, *Daira perlata*, *Neptunus pelagicus*, *Scylla serrata*, *Thalamita sima*, *Calappa hepatica*, *Palaeomon ornatus*. There are other species whose range appears to be more particularly restricted

to the Eastern Asiatic section of this area, extending northward to the coasts of China and Japan; as, *Hyastenus diacanthus*, *Neptunus trituberculatus*, *Heterograpsus sanguineus*, *Varuna litterata*; while many other genera and species appear to be more especially characteristic of the Australian sub-province, as *Paramithrax*, *Prionorhynchus edwardsii*, *Nectocarcinus*, *Pilumnus tomentosus*, *Pilumnopeus serratifrons*, *Ozium truncatus*, *Heloccius*, *Hymenicus*, *Petrolisthes elongatus*.

II. THE ANTARCTIC KINGDOM:—A large number of species occur on the South American, and some also on the South African Coasts. Of these, *Halicarcinus planatus*, *Munida subrugosa*, *Palaemon affinis*, *Serolis paradoxa*, and *Sphaeroma gigas*, are more particularly Antarctic forms. The following also are species found on the Western coast of South America; *Platyonychus bipustulatus*, *Heterograpsus crenulatus*, *Eupagurus novæ-zealandiæ*, *Rhyuchocinetus typus*, *Squilla nepa*, *Orchestia chilensis*; and the following, (in addition to several species occurring throughout the whole Asiatic region), are found at the Cape of Good Hope; *Plagusia chabrui*, *Palinurus lalandii*, *Palaemon affinis*, and *Idotea affinis*. *Cirolana rossii* is nearly allied to, and may hereafter prove to be identical with *C. hirtipes* of the Cape. Representative species of *Cyclograpsus* inhabit the shores of New Zealand, South Africa, and South America.

The remarkable resemblance between the Carcinological Fauna of New Zealand, and that of Great Britain, has been adverted to by Dana and other authors, and is sufficiently striking; many of the genera are common to the two areas, others, as for instance, *Paramithrax*, (subgen. *Leptomithrax*), *Nectocarcinus*, *Paranephrops*, which are apparently restricted to the Southern hemisphere, find their nearest allies in European forms.

This is even more remarkably seen in the distribution of the species of Fishes, many species being common to the British and Antarctic areas. (See Günther, P.Z.S., 1871, pp. 653, 673).

On the other hand, the *Maiioidea* are, it would seem, far less numerous in New Zealand than in Great Britain ; while of the *Grapsoidæ*, which are remarkably represented both in number and variety of species in the New Zealand Fauna, there are but two or three species properly indigenous to Great Britain.

No Land-Crab of the family *Telphusidæ* inhabits New Zealand. The *Paratelphusa tridentata*, M. Edw., included doubtfully in its Fauna, has since been shown to inhabit the East Indian Archipelago. The Cray-fish of the genus *Paranephrops*, are, I believe, restricted to New Zealand ; where they seem to supply the place of the Australian *Cheraps* and *Engæus*.

I may add in conclusion, that there are a few species, whose range does not appear to be restricted to any well-defined geographical area. Instances are the pelagic and almost cosmopolitan *Planes minutus* and *Paluemon natator*.; also, *Grapsus pictus* and *Leiolophus planissimus*.

As this Catalogue has been prepared in my leisure moments, and without the advantage of consulting any large local Collection,\* it will be found to contain many imperfections ; and there is no doubt that the number of species will hereafter be largely added to, especially in the tribe *Amphipoda* ; of the strictly marine species of this group inhabiting New Zealand, little or nothing is known.

EDWARD J. MIERS.

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\*The only Collection which I have had the advantage of consulting besides that of the British Museum, is a small collection of *Decapoda*, brought to England by DR. HECTOR ; it contained two undescribed species.

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Harpacticarcinus tumidus (H. Woodward), Q. J. Fed. Soc

an coeene genus in Europe.

Crabs claws are also found at Oamann &c.

## CRUSTACEA MALACOSTRACA.

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### I. PODOPTHALMATA.

*Crustacés pedicels*, Lam. Syst. An. sans Vert. p. 147, (1801).

*Podopthalma*, Leach, Linn. Trans. xi, p. 307, (1815).

*Podopthalmiens*, M. Edw. Hist. Nat. Crust. i, p. 237, (1834).

*Podopthalmia*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 7, (1852).

Malacostracous Crustacea having mandibles and maxillæ adapted for mastication, pedunculate and mobile eyes, and a carapace covering the whole or the greater part of the thorax.

#### Order I. DECAPODA V. EUBRANCHIATA.

*Eubranchiata*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 8, (1852).

Branchiæ enclosed in the normal condition beneath the carapace.

#### Tribe I. BRACHYURA.

*Canceri Brachyuri*, Lam. (part) Syst. An. sans Vert. p. 148, (1801).

*Brachyura*, Leach, (part) Linn. Trans. xi, p. 307, (1815); Latr. (part) Fam. Nat. p. 267, (1825); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 58, (1852).

*Brachyures*, M. Edw. Hist. Nat. Crust. i, p. 247, (1834).

Abdomen inflexed beneath the body, without swimming appendages, and without vestiges of appendages to the penultimate segment. Sternum never linear, but of some width between all the legs, vulvæ always situated upon the sternum. Carapace greatly developed and covering a great part of the abdomen. Antennæ with the flagella very short, inner with distinct fossettes. External maxillipeds operculiform. Buccal cavity distinctly defined in front.

## Sub-Tribe I. OXYRHYNCHA.

*Oxyrhynchi*, Latr. (part) Hist. Nat. Crust. vi, p. 85, (1803).

*Oxyrhinques*, M. Edw. Hist. Nat. Crust. i, p. 263, (1834).

*Maioides* v. *Oxyrhyncha*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 66, (1852).

Carapace more or less narrowed and produced or rostrate anteriorly, with the branchial regions greatly developed, and the hepatic regions rudimentary. Branchiæ nine in number. Internal antennæ longitudinally plicate. Epistome usually large. Buccal cavity subquadrate; efferent canal from the branchiæ terminating at the sides of the palate.

Fourth joint of the external maxillipeds inserted at the summit or at the antero-internal angle of the third joint. Male genital appendages inserted in the base of the fifth pair of legs.

## LEGION I. MAINEA.

*Mainea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 76, (1852).

Body elongate, rounded behind, narrowed, produced, and rostrate anteriorly. Basal joint of the external antennæ placed beneath the eyes. Legs all of normal shape.

## Family I. MAIIDÆ.

*Maiidæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 77, (1852).

Eyes capable of being retracted into the usually large orbits, which are nearly always incomplete or marked with fissures on the upper and lower margins.

## HUENIA.

*Huenia*, De Haan, Faun. Japon. Crust. p. 83, (1839).

Carapace varying in shape in the two sexes. Rostrum triangular, acute, deep and laterally compressed. Eyes scarcely projecting beyond the orbits, which are scarcely defined below. Basal joint of the external antennæ without a spine at the distal extremity, second and third joints cylindrical. Epistome rather shorter than the mouth, concave. The legs rather slender and compressed, those of the first ambulatory pair much longer than the rest.

Male with the carapace somewhat elongate, triangular, rounded behind. Hands enlarged, often ridged above, the fingers meeting only at the tips. Abdomen seven-jointed.

Female with the lateral margins of the carapace produced on each side into two large flattened rounded lobes or expansions. Abdomen five-jointed.

### 1. *Huenia bifurcata*.

*Huenia bifurcata*, Streets, Proc. Acad. Nat. Sci. Philad. p. 107, (1870).

Carapace smooth, elongated, narrowing in front; antero-lateral margins acute; gastric region with three low tubercles arranged in a triangle, with the base directed forward; cardiac region with a low tubercle. Antero-lateral borders produced into sharp processes directed forward, outward and slightly upward from the base of the rostrum; lateral projections at the junction of the antero-lateral and postero-lateral borders rather broad, directed somewhat upward, and with two teeth separated by a concave interval, at their extremities. Postero-lateral borders rounded. Posterior border projecting backward, lip-like, slightly everted on each side. Rostrum flattened horizontally at the anterior extremity, bifurcated at the point. Upper surface covered with hooked hairs. Under surface concave. Anterior pair of legs about the length of the carapace, with a small tooth directed forward at the distal extremity of the third joint. Second pair longer. Remaining legs considerably shorter, each with a spine at the middle of the under surface of the fifth article. Carapace with rostrum  $\frac{9}{10}$  in. (S.).

New Zealand (Mus. Philad. Acad.).

I have not seen examples of this species.

### HALIMUS.

*Halimus*, Latr. Fam. Nat. R. A. p. 272, (1825); M. Edw. Hist. Nat. Crust. i, p. 340. (1834).

Carapace convex, rounded behind, sides converging to the front, and usually armed with a series of five spines, extending to the back of the branchial region. Spines of rostrum long, and usually divergent from their base. There is a supra-ocular spine or tubercle. Basal joint of the external antennae oblong, broader than the succeeding. Epistome transverse. Third joint of the external maxillipeds with the anterior

margin truncate, and somewhat produced at its antero-external angle. Anterior legs long, considerably enlarged in the adult male. Ambulatory legs long, with the penultimate joint more or less dilated, expanded and compressed. Abdomen of ♂ seven, of ♀ five, six-jointed.

2. *Halimus hectori*. Pl. I, fig. 1.

*Halimus hectori*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 219, (1876).

Carapace moderately convex, broadest behind, with the sides converging from the front of the branchial regions, obscurely tuberculated; there are four low tubercles, (two median and two lateral), on the gastric, two in front of the branchial region, one at some distance behind upon the surface, and two smaller on the sides. The upper orbital margin projects considerably over the base of the eyes. There are four obtuse spines, of which two larger, on the hepatic, and about ten smaller tubercles on the pterygostomian regions; cardiac region convex. The spines of the rostrum are straight, and scarcely at all divergent. Anterior legs wanting. Penultimate joint of the ambulatory legs considerably dilated, and square-truncate at its distal extremity. Abdomen of ♀\* six-jointed, the two last joints coalescent. Length rather more than 2 in.; breadth nearly  $1\frac{1}{2}$  in.

New Zealand (Coll. Brit. Mus.).

This species is in many respects intermediate between *Acanthonyx* and *Halimus*, the two genera indeed are separated by structural peculiarities of but little importance; the spines of the rostrum are not divergent, and the basal joint of the external antennæ is rather narrow as in *Acanthonyx*, but in the convergent sides of the carapace and the form of the penultimate joints of the legs it resembles *Halimus*.

As this latter genus inhabits the Southern Seas and the species of *Acanthonyx* the Northern temperate zone, I refer the species to *Halimus*. It is distinguished from other species of the genus by the absence of spines upon the carapace and sides of the branchial regions. A single, (unfortunately mutilated) specimen, was brought to England and presented to the British Museum by Dr. HECTOR, F.R.S.

PARAMITHRAX.

*Paramithrax*, M. Edw. Hist. Nat. Crust. i, p. 323, (1834); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 79, (1852).

\* By a printer's error "male" in Ann. Mag. Nat. Hist. *l.c.*

Carapace triangular, rather convex, and more or less tubercular and spinose. Rostral spines rather long, and divergent from their base. Orbits large, with the upper margin projecting, with two deep fissures; lower margin usually incomplete or widely emarginate. Basal joint of the external antennæ large and broad, with two spines at its distal extremity, flagellum excluded from the orbit by the enlargement of the basal joint. Epistome transverse. Third joint of the external maxillipeds truncate above. Anterior legs in the male large, arm usually with a row of spines above, wrist with a ridge crossing obliquely its outer surface or simply tuberculated, hands rather compressed, fingers acute. Abdomen of ♂ and ♀ seven-jointed.

#### Sub-Genus PARAMITHRAX.

*Paramithrax*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 219, (1876).

Anterior legs in the male enlarged, hand compressed, fingers with a vacant space at base between them when closed, wrist with two longitudinal ridges, one on the upper and one obliquely crossing the outer surface.

### 3. *Paramithrax peronii*.

*Paramithrax peronii*, M. Edw. Hist. Nat. Crust. i, p. 324, (1834); Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 10, pl. i, fig. 3, (1853).

Carapace hairy, covered with large smooth tubercles and with spinous tubercles, forming a longitudinal median series, upon the gastric, cardiac, and intestinal regions. Rostrum formed of two long spines. Four spines upon the sides of the hepatic and five upon the sides of the branchial regions. Basal joint of the external antennæ terminating anteriorly in two spines, flagellum not concealed beneath the rostrum. Anterior legs very large; arm with several large spinous tubercles above; wrist with a strong even ridge on its external surface; hands very large, smooth; fingers acute at the extremities. Ambulatory legs hairy. Length,  $2\frac{1}{2}$  in.; breadth,  $1\frac{3}{4}$  in. (J. & L.).

New Zealand; Akaroa (Hombr. and Jacq.); Australia (Coll. Brit. Mus.).

In the above description the spines of the upper orbital margin are apparently included among the lateral hepatic spines. In this species the spines at the distal end of the basal joint of the external antennæ

are small, sub-equal, the external orbital spine is acute, and the five branchial spines form a regular series, and are equidistant.

4. *Paramithrax barbicornis*. Pl. I, fig. 2. ♂.

*Pisa barbicornis*, Latr. Encycl. x, p. 141, (1825).

*Paramithrax barbicornis*, M. Edw. Hist. Nat. Crust. i, p. 324, (1834); Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 219, (1876).

Carapace nearly ovoid, convex reddish livid brown, covered with long concolorous, or brown on white hairs. Sides dilated after the postocular teeth. Rostral spines strong, triangular, acute, divergent. Orbits deeply notched above, terminated posteriorly by a small spine, two other spines after the notch, which are stronger, especially the former, which forms the posterior extremity of this part of the orbital margin. Four small spines on the sides, of which the two first are obtuse, placed near to one another, the two last acute, separated. Anterior legs reddish, small, wrists as long as the palms; fingers slender, conical, white, acute, without teeth. Ambulatory legs rather large relatively to the body, with long yellowish hairs. (Latr.).

Australia (Mus. Paris); New Zealand (Coll. Brit. Mus.).

Some specimens from New Zealand, in the Collection of the British Museum, are, I think, to be referred to the foregoing species, of which the description applies to the young female. The males have the anterior legs greatly developed; arm with a series of strong spines above; wrist with two ridges, the inner divided into several lamellate or tuberculiform lobes, the outer uninterrupted, except at the base. Hands compressed: fingers leaving a space at base when closed. Carapace, when the hairs are removed, appears covered with numerous, wart-like, minutely punctate flattened tubercles. Length, 2 in.; breadth,  $1\frac{1}{2}$  in.

Should this species, on comparison with specimens of both ages and sexes from Australia, prove distinct, it may be designated by the name of *P. latreillei*.

5. *Paramithrax gaimardii*.

*Paramithrax gaimardii*, M. Edw. Hist. Nat. Crust. i, p. 325, (1834); White Dieffenb. New Zealand ii, p. 265, (1843).

Animal covered with very close-set hooked hairs. Carapace with the sides of the hepatic regions swollen; orbits very deep, with the

*with the help of P. M. Dieffenb. New Zealand ii, p. 265, (1843)*

lower margin notched; eyes, when retracted, touching the external orbital angle. Basal joint of the external antennæ very wide, terminating in two strong spines, of which one fills the internal orbital hiatus, and separates the flagellum from it, which is visible at the sides of the rostrum. (M. E.).

New Zealand (Quoy and Gaimard) (Coll. Brit. Mus.).

There are specimens in the British Museum Collection from New Zealand and Port Jackson which agree very well with M. Edwards' short description, given above, of this species. They resemble young specimens of *P. peronii*, but the depression separating the branchial and hepatic regions is more marked, the outermost of the two spines at the distal extremity of the basal joint of the external antennæ is very long and visible from above, the external orbital spine is truncate, the penultimate lateral branchial spine is absent, and the last spine very long. Length,  $1\frac{1}{2}$  in.; width,  $\frac{7}{8}$  in.

#### Sub-Genus LEPTOMITHRAX.

*Leptomithrax*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 220, (1876).

Anterior legs in the male elongated, slender, hand and wrist sub-cylindrical, fingers meeting along their inner edges when closed, wrist simply granulated, without longitudinal ridges.

This sub-genus is intermediate between the true *Paramithrax* and *Maia* of the northern hemisphere, from the latter genus it is distinguished by the much narrower inter-orbital space, and basal joint of the external antennæ, the flagellum of which arises from the orbital margin, and not from within the orbital cavity, as in *Maia*. It includes the *Paramithrax edwardsii* of De Haan, and *P. australiensis*, Miers, in addition to the following species.

#### 6. *Leptomithrax australis*.

*Maia australis*, Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 11, pl. ii, fig. 1, (1853).

Carapace rather broad, narrowed anteriorly, covered with smooth tubercles, and hairy. Spines of the rostrum short, scarcely divergent. Anterior angle of the upper orbital margin rounded. Antero-lateral margins with five spines. Ocular peduncles thick; eyes short. External

maxillipeds finely denticulated on their inner margins. Legs slender, elongate; abdomen broad. Colour, reddish yellow. (J. & L.)

Auckland Is. (Hombron and Jacquinot).

In this species the depressions separating the regions of the carapace are scarcely marked, the tubercles are longer and more acute towards the margins, the colour on the exposed parts of the carapace and anterior legs reddish, mottled with yellow. A specimen of an adult female exists in the British Museum Collection. Length,  $2\frac{3}{4}$  in.; breadth, 2 in.

#### 7. *Leptomithrax longimanus*. Pl. I, fig. 3.

*Leptomithrax longimanus*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 220, (1876).

Carapace triangular, branchial regions convex on the sides, depression separating the branchial from the gastric, cardiac, and hepatic regions deep and well defined, carapace covered, as are also the arms and wrists, with a very close velvet-like pubescence, and with small scattered granules. Spines of rostrum long. Antero-lateral margins destitute of spines. Anterior legs very long, about twice as long as the carapace, hand slender, cylindrical, and minutely granulous. Ambulatory legs slender, covered with a close pubescence, decreasing regularly in length from the first to the last. Length,  $1\frac{3}{4}$  in.; breadth,  $1\frac{1}{2}$  in.

New Zealand (Coll. Brit. Mus.).

At once distinguished by the great length of the anterior legs, and the absence of spines on the antero-lateral margins.

The male only is known.

#### HYASTENUS.

*Hyastenus*, White, P.Z.S., xv, p. 56, (1847).

Carapace triangular, with the sides straight, rounded behind, usually convex on the branchial regions. Spines of rostrum long, divergent. Supra-ocular spine small or obsolete, directed outward, with a fissure above and below. Orbits small, upper margin not projecting. Eyes completely retractile. Basal joint of the external antennæ rather long, without spines at its distal extremity. Anterior legs in the male unarmed, not nearly as long as the first pair of ambulatory legs, which are longer than any of the succeeding. Abdomen of ♂ seven, of ♀ five-jointed.

8. *Hyastenus diacanthus*.

*Nucia diacantha*, De Haan, Faun. Japon. Crust. p. 96, pl. xxiv, fig. 1, (1839).

Carapace triangular, rather convex. Rostral spines long and slightly divergent. Gastric region very convex, in young specimens almost tuberculated. Antero-lateral margins long, straight, unarmed, terminating posteriorly in a strong spine, directed outward, and placed on a level with the back of the branchial regions. Anterior legs in the male strong, without spines or tubercles, hand rather compressed, fingers leaving a slight hiatus at base when closed. First pair of ambulatory legs very much longer than the succeeding. The whole animal more or less thickly covered with stiff curled hairs. Length,  $2\frac{1}{4}$  in.; breadth,  $1\frac{1}{4}$  in.

New Zealand (Coll. Brit. Mus.).

The range of this species extends northward through Port Essington and the Philippine Islands to Japan.

## PARAMICIPPA.

*Paramicippa*, M. Edw. Hist. Nat. Crust. i, p. 332, (1834).

Carapace nearly oblong, inter-orbital space very broad, with a depression on each side behind the orbits. Rostrum broad, lamellate and deflexed, two-lobed. Eyes obliquely retractile within the narrow orbits, which have one or two fissures above and below. Basal joint of the external antennæ very broad, flagellum visible from above at sides of rostrum. Epistome transverse. Anterior legs in the male with the palm enlarged, short, smooth, fingers when closed, meeting only at their tips. Abdomen of ♂ and ♀ seven-jointed.

This genus is closely allied to *Micippa*, from which it is far removed in Dana's system of classification; the orbits are formed upon the same plan, and the eyes, I believe, retractile in both genera; the principal difference is in the anterior legs, which in *Micippa* are slender, elongate, with the fingers meeting throughout when closed.

9. *Paramicippa spinosa*.

*Micippa spinosa*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 218, (1857).

Carapace depressed, unequal above, closely tuberculated and setose. Dorsal spines few, long, slender, obtuse at apex, three in the median

line, of which two are upon the gastric, and one, largest, upon the cardiac region. A large spine upon the branchial region, between which and the post-orbital tooth, are nine spines on the lateral margin. Posterior margin spinulose. Rostrum dilated at the extremity, with the angles broadly rounded, margin crenulate, two median divergent teeth. Orbits bi-fissate above, the inner fissure shut, the outer open. Pterygostomian region convex and tuberculated, not setose. Anterior legs very smooth, pale fuscous, hand and wrist obsoletely granulated, apices of the fingers black. Ambulatory legs compressed, densely pilose, third joint with a small terminal spine above. Length,  $\frac{3}{4}$  in.; breadth, about  $\frac{2}{3}$  in. (S.).

The specimens described by Stimpson were found at Port Jackson, examples from the same locality are in the Collection of the British Museum.

New Zealand (Coll. Brit. Mus.).

#### Family II. PERICERIDÆ.

*Pericerida*, Dana (part), U.S. Explor. Exped. xiii, Crust. part i, p. 77, (1852).

*Maiida*, Sub. Fam. *Pericerinae*, Stimpson, Bull. Mus. Comp. Zool. ii., p. 112, (1870).

Eyes retractile or not, within the orbits, which are small, deep, circular, and entire.

The non-retractile eyes were considered by MM. Edwards and Dana, as characteristic of this family, as Stimpson, however, has pointed out, the eyes are often more completely retractile within the orbits in the *Pericerida*, than in any other group, and the best characteristic of this family is to be found in the structure of the orbits themselves, which are never incompletely defined, as in the true *Maiida*.

#### PRIONORHYNCHUS.

*Prionorhynchus*, Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 5, (1853).

Carapace narrowed anteriorly, tuberculated or spinose; branchial regions well developed. Rostrum lamellate, directed obliquely downward, deeply notched at the extremity. Orbits small, ovate, not notched below, nearly filled by the short ocular peduncles. Basal joint of the external antennæ greatly developed, with three spines at its

distal extremity; flagellum minute, concealed beneath the rostrum, and placed at some distance from the orbit. Epistome transverse. Third joint of the external maxillipeds notched anteriorly. Anterior legs large, compressed, fingers smooth, not spoon-excavate. Ambulatory legs becoming successively shorter. Abdomen of ♂ seven-jointed.

#### 10. *Prionorhynchus edwardsii*.

*Prionorhynchus edwardsii*, Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 8, pl. i, fig. 1, (1853).

Carapace with numerous small rounded granules, interspersed with larger tubercles, of which some are placed in a longitudinal median series; antero-lateral margins spinose. Lobes of the rostrum rounded, dentate on the margins. Anterior legs armed with spinous tubercles above, chiefly on the third and fourth joints. Ambulatory legs finely granulous, with large spinous tubercles on the third and fourth joints. Tarsi smooth. Colour ashy grey. Length 4 in., breadth 3 in. (J. & L.).

Auckland Islands (Hombron and Jacquinot).

The small tubercles on the legs in the adult are scarcely spinous.

### LEGION II. PARTHENOPINEA.

*Parthenopiens*, M. Edw. Hist. Nat. Crust. i, p. 272, (1834).

*Parthenopinea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 136, (1852).

Carapace either short triangular or transverse, with the antero-lateral margins arcuate. Basal joint of the external antennae inserted interior to the eyes. Legs of normal shape, the anterior pair longer, usually very much longer, than the ambulatory legs.

### LAMBRUS.

*Lambrus*, Leach, Trans. Linn. Soc. xi, p. 310, (1815); M. Edw. Hist. Nat. Crust. i, p. 352, (1834).

Carapace short triangular, or lozenge-shaped, and rounded on the sides; branchial regions greatly developed. Rostrum small, prominent. Eyes retractile within the nearly circular orbits. External antennae with the basal joints short, and contained in the hiatus between the basal joint of the inner antennae, and the lower margin of the orbit. Anterior legs very long, (more than two and a half times the length of

the carapace), usually trigonous or compressed, the fingers comparatively small. Ambulatory legs very short and slender.

#### 11. *Lambrus nodosus*.

*Lambrus nodosus*, Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 13, pl. i, fig. 2, (1853).

Carapace longer than broad, rounded on the sides, obscurely tuberculated upon the gastric, cardiac, genital, and intestinal regions, and on the external margins of the branchial regions. Rostrum prominent, terminating in a blunt spine. Anterior legs very long, with large tubercles upon the upper and outer margins, mobile finger with large tubercles at its base. Ambulatory legs slender, smooth. Penultimate segment of the abdomen with a strong tubercle. Colour ashy grey. Length 1 in.; breadth nearly 1 in. (J. & L.)

New Zealand, Raffles Bay. (Hombron and Jacquinot.)

This species is at once distinguished by the nearly smooth carapace and the large rounded tubercles of the anterior legs. Specimens are in the British Museum Collection from the Australian Coast.

#### EURYNOLAMBRUS.

*Eurynolambrus*, M. Edw. and Lucas, Archiv. Mus. Hist. Nat. ii, p. 479, (1841).

Carapace much broader than long, nearly flat, produced at the sides over the base of the ambulatory legs, rugose above, with four depressions; two placed at the spot where the hepatic, branchial and gastric regions unite, the others in the middle of the branchial regions. Front small, inclined and divided into two sub-triangular lobes. Orbits oval, with a small fissure above. Basal joint of the external antennæ very large, united to the front, flagellum inserted at its antero-internal angle. Pterygostomian regions with a deep cavity. Anterior legs of moderate size, hand swollen, rounded, fingers slender, acute. Ambulatory legs with prominent longitudinal crests. Abdomen of male seven-jointed.

#### 12. *Eurynolambrus australis*.

*Eurynolambrus australis*, M. Edw. and Lucas, Archiv. Mus. Hist. Nat. ii, p. 481, pl. xxviii, fig. 14, 15, (1841).

Carapace triangular, tuberculated above, lateral margins obscurely toothed. Anterior legs robust, irregularly punctulated. Ambulatory

legs with prominent longitudinal crests. Colour uniformly reddish. Length, 1 in.; breadth,  $1\frac{5}{8}$  in. (M. E. & L.).

New Zealand (Coll. Brit. Mus.); Bay of Islands (Dana).

### Sub-Tribe II. CYCLOMETOPA.

*Cyclomètopes*, M. Edw. Hist. Nat. Crust. i, p. 264, (1834).

*Cancroidea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 67, (1852).

Carapace usually transverse, wide in front, regularly arcuate anteriorly (sometimes quadrate or sub-orbicular), never acuminate or rostrate. Efferent channel, branchiæ, male genital appendages and external maxillipeds, as in the *Oxyrhyncha*. Epistome short, transverse. Internal antennæ usually transversely plicate.

### Family I. CANCRIDÆ.

*Canceride*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 145, (1852).

Carapace usually transverse, often convex with the antero-lateral margins arcuate. The teeth of the margins often obtuse or obscure. Margin of the efferent channel to the branchiæ not defined by a longitudinal ridge on each side of the pre-labial plate or palate. Ambulatory legs all gressorial, with styliform tarsi.

### Sub-Family I. CANCHINE.

*Canchine* and *Xanthine*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 147, 148, (1852).

Anterior legs with the fingers acute, not spoon-excavated at the tips.

### CANCER.

*Cancer*, Linn. (part) Syst. Nat. p. 1038, (1766); Leach, Trans. Linn. Soc. xi, p. 320, (1815); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 148, (1852); A. M. Edw. Nouv. Archiv. Mus. Hist. Nat. i, p. 185, (1865).

*Platycarcinus*, M. Edw. Hist. Nat. Crust. i, p. 412, (1834).

Carapace transverse and usually flattened above; latero-anterior margins very long, curving backwards to the latero-posterior crest or

post-branchial line, which is continued to the posterior margin of the cardiac region. Teeth of the latero-anterior margin ten, usually large and flattened. Front narrow, tridentate (the internal orbital angle excluded), projecting horizontally beyond the level of the upper orbital margin. Inner antennæ longitudinally plicate beneath the front. Basal joint of the external antennæ filling the internal orbital angle, with the flagellum excluded from the orbit. Orbits small, nearly circular. External maxillipeds long, third joint usually rounded. Anterior legs compressed, subequal. Ambulatory legs rather long and slender. Abdomen of the male five-jointed, third, fourth, and fifth joints coalescent.

### 13. *Cancer novæ-zealandiæ*.

*Platycarcinus novæ-zealandiæ*, Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 34, pl. iii, fig. 6, (1853).

*Cancer novæ-zealandiæ*, Alph. M. Edw. Nouv. Archiv. Mus. Hist. Nat. i, p. 189, (1865); Miers, Zool. Erebus and Terror, Crust. p. 2, pl. i, fig. 5, (1874).

Carapace wide, moderately flattened in the male, much more in the female. Surface covered with little granulations; regions scarcely distinct. Latero-anterior margin with ten crenated lobes, which project very slightly beyond their lines of coalescence. Behind the tenth lobe there is a slight, scarcely marked projection, which gives rise to the granulous post-branchial line. Upper orbital margin without either tooth or spine. Internal orbital angle less prominent than the front. Front with three teeth, the median tooth smaller and more depressed than the rest. Anterior legs with the wrist very granulous externally, with a large tubercle near the margin, and a strong tooth on the inner side; hand granulous above, with two parallel lines, each having three or four tubercles, which are larger than the granulations, and with five well marked granulous lines on the outer side; thumb granulous above, its extremity as well as that of the finger, black. Ambulatory legs robust and of moderate length. Seventh joint of the abdomen of the male slender and elongate. Length,  $1\frac{7}{8}$  in.; breadth,  $2\frac{3}{4}$  in. (A. M. E.).

New Zealand (Coll. Brit. Mus.); Akaroa (Homb. and Jacq.).

This species only differs in the somewhat more acute tubercles of the hands and teeth of the antero-lateral margins, from the *C. plebeius*, Poeppig, which is found on the coast of Chili.

## HETEROZIUS.

*Heterozius*, Alph. M. Edw. Ann. Soc. Ent. France (ser. 4) vii, p. 275, (1867).

Carapace rounded in front, very greatly depressed. Front narrow and prominent. Basal joint of the external antennæ not reaching the front. Third joint of the external maxillipeds very small and narrowed anteriorly. Endostome not canaliculated. Abdomen five-jointed.

14. *Heterozius rotundifrons*.

*Heterozius rotundifrons*, A. M. Edw. Ann. Soc. Ent. France (ser. 4) vii, p. 275, (1867).

Carapace flattened, entirely smooth, except for a groove, which defines the hepatic region behind, and extends in a straight line at a little distance from the margin towards the cardiac region. Latero-anterior margins very long, so that a straight line joining their posterior angles would divide the carapace into two unequal parts, of which the anterior would be much the larger. They form a regular curve with the front, are entire, and have two small fissures behind, of which the anterior is continuous with the sub-hepatic groove, and obscurely defines two lobes. Front narrow, prominent, rounded in the middle, where it is divided by a narrow fissure of little depth. Basal joint of the external antennæ so small that the latter are scarcely separated from the fossettes of the inner antennæ. Inferior surface of the body and legs covered with a very short down. Anterior legs subequal. Hand smooth, and rounded above, and presenting within, near the articulation with the wrist, a large tubercle. Fingers long, slender, and nearly straight. (A. M. E.).

New Zealand (Coll. Brit. Mus.).

Occasionally, in male specimens, the sub-hepatic groove and the notch in the centre of the front are absent, and the hands very unequal. There is sometimes a longitudinal groove upon the outer surface of the hand, the tubercle on the inner surface varies greatly in size and shape. The specimens described by M. A. Milne Edwards are from New Caledonia.

## ACTÆA.

*Cancer*, M. Edw. (part) Hist. Nat. Crust. i, p. 372, (1834).

*Xantho*, M. Edw. (part) Hist. Nat. Crust. i, p. 387, (1834).

*Actæa*, De Haan, Faun. Japon. Crust. i, p. 18, (1833); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 182, (1852); A. M. Edw. (part) Nouv. Archiv. Mus. Hist. Nat. i, p. 259, (1865).

Carapace convex, more or less lobulate above, front not produced beyond the level of the orbits, with a median fissure. Antero-lateral margins regularly arcuate, longer than the posterolateral, crenate or lobate, rather than distinctly toothed. Basal joint of the external antennæ in contact with the lower surface of the front of the carapace, or inner supra-orbital angle. Orbits small. Third joint of the external maxillipeds with the front margin straight, entire. Anterior legs robust, fingers acute. Ambulatory legs not cristate above. Abdomen of ♂ five, of ♀ seven-jointed.

#### 15. *Actæa granulata*.

*Cancer granulatus*, Audouin, Explic. Planches in Savigny's Egypt, Crust. pl. vi, fig. 2; De Haan, Faun. Japon. Crust., p. 47, (1835).

*Cancer savignyi*, M. Edw. Hist. Nat. Crust. i, p. 378, (1834).

*Actæa pura*, Stimps. Proc. Acad. Nat. Sci. Philad. p. 32, (1858).

*Actæa granulata*, A. M. Edw. Nouv. Archiv. Mus. Hist. Nat. i, p. 275, (1865).

*Not known* 1870  
Convex, lobulate anteriorly, the regions separated by deep grooves. Carapace and legs entirely covered with small punctulate tubercles. Latero-anterior margins very obscurely divided into four lobes. Latero-posterior margins very concave. Front deeply notched in the middle line, the two median lobes rather prominent. Anterior legs short, robust. Fingers short, brown, granulous at base. Ambulatory legs robust, compressed, tarsi spinulous. Colour reddish, with lighter patches. Length  $\frac{3}{4}$  in.; breadth 1 in. (A. M. E.).

New Zealand (Coll. Brit. Mus.).

This species has a very wide geographical distribution, it has been found in the Red Sea, at Mozambique, the Mauritius, Port Jackson, Hong-Kong, the Philippine Islands, Japan, &c.

#### Sub-Family 2. CHLORODINÆ.

*Chlorodinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 149, (1852).

Anterior legs with the fingers more or less excavated at the tips.

## LEPTODIUS.

*Chlorodius*, M. Edw. (part) Hist. Nat. Crust. i, p. 399, (1834);  
Dana (part) U.S. Explor. Exped. xiii, Crust. part i, p. 204, (1852).

*Leptodius*, A. M. Edw. Ann. Sci. Nat. Zool. xiv, p. 229, (1860);  
Nouv. Archiv. Mus. Hist. Nat. ix, p. 221, (1873).

Carapace transverse, anteriorly tuberculated, with the antero-lateral margin regularly arcuate, and dentate. Front scarcely produced beyond the level of the orbits, usually divided by a median notch into two truncated lobes. Orbits small. Internal antennæ transversely plicated. External antennæ with the basal joint reaching to the front, flagellum included within the internal orbital hiatus. Third joint of the external maxillipeds with the anterior margin not notched. Anterior legs robust, arm short. Ambulatory legs not cristate or spinulose above.

16. *Leptodius nudipes*.

*Chlorodius nudipes*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 209, pl. xi, fig. 12, (1852).

*Leptodius nudipes*, A. M. Edw. Nouv. Archiv. Mus. Hist. Nat. ix, p. 225, (1873).

Carapace not shining, anteriorly neatly areolate, posteriorly nearly plane, areolets of the gastric region not divided through, areolets behind the third and fourth teeth of the antero-lateral margins separate, areolets of the cardiac region united or but faintly separate, front emarginate near antennæ, salient, antero-lateral margin 10-11 toothed, one tooth being posterior to the fifth. Feet all naked, anterior pair stout, hand and carpus unarmed, surface finely crose within, carpus armed within with a short spine. Eight posterior feet rather short, third joint not having a sharp upper edge. (D.).

New Zealand (Mus. Paris).

Its range extends to New Caledonia and the Sandwich Islands, and New Zealand, according to M. A. Milne Edwards. Dana's specimens were obtained at the Mangsi Islands.

17. *Leptodius eudorus*?

*Cancer eudorus*, Herbst, Krabben iii, pl. ii, fig. 3, (1799)?

*Chlorodius eudorus*, M. Edw. Hist. Nat. Crust. i, p. 402, (1834);  
White Diffenb. New Zealand ii, p. 265, (1843).

Distinguished from *C. sanguineus* (according to M. Edwards), only by the more numerous and elevated tubercles of the carapace, and the form of the frontal lobes, which are narrow and deeply notched, so as to present the appearance of two small rounded teeth.

New Zealand (Coll. Mus. Paris).

I have never seen specimens of this species, which, according to Milne Edwards' description, is easily distinguishable by the form of the frontal lobes, from its congeners.

#### DAIRA.

*Daira*, De Haan, Faun. Japon. Crust. p. 18, (1833).

*Lagostoma*, M. Edw. Hist. Nat. Crust. i, p. 386, (1834).

Carapace transverse, convex, antero-lateral margin longer than the postero-lateral, crenate. Front not produced beyond the orbits. Internal antennæ transversely plicate. External antennæ with the basal joint reaching to the lower margin of the front, the flagellum included within the internal orbital hiatus. Palate with a ridge imperfectly defining the margin of the efferent channel. External maxillipeds with the third joint deeply notched in front. Ambulatory legs compressed, but not cristate above.

#### 18. *Daira perlata*.

*Cancer perlatus*, Herbst, i, p. 265, pl. xxi, fig. 122, (1796).

*Cancer variolosus*, Fabr. Ent. Syst. Suppl. p. 338, (1798).

*Lagostoma perlata*, M. Edw. Hist. Nat. Crust. i, p. 387, (1834).

*Cancer (Daira), perlata*, De Haan, Faun. Jap. p. 18, (1833).

*Daira variolosa*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 202, pl. x, fig. 4, (1852).

*Daira perlata*, Heller, Voy. Novara, Crust. p. 18, (1865).

Carapace oval, very convex, and covered with large pea-shaped tubercles, median lobes of the front small, prominent, and rounded; latero-anterior margins of the carapace with a dozen tooth-like tubercles, and produced to a level with the posterior part of the cardiac region. Anterior legs covered with tubercles, the following with rather long hairs above, and armed with spines, except upon the tarsus. Inferior surface of the body smooth. Colour brownish. Length  $1\frac{1}{2}$  in.; breadth 2 in. (M. E.).

Auckland (Heller).

The range of this species extends from Japan and the Philippine Islands, throughout the Australian Seas, to Mauritius on the one hand, and the Samoa Islands on the other.

### Family 2. ERIPHIIDÆ.

*Eriphiidae*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 228, (1852).

Carapace transverse, with the antero-lateral margins arcuate, or nearly subquadrate. Margin of the efferent channel to the branchiæ well defined by a longitudinal ridge on each side of the prelabial plate, or palate. Ambulatory legs all gressorial, with styliform tarsi.

### PILUMNUS.

*Pilumnus*, Leach, Linn. Trans. xi, p. 321, (1815); M. Edw. Hist. Nat. Crust. i, p. 415, (1834); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 229, (1852).

Carapace thick, convex, slightly broader than long, front inclined Antero-lateral margin shorter than the postero-lateral, dentate or spinous-toothed. Orbits often denticulated. Basal joint of the external antennæ short, not quite reaching to the front, flagellum entering the inner orbital hiatus. Anterior legs robust, usually spinose or denticulated. Ambulatory legs of moderate length, not cristate. Abdomen of ♂ and ♀ seven-jointed.

The species are all of small size, and more or less completely clothed with long hairs.

#### 19. *Pilumnus vespertilio*.

*Cancer vespertilio*, Fabr., Ent. Syst. ii, p. 463, (1793).

*Pilumnus vespertilio*, M. Edw. Hist. Nat. Crust. i, p. 418, (1834).

Carapace entirely covered with long brown (or cinereous) hairs. Latero-anterior margins with three large spines placed in the same line, and a fourth smaller spine upon the pterygostomial region. Upper and external surface of the hands granulated, lower portion of the hand smooth. Third joint of the external maxillipeds deeply notched at its antero-internal angle. Length  $\frac{7}{8}$  in.; breadth  $1\frac{1}{2}$  in. (M. E.).

New Zealand (Coll. Brit. Mus.).

In the specimens in the Collection of the British Museum, the antero-internal angle of the external maxillipeds is scarcely notched.

This species is found on the coasts of Australia, at Borneo, the Philippines, Japan, and the Fiji Islands; and is subject to considerable variation in the density and colour of the hair of the carapace.

#### 20. *Pilumnus tomentosus*.

*Pilumnus tomentosus*, Latr. Encycl. Meth. x, p. 125, (1825); M. Edw. Hist. Nat. Crust. i, p. 418, (1834).

Body of a blackish-brown colour, covered with a very short down. Lateral margins with three small conical tubercular teeth, and several small tubercles on the sides of the carapace like those of the margins. Front divided into two rounded crenulated lobes. Upper orbital margin with three raised granules. Right hand large, strongly granulated externally; fingers blackish, striated, with white tips. Length  $\frac{3}{4}$  in.; breadth 1 in. (Latr.).

New Zealand (Coll. Brit. Mus.).

This species, according to M. Edwards, differs from the preceding only in its short, close hair, and in the granulations extending over the whole of the lower part of the hand. A series of specimens in the British Museum shows that either the right or left hand may be the larger. It is also found in Bass' Straits and at Port Jackson.

#### PILUMNOPEUS.

*Pilumnopeus*, A. M. Edw. Ann. Soc. Entom. France (ser. 4) vii, p. 277, (1867); Nouv. Archiv. Mus. Hist. Nat. iv, p. 82, (1868).

Resembles *Pilumnus*, but the carapace and legs are without the long hairs so characteristic of that genus, the teeth of the antero-lateral margin are broad (never spinous), and there is an external orbital hiatus, as in *Panopeus*.

#### 21. *Pilumnopeus serratifrons*.

*Ozius?* *serratifrons*, Kinahan, Journ. Roy. Dublin Soc. i, p. 113, pl. iv, fig. 1, (1856).

Carapace slightly depressed, its anterior portions with tuberculated curved hairy ridges. Front produced, lamellar, directed downwards, two lobed, a small triangular tooth at base of each lobe, the lobes finely

serrated. Antero-lateral margin with three flattened teeth, (the external angle of the orbit excluded), the posterior triangular, anterior rounded and lamellar. Anterior legs strong, often unequal, finely granulated, especially on upper edges, hand compressed, swollen in centre, curved, fingers moderate, curved, rounded, mobile one with a longitudinal depression on its exterior edge, wrist finely granulated, a strong spine on its superior external angle. Orbits oval. superior border finely tuberculated, with two short fissures, a deep narrow external fissure, orbital hiatus broad, inferior border two lobed, the inner lobe produced, tooth-like. Colour yellowish brown. Length  $\frac{3}{4}$  in.; breadth  $1\frac{1}{8}$  in. (K.).

New Zealand (Coll. Brit. Mus.); Australia, Port Philip (Coll. Brit. Mus.).

*Pilumnopus crassinanus* of A. M. Edwards, is possibly identical with this species, but it is too shortly described for me to be certain on this point.

#### OZIUS.

*Ozius*, M. Edw. Hist. Nat. Crust. i, p. 404, (1834).

Carapace transverse, flattened. Antero-lateral margin usually dentate and shorter than the postero-lateral. Palate with a strong ridge on either side, defining the margin of the efferent channel. External antennæ with the basal joint completely reaching the front, the flagellum entering the internal orbital hiatus. Anterior legs with the fingers not spoon-excavate at the extremity; ambulatory legs of normal shape, not cristate above.

#### 22. *Ozius truncatus*.

*Ozius truncatus*, M. Edw. Hist. Nat. Crust. i, p. 406, pl. xvi, fig. 11, (1834); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 230, pl. xiii, fig. 4, (1852).

*Xantho deplanatus*, White, Juke's Voy. H.M.S. Fly, p. 337, (1847).

Carapace not very wide, nearly flat above, and slightly tuberculated in front. Front very wide, nearly straight, slightly sinuous, without a transverse groove in front; orbits without distinct fissures; latero-anterior margins short, divided into four or five wide obtuse lobes. Pterygostomial regions granulous, and third joint of the external maxillipeds with the anterior margins notched. Basal joint of the external antennæ very oblique, flagellum rudimentary, the internal

Dana's Phil. in 2

orbital hiatus very narrow. Colour, brownish. Length  $1\frac{3}{8}$  in.; breadth 2 in. (M. E.).

New Zealand (Coll. Brit. Mus.); Bay of Islands (Dana); Australia (Coll. Brit. Mus.).

In the specimens in the Collection of the British Museum which are named *deplanatus* by White, and which I refer to this species, the antero-lateral margins are granulous, the anterior tooth very broad, and scarcely distinct; the second, obtuse; the third and fourth more acute, but still very broad. If distinct from *O. truncatus*, this species must be designated by White's name of *deplanatus*. There are specimens in the British Museum Collection from Australia and Lord Howe Island.

#### EUDORA.

*Eudora*, De Haan, Faun. Japon. Crust. p. 22, (1833).

*Ruppellia*, M. Edw. Hist. Nat. Crust. i, p. 420, (1834).

Carapace nearly smooth, and rather convex, with the antero-lateral margins arcuate, regularly dentate, shorter than the postero-lateral. Anterior legs with the fingers not spoon-excavate at the extremity. External antennæ with the flagellum completely excluded, but not widely separated from the orbital region. Palate with a ridge on either side, defining the margin of the efferent channel.

#### 23. *Eudora tetraodon*.

*Eudora tetraodon*, Heller, Voy. Novara, Crust. p. 14, pl. ii, fig. 3, (1865).

Carapace convex, distinctly areolated, with a deep cervical groove, the gastric region divided in front into two epigastric and protogastric lobes, but entire behind. Front prominent, quadrilobate; with the median lobes broad, round, the outer lobes, smaller. Antero-lateral margin four-toothed, the teeth conical, acute; the postero-lateral margin elongate, convex, smooth. Anterior legs equal thick, with the wrist bidentate within, the hand slightly compressed, with the external surface smooth, and with a longitudinal groove near the upper margin. Ambulatory legs shorter, and long-hirsute at the upper margin, the two last joints also pubescent below. Length  $1\frac{3}{4}$  in.; breadth  $2\frac{1}{4}$  in. (H.).

Auckland (Heller).

I have not seen specimens of this species.

## RUPPELLIOIDES.

*Ruppellioides*, Alph. M. Edw. Ann. Soc. Entom. France (ser. 4) vii, p. 279, (1867).

Resembles *Ruppellia*, but the sub-orbital lobe not united with the front of the carapace so as to exclude the external antennæ from the orbit. Basal joint of the external antennæ greatly developed, and produced between the sub-orbital lobe and the front, and bearing at its extremity the flagellum, which is thus included within the orbit.

24. *Ruppellioides convexus*.

*Ruppellioides convexus*, Alph. M. Edw. Ann. Soc. Entom. France (ser. 4) vii, p. 279, (1867).

Carapace wide, and very convex, strongly lobate in front, the lobes covered with granules. Antero-lateral margins divided into five but slightly prominent teeth, and directed forwards. Front biemarginate, consisting of four rounded teeth. Anterior legs strongly granulous. (A. M. E.).

New Zealand (Coll. Mus. Paris).

A specimen of unknown locality is in the collection of the British Museum, which agrees with the description of this species.

*doubtful h. 2*

## Family 3. PORTUNIDÆ.

*Portuniens*, M. Edw. (part) Hist. Nat. Crust. i, p. 432, (1834); A. M. Edw. (part) Archiv. Mus. Hist. Nat. x, p. 309, (1861).

*Portunidæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 145, (1852).

Carapace depressed, usually more or less hexagonal in shape, never very convex. Antero-lateral margins with well defined acute teeth. Inner ramus of the first (innermost) pair of maxillipeds with an internal lobe. Margin of the efferent branchial channel usually defined by a longitudinal ridge on each side of the prelabial plate or palate. Fifth pair of ambulatory legs natatorial, their terminal joint oval, expanded and lamellate.

## NEPTUNUS.

*Portunus*, Fabr. (part) Ent. Syst. Suppl. p. 365, (1798).

*Lupa*, Leach (part) Edinb. Encycl. vii, p. 390, (1814); M. Edw. (part) Hist. Nat. Crust. i, p. 445, (1834).

*Neptunus*, *Pontus*, De Haan, Faun. Japon. Crust. p. 7, (1833).

*Lupa*, Dana, (part) U.S. Explor. Exped. xiii, Crust. part i, p. 268, (1852).

*Neptunus*, A. M. Edw. (part) Archiv. Mus. Hist. Nat. x, p. 314, (1861).

Carapace very wide, with transverse granulous lines. Latero-anterior margins with nine or more teeth (including the external orbital angle), the last tooth much the longest. Front wide, and divided into five or six teeth. Upper orbital margin with two fissures. Basal joint of the external antennæ large, flagellum placed in the internal orbital hiatus. External maxillipeds short, and not produced over the epistome. Anterior legs usually long, arm with acute spines upon the anterior margin; hand nearly prismatic, with longitudinal ridges, giving rise above to spiniform tubercles. Thigh of the swimming legs with the lower margin usually destitute of spines. Median suture of the sternum extending over the three last segments of the body.

## 25. *Neptunus sayi*.

*Lupa pelagica*, Say, Journ. Acad. Nat. Sci. Philad. i, p. 97, (1817).

*Lupa sayi*, Gibbes, Carcin. Coll. U.S. p. 178, (1850); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 273, pl. xvi, fig. 8, (1852).

*Neptunus sayi*, Alph. M. Edw. Archiv. Mus. Hist. Nat. p. 317, pl. xxix, fig. 2, (1861).

Carapace regularly convex, finely granulated, with the epibranchial lines scarcely marked. Front divided into six nearly equal teeth, of which the two median are placed close to one another. Arm long and slender, with four spines upon its anterior and none at the extremity of the posterior margin. Wrist with two spines, one at the antero-internal angle, and one on the outer surface. Hand with smooth longitudinal ridges, and two spines above, one on the inner margin above the base of the mobile finger, and one on the outer margin at the base of the palm. Ambulatory legs rather long. Abdomen of ♂ nearly triangular. Length usually about 1 in.; breadth 2 in. (A. M. E.).

New Zealand (Coll. Brit. Mus.).

To this species I refer a single specimen (female), from New Zealand, in the Collection of the British Museum, which agrees, completely, in all external characteristics with the specimens of *N. sayi*, from different parts on the American Coast. This species as at present

characterized has a most extended geographical range, being found on the Atlantic Coasts of the United States, at Brazil, and the Falkland Islands; and there is even a specimen (female) from Ceylon in the British Museum Collection. It is probable that when the specimens from these different localities are carefully compared, specific differences will be found to exist. Lieutenant Ordway, in a monograph of the American species of the genus *Callinectes*, closely allied to *Neptunus*, in the Boston Journal of Natural History, vii, 1859-63, has pointed out modifications of the form of the male abdomen and intro-mittent appendages, in the different species, which had not previously been observed.

## 26. *Neptunus pelagicus*.\*

*Cancer pelagicus*, Linn. Syst. Nat. (ed. xii) p. 1042, (1766).

*Lupa pelagica*, M. Edw. Hist. Nat. Crust. i, p. 450, (1834).

*Neptunus pelagicus*, A. M. Edw. (part) Archiv. Mus. Hist. Nat. x, p. 320, (1861); Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 221, (1876).

Carapace wide, with very coarse granulations, without tubercles upon the gastric and cardiac regions. Teeth of the lateral margins short, wide at the base, ninth epibranchial spine long, acute. Front six toothed, the median teeth smaller, but never obsolete. Orbits divided above into three lobes, by two deep fissures, the middle lobe with a small spine at its external angle. Anterior legs very long and slender. Anterior margin of the arm with three, four, or even five spines, there is also a single spine at the extremity of the posterior margin. Wrist with an acute spine upon its inner, and a similar smaller spine upon its outer surface. Hand usually very long and slender, with three spines, two placed above the base of the mobile finger, and one

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\* Under the name of *N. pelagicus* two very distinct but nearly allied species appear to have been confounded. The second species, which I have designated *N. trituberculatus*, Ann. Mag. Nat. Hist. loc. cit. is more convex, less coarsely granulated, with the epibranchial lines less strongly marked than in *N. pelagicus*. There are three low tubercles placed in a triangle in the central portion of the carapace, one anterior, upon the gastric, and two posterior upon the cardiac region. The front is four toothed, the median teeth being obsolete. The middle lobe of the upper orbital margin is commonly without a spiniform prominence. The arms are shorter and more robust than in *N. pelagicus*. The colour is of a dull pink or slate, with numerous regular spots of pale yellow upon the carapace and legs.

This species inhabits the coasts of China and Japan, it has been figured by De Haan in the "Fauna Japonica" pl. ix, x, as *N. pelagicus*, and attains to quite as large a size as that species.

over the articulation of the hand with the wrist. Abdomen of male somewhat triangular, with the sides concave. Colour, (in preserved specimens), bluish or pink, with irregular spots, blotches, and bands of pale yellow.

New Zealand (Coll. Brit. Mus.).

This species has often a length of 4 and a breadth of 9 in., and is sometimes larger, and is very widely distributed throughout the Red Sea and Indian Ocean, amongst the East Indian Islands, on the coasts of the Philippines, China and Japan, the Eastern coast of Australia, &c.

## 27. *Neptunus sanguinolentus*.

*Cancer sanguinolentus*, Herbst, Krabben u. Krebse i, p. 161, pl. viii, fig. 56-57, (1796).

*Portunus sanguinolentus*, Fabr. Ent. Syst. Suppl. p. 367, (1798).

*Lupa sanguinolenta*, M. Edw. Hist. Nat. Crust. p. 451, (1834); Règne animal de Cuvier Atlas, pl. x, fig. 1.

*Neptunus sanguinolentus*, Alph. M. Edw. Archiv. Mus. Hist. Nat. x, p. 319, (1861).

Carapace slightly convex, finely granulous, with moderately prominent lines upon the gastric regions. Latero-anterior margins very long and oblique, and lateral spine very long and acute. Front with six teeth, the two middle very small, the next long and acute, the outermost short and obtuse. Orbital margin straight, with two small fissures. Anterior legs long and slender, arm with three or four spines upon the anterior margin, but without a spine at the extremity of the posterior margin. Wrist with a spine on its outer surface, and a larger one at its antero-internal angle. Hands with two spines above, one on the inner margin above the base of the mobile finger, and another on the outer margin above the articulation with the wrist. Ambulatory legs flattened, and of moderate length. Colour reddish yellow, with three large circular spots of bright red with a pale margin on the posterior half of the carapace, and others upon the legs. Length  $2\frac{1}{4}$  in.; breadth  $5\frac{1}{2}$  in. (A. M. E.).

Auckland (Heller).

This species occurs throughout the Indian Ocean, and East Indian Archipelago, also on the Australian Coast.

## SCYLLA.

*Portunus*, (part) Fabr. Ent. Syst. Suppl. p. 363, (1798).

*Lupa*, (part) Leach, Edinb. Encycl. vii, p. 390, (1814); Trans. Linn. Soc. xi, p. 318, (1815); M. Edw. Hist. Nat. Crust. i, p. 448, (1834).

*Scylla*, De Haan, Faun. Japon. Crust. p. 11, (1833); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 270, (1852); Alph. M. Edw. Archiv. Mus. Hist. Nat. x, p. 347, (1861).

Carapace very wide, and rather convex. Latero-anterior margins with nine teeth, the ninth similar to the preceding. Basal joint of the external antennæ large, flagellum inserted in the internal orbital hiatus. Epistome well developed, anterior margin of the buccal cavity separated by a transverse groove from the posterior margin of the antennary region. Median suture of the sternum extending over the three last segments of the body. Anterior legs short and robust. Hand somewhat swollen, without longitudinal ridges.

## 28. *Scylla serrata*.

*Cancer serratus*, Forskal, Desc. Animal. p. 90, (1775).

*Cancer olivaceus*, Herbst, Krabben u. Krebse ii, p. 157, pl. xxxviii, fig. 3, (1796).

*Portunus tranquebaricus*, Fabr. Ent. Syst. Suppl. p. 366, (1798).

*Lupa tranquebarica*, M. Edw. Hist. Nat. Crust. i, p. 448, (1834).

*Lupa lobifrons*, M. Edw. Hist. Nat. Crust. i, p. 453, (1834).

*Scylla serrata*, De Haan, Faun. Japon. Crust. p. 44, (1835).

*Scylla tranquebarica*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 270, (1852).

*Scylla serrata*, Alph. M. Edw. Ann. Sci. Nat. xiv. (ser. 4) p. 252, pl. i, ii, (1860); Archiv. Mus. Hist. Nat. x, p. 349, (1861).

Carapace convex, nearly smooth, very finely granulated; the lines on the gastric and branchial regions distinct. Latero-anterior margins very long. Front with six large flat teeth. Anterior legs very robust, arm trigonous, with three spines upon the anterior, and two upon the posterior margin. Wrist with an acute spine at its antero-internal angle, and two small spines upon its external surface. Hand very large, with three spines above, two above the base of the mobile finger, and over the articulation with the wrist. Colour, olive brown. Length nearly 4 in.; breadth  $6\frac{1}{4}$  in. (A. M. E.).

Auckland (Heller).

This species varies greatly in the form of the frontal lobes, and of the spines on the anterior legs. It occurs in the Red Sea, at the

Mauritius, throughout the Indian Ocean, on the Coasts of China, Japan, and Australia, and at the Fiji Islands.

#### THALAMITA.

*Thalamita*, Latr. (part) Règne Animal de Cuvier (ed. 2) iv, p. 33, (1829); M. Edw. (part) Hist. Nat. Crust. i, p. 457, (1834); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 280, (1852); A. M. Edw. Archiv. Mus. Hist. Nat. x, p. 354, (1861).

Carapace almost quadrilateral, and very wide. Frontal margin very large, occupying with the orbits nearly the whole width of the carapace. Latero-anterior margins forming nearly a right angle with the front, with only four or five teeth. Basal joint of the external antennæ very large, flagellum excluded from the orbit. Median suture of the sternum extending over the three last segments. Anterior legs armed with spines. Fifth pair of legs with a spine upon the inferior margin of the thigh.

#### 29. *Thalamita sima*.

*Thalamita sima*, M. Edw. Hist. Nat. Crust. i, p. 460, (1834); A. M. Edw. Archiv. Mus. Hist. Nat. x, p. 359, (1861).

*Thalamita arcuatus*, De Haan, Faun. Japon. Crust. p. 43, pl. ii, fig. 2, and pl. xiii, fig. 1, (1835).

Carapace clothed with short hairs, and with prominent naked transverse lines. Latero-anterior margins five-toothed, the fifth tooth slightly longer than the rest. Front four-toothed, the two median teeth very wide, and separated by a very narrow median fissure, the two lateral much smaller, with the front margin arcuate. Basal joint of the external antennæ with a smooth, entire ridge. Anterior legs robust; arm with transverse squamiform lines, its anterior margin with two or three spines. Wrist with three spines, the inner very long and acute. Hand with five spines above, three on the outer and two on the inner margin, outer surface longitudinally costate. Penultimate joint of the natatory legs smooth, not denticulated below. Length about 1 in.; breadth nearly  $1\frac{3}{4}$  in. (A. M. E.).

New Zealand (Coll. Brit. Mus.).

This is a common and widely distributed species; it occurs in the Red Sea, Indian Ocean, and on the Chinese, Japanese and Australian coasts.

30. *Thalamita danæ*.

*Thalamita crenata*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 282, pl. xvii, fig. 7, (1852), nec. Latr.

*Thalamita danæ*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 37, (1858); Alph. M. Edw. Archiv. Mus. Hist. Nat. x, p. 366, pl. xxx, fig. 1, (1861).

Carapace very much flattened, with strongly marked transverse lines. Latero-anterior margins with five acute teeth, the fourth and fifth rather smaller than the rest. Front divided into eight flat, truncated lobes, of which the external are widest and arcuate. Basal joint of the external antennæ with a granulated ridge. Anterior legs rather slender, arm with usually three spines upon its front margin. Wrist slightly granulous, with a large spine at its antero-internal angle, and two or three spinules upon its outer surface. Hand with five spines placed alternately on the inner and outer margin of its upper surface, and externally marked with prominent granulated longitudinal ridges. Colour, reddish yellow. Length  $1\frac{1}{2}$  in.; breadth  $2\frac{3}{4}$  in. (A. M. E.).

not h.?

Auckland (Heller).

Also found on the coasts of China and Japan, and at Samarang.

## NECTOCARCINUS.

*Portunus*, M. Edw. (part) Hist. Nat. Crust. i, p. 445, (1834).

*Nectocarcinus*, Alph. M. Edw. Ann. Sci. Nat. (ser. 4) xiv, p. 220, (1860); Archiv. Mus. Hist. Nat. x, p. 404, (1861).

Carapace thick, scarcely convex. Latero-anterior margins four toothed, regions well marked. Front prominent, entire or lobed. Orbits small. Basal joint of the external antennæ straight, narrow, and uniting with the front. Basal joint of the internal antennæ very large. External maxillipeds elongate, with the third joint notched on the inner side. Anterior legs short and robust. Sternal plate with a median suture which extends over only the last two joints. Abdomen of the male four-jointed, the third, fourth, and fifth joints coalescent, and forming a single mass.

This genus is the representative in Southern Seas of *Portunus* of the northern hemisphere, from which it is at once distinguished by having only four teeth on the antero-lateral margins of the carapace.

31. *Nectocarcinus integrifrons*.

*Portunus integrifrons*, Latr. Encycl. Méth. x, p. 192, (1825); M. Edw. Hist. Nat. Crust. i, p. 445, (1834).

*Nectocarcinus melanodactylus*, Alph. M. Edw. Ann. Sci. Nat. (ser. 4) xiv, p. 220, (1860).

*Nectocarcinus integrifrons*, Alph. M. Edw. Ann. Sci. Nat. (ser. 4) xiv, p. 220, (1860); Archiv. Mus. Hist. Nat. x, p. 406, pl. xxxviii, (1861); Miers, Zool. Erebus and Terror, Crust. p. 2, pl. i, fig. 3, young, (1874).

Carapace but slightly convex, and granulous. Granules placed in little groups. Regions distinctly defined. Latero-anterior margins divided into four teeth, of which the first is the widest, and the last small and acute. Front wide, arched, and entire. Orbital margin with two linear fissures. Sub-orbital angle scarcely prominent. Anterior legs covered with squamous lines, and closely-placed granules. Wrist with an acute spine at its anterior inner angle. Hand not carinate, with a small spine above the base of the mobile finger. Fingers strongly carinate, the margins sharp, their extremities and keels black. The following legs compressed, and with the last joint styliform. Swimming legs with the thigh similar to that of the other legs, penultimate joint wide, last joint flat and lanceolate. Colour, reddish yellow. Length  $1\frac{1}{8}$  in.; breadth  $1\frac{1}{3}$  in. (A. M. E.).

New Zealand (Coll. Mus. Paris; Brit.).

Also found in Australia and Van Diemen's Land.

32. *Nectocarcinus antarcticus*.

*Portunus antarcticus*, Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 51, pl. v, fig. 1, (1853).

*Nectocarcinus antarcticus*, Alph. M. Edw. Archiv. Mus. Hist. Nat. x, p. 407, (1861).

*Nectocarcinus antarcticus*, Miers, Zool. Erebus and Terror, Crust. p. 2, pl. i, fig. 2, (1874).

Carapace very slightly convex, ridged, and marked with granulous lines. Latero-anterior margins with the teeth very short, the first the widest, the fourth small and acute. Front narrow, prominent, divided into six teeth, the two median short and acute, the next wide, triangular, and longer, the outermost very short and obtuse. Orbital margins with a linear fissure. Sub-orbital angle short and acute. Anterior legs short and granulous. Arm with a short spine

in the middle of the posterior margin. Wrist with two spines, one on the inner, the other on the outer surface. Hand slightly carinate, with a short spine above the base of the mobile finger. Mobile finger with four or five small acute spines on its upper margin. Following legs slender, somewhat elongate. Fifth pair of legs with the thigh short and wide, the penultimate joint flattened, the last joint oval and lamellate. Colour, ferruginous-brown. Length  $1\frac{2}{3}$  in.; breadth  $2\frac{1}{3}$  in. (A. M. E.).

Auckland Islands (Coll. Mus. Paris); New Zealand (Coll. Brit. Mus.).

#### Family IV. PLATYONYCHIDÆ.

*Portuniens*, M. Edw. (part) Hist. Nat. Crust. i, p. 432, (1834); A. M. Edw. Archiv. Mus. Hist. Nat. x, p. 309, (1861).

*Platyonychidæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 290, (1852).

Carapace rarely hexagonal, more or less rounded on the sides, often longer than broad. Teeth of the antero-lateral margins well defined, acute. Inner ramus of the first pair of maxillipeds simple. Abdomen narrow at base. Margin of the efferent branchial channel not defined by a longitudinal ridge on each side of the prelabial plate or palate. Fifth pair of legs natatorial, their terminal joint oval, expanded, and lamellate.

#### PLATYONYCHUS.

*Platyonychus*, Latr. (part) Encycl. Méth. x, p. 151, (1825); M. Edw. (part) Hist. Nat. Crust. i, p. 435, (1834); A. M. Edw. (part) Archiv. Mus. Hist. Nat. x, p. 410, (1861); Bell, Brit. Crust. p. 83, (1853); Miers, Zool. Erebus and Terror, Crust. p. 2, (1874).

Carapace broader than long, smooth above, antero-lateral margins regularly five-toothed. Front, narrow, dentate, and not produced beyond the level of the external orbital angle. Orbits wide, with a large internal hiatus. Fossettes of the inner antennæ small, and imperfectly defined. Basal joint of the external antennæ small, and not occupying the whole of the inner orbital hiatus. External maxillipeds very large. Anterior legs large, the hands long, costate externally. Next three pairs of legs with the tarsi lanceolate, compressed. Posterior legs with the last joint oval, broad, rounded at the extremity.

The genus as thus characterized, excludes the species referred to it by M. A. Milne Edwards, having a carapace not broader than long, small hands, and an elongated acute lanceolate terminal joint to the fifth pair of legs, for which Dr. Leach's prior name of *Portunus* is retained.

### 33. *Platyonychus bipustulatus*.

*Platyonychus bipustulatus*, M. Edw. Hist. Nat. Crust. i, p. 437, pl. xvii, fig. 7-10, (1834); Alph. M. Edw. Archiv. Mus. Hist. Nat. x, p. 413, (1861); Miers, Zool. Erebus and Terror, Crust. p. 2, pl. i, fig. 1, (1874).

*Anisopus punctatus*, De Haan, Faun. Japon. Crust. p. 44, pl. ii, fig. 1, (1835).

*Platyonychus purpureus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 291, pl. xviii, fig. 3, (1852).

*Portunus catharus*, White, Dieffenb. New Zeal. ii, p. 265, (1843).

Carapace nearly circular, very finely granulous. Regions scarcely defined. Latero-anterior margins regularly arched and divided into five teeth; which are wide, and directed forwards. Front but slightly prominent, with four small teeth; the middle ones more prominent than the lateral. Orbital margin divided into three lobes by two fissures, the median lobe spinous. Anterior legs of moderate length. Arm smooth. Wrist with a spine at its antero-internal angle. Hand strongly carinate, the carinæ granulous, with a small spine above the base of the mobile finger, on the inner side. Legs of the second pair very long and robust, especially in the male. Above the articulation the margin of the thigh is raised, and forms a crest. Tarsus falciform, and with the upper margin deeply channelled. Legs of the third and fourth pairs of ordinary shape. Swimming legs wide and thick, tarsus wide and rounded. Abdomen of male with seven distinct joints. Colour yellowish, with very close purple punctulations on the hinder part of the branchial and hepatic regions. Length  $2\frac{1}{4}$  in.; breadth  $2\frac{1}{2}$  in. (A. M. E.).

New Zealand (Coll. Brit. Mus.).

This species is found in the Australian, Indian, and Japanese Seas, and also on the Coast of Chili.

### Sub-Tribe III. CATOMETOPA.

*Quadrilatera*, Latr. (part) Fam. Nat. p. 269, (1825).

*Catometopes*, M. Edw. Hist. Nat. Crust. i, p. 264, (1834).

*Grapsoidea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 67, (1852).

Carapace broad in front, often subquadrate, sometimes subglobose, transverse or arcuate anteriorly, never rostrate. Branchiæ usually fewer than nine in number. Epistome very short, often almost linear. Efferent channel as in the *Oxyrhyncha*. Fourth joint of the external maxillipeds inserted at the summit, or at the antero-external angle of the third joint. Male genital appendages either inserted in the sternum itself, or in the basal joints of the last pair of legs, thence passing through a channel in the sternum beneath the abdomen.

#### Family I. MACROPTHALMIDÆ.

*Macroptalmide*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 306, (1852).

Carapace nearly always transverse, broadest in front, with the anterior angles acute, the sides not arcuate. Eyes not shorter than  $\frac{1}{3}$  the width of the carapace. Internal antennæ transverse, or longitudinal. Fourth joint of the external maxillipeds articulated with the third at the middle of its front margin, or at its antero-external angle. Third joint never marked with an oblique piliferous crest. Second joint of the abdomen in the male narrower than the adjacent part of the sternum.

#### Sub-Family I. MACROPTHALMINÆ.

*Gonoplaciens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 56, (1837).

*Macroptalminæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 312, (1852).

Carapace usually depressed. Internal antennæ transverse, placed beneath the front. External antennæ applied to the base of the front.

#### HEMIPLAX.

*Hemiplax*, Heller. Voy. Novara, Crust. p. 40, (1865).

Carapace nearly flat, front filling nearly one-third of the breadth of the carapace, sides nearly straight, toothed. External maxillipeds gaping, third joint shorter than the second, narrowed at the base, with the surface obtusely keeled, not bearded. Anterior legs subequal, shorter than the following.

34. *Hemiplax hirtipes*.

*Hemiplax hirtipes*, Heller, Voy. Novara, Crust. p. 40, pl. iv, fig. 3, (1865).

Carapace nearly flat above, with the regions but little conspicuous, smooth. Front sloping, sinuated in the middle. Antero-lateral margin tridentate, the anterior or extraorbital tooth strong, the two following smaller, acute. Anterior legs of the male of moderate size, the hand oblong, compressed, smooth. Ambulatory legs of the second and fifth pairs short, those of the third and fourth pairs elongated, with the joints compressed, pilose on the upper margin. Length,  $\frac{5}{12}$  in.; breadth  $\frac{7}{12}$  in. (H.).

Auckland (Heller): New Zealand (Coll. Brit. Mus.).

## Sub-Family II. OCYPODINÆ.

*Ocypodius*, M. Edw. Hist. Nat. Crust. ii, p. 39, (1837).

*Ocypodina*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 312, (1852).

Carapace very convex anteriorly. Front narrow. Internal antennæ longitudinally plicate. External antennæ placed at a short distance from the front. Fourth joint of the external maxillipeds exposed, third shorter than the second.

## HELOECIUS.

*Gelasimus*, M. Edw. (part) Hist. Nat. Crust. ii, p. 49, (1837).

*Heleocius*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 319, (1852).

Internal antennæ longitudinal, inserted near the front on each side, external somewhat remote from the front. Third joint of the external maxillipeds shorter than the second. Anterior legs of the male sub-equal. Second and third joints of the external maxillipeds distinctly marked with a nearly longitudinal linear furrow. Second joint of the abdomen in the male scarcely narrower than the sternum.

Several species of this genus, which is at once distinguished from *Gelasimus* by its equal hands, have been described from Australia, differing in the proportions of the carapace and length of the anterior legs. characters which are perhaps not of specific importance.

35. *Heloecius cordiformis*.

*Gelasimus cordiformis*, M. Edw. Hist. Nat. Crust. ii, p. 53, (1837).

*Heloecius cordiformis*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 320, pl. xix, fig. 6, (1852).

Carapace convex, broad in front and narrowed posteriorly. Front slightly narrowed below. Lower orbital margin ceasing to be distinct before reaching the level of the lower margin of the external margin of the buccal cavity. Hand smooth, and as long as the carapace is broad, palm swollen and much longer than high, fingers shorter than the palm, and spoon-excavate. Ambulatory legs smooth. Length  $\frac{3}{4}$  in.; breadth  $\frac{1}{2}$  in. (M. E.)

New Zealand (Coll. Brit. Mus.).

The length of the hands varies with the age of the specimens. This species is found on the coasts of Australia and Tasmania.

## Family II. GRAPSIDÆ.

*Grapsoidiens*, M. Edw. Hist. Nat. Crust. ii, p. 68, (1837).

*Grapsidæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 308, (1852).

Carapace sub-quadrate, usually depressed, with the sides straight or arcuate. Front usually broad. Eyes not equalling in length one-third the width of the carapace. Internal antennæ transversely plicate. Fourth joint of the external maxillipeds articulated with the third joint at its summit, or at its antero-external angle. Second joint of the abdomen of the male nearly equalling in width the adjoining part of the sternum.

## Sub-Family I. GRAPSINÆ.

*Grapsinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 331, (1852).

Internal antennæ concealed by the front. Third joint of the external maxillipeds not crossed by an oblique piliferous crest. (Body usually depressed).

## GRAPSUS.

*Grapsus* Lam. (part) Syst. Anim. sans Vert. p. 150, (1801); M. Edw. (part) Hist. Nat. Crust. ii, p. 83, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 332, (1852).

Carapace very much flattened, more or less transversely lineolate, with the sides arcuate, the front less than half the breadth of the body. External maxillipeds having between them, when closed, a lozenge-shaped vacant space. Ambulatory legs with the tarsi spinulose below.

### 36. *Grapsus pictus*.

*Grapsus pictus*, Latr. Hist. Nat. Crust. vi, p. 69, (1803); Encycl. pl. cv, fig. 3, (1818); M. Edw. Hist. Nat. Crust. ii, p. 86, (1837).

Carapace scarcely convex, granulated anteriorly, with transverse lines upon the branchial and hepatic regions. Front nearly vertically deflexed. Antero-lateral margins very slightly arcuate, with a tooth on each side, behind the external orbital angle. Anterior legs very small. Arm with several spines on its inferior, inner, and outer margins, towards the distal extremities, wrist granulated above, with a large laminated acute spine on its inner margin, hand slightly granulated, and with two longitudinal ridges on the outer surface. There is a small laminated spine behind the base of the mobile finger. Fingers granulated above, excavated at the tips. Third joint of the ambulatory legs, (the last pair excepted), dentate at the distal extremity.

New Zealand (Coll. Brit. Mus.).

This species is distributed throughout most of the warmer, temperate and tropical seas of the world. Specimens are in the Museum from the Cape de Verd Islands, St. Helena, South Africa, the Mauritius, California, Peru, Georgia.

It varies considerably in colour, but I cannot connect this variation with the geographical distribution of the species. Several supposed species have been described by Milne Edwards and other authors, chiefly based upon differences of colour.

### 37. *Grapsus variegatus*.

*Cancer variegatus*, Fabr. Ent. Syst. p. 450, (1793).

*Grapsus variegatus*, Latr. Hist. Nat. Crust. vi, p. 71, (1803); M. Edw. Hist. Nat. Crust. ii, p. 87, (1837).

*Grapsus personatus*, Lam. Hist. Ann. sans Vert. v, p. 249, (1818).

*Grapsus strigilatus*, White, Zool. Miscell. p. 78, (1842); Dieffenb. New Zealand ii, p. 265, (1843).

*Leptograpsus variegatus*, M. Edw. Ann. Sci. Nat. xx, p. 171, (1853).

Carapace flat, with the branchial regions marked with oblique transverse lines. Lateral margins armed with three teeth. Fron

nearly horizontal, rather concave, and not occupying half the length of the carapace. Epistome very short, with transverse crests. Hands very robust, smooth externally, with a few small scattered tubercles above. Colour red, alternating with yellow. Length  $1\frac{3}{4}$  in.; breadth 2 in. (M. E.).

New Zealand (Coll. Brit. Mus.).

This species is found upon the Australian and Chilian Coasts, and at Norfolk Island.

#### HETEROGRAPSUS.

*Pseudograpsus*, M. Edw. (part) Hist. Nat. Crust. ii, p. 81. (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 334, (1852).

*Hemigrapsus*, Dana, U.S. Explor. Exped. Crust. part i, p. 348, (1852).

*Heterograpsus*, Lucas, Explor. Algérie, Crust. p. 18, (1849); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 332, (1852).

Carapace slightly convex and lobate in front, sides slightly arcuate anteriorly, three toothed. Front straight or slightly sinuous. External maxillipeds when closed, meeting or nearly meeting along their inner margins. Ambulatory legs usually robust, and slightly compressed. Tarsi not spinulous. Abdomen seven-jointed in both sexes.

#### 38. *Heterograpsus sexdentatus*.

*Cyclograpsus sexdentatus*, M. Edw. Hist. Nat. Crust. ii, p. 79, (1837); White, Dieffenb. New Zealand ii, p. 266, (1843).

*Hemigrapsus sexdentatus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 348, pl. xxii, fig. 2, (1852).

*Heterograpsus sexdentatus*, M. Edw. Ann. Sci. Nat. xx, p. 192, (1853).

Gastric region uneven. Front straight. Lateral margins of the carapace granulous, and divided on each side into three teeth, of which the two first are very broad. Orbits directed forward. External orbital hiatus slightly defined. Legs slender, tarsi thick and short. Length  $1\frac{1}{4}$  in.; breadth  $1\frac{3}{8}$  in. (M. E.).

New Zealand (Coll. Mus. Paris; Brit.); Bay of Islands (Dana).

The specimens referred to this species by Dana, are of a dark brown or black, clouded with grey or dirty white on the back. Legs black, clouded or banded with dirty white. It seems to be a very common species in New Zealand.

39. *Heterograpsus crenulatus*.

*Cylograpsus crenulatus*, M. Edw. Hist. Nat. Crust. ii, p. 80, (1837).

*Hemigrapsus crenulatus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 349, pl. xxii, fig. 3, (1852).

*Heterograpsus crenulatus*, M. Edw. Ann. Sci. Nat. xx, p. 193, (1853).

*Heterograpsus barbimanus*, Heller, Voy. Novara. Crust. p. 53, pl. iv, fig. 5, (1865).

Gastric region scarcely uneven. Front nearly straight. Three teeth on each side of the carapace. Legs with long hairs above and below. (M. E.).

New Zealand (Coll. Brit. Mus.); Bay of Islands (Dana).

There is a specimen from Chili, in the British Museum Collection, of this species. I unite with *H. crenulatus*, *H. barbimanus*, Heller, from New Zealand, the hairs on the inner surface of the hand, which he considered a specific distinction, being, as the large series in the British Museum Collection shows, characteristic of the males of *H. crenulatus*. Length 1 in. ; breadth  $1\frac{1}{4}$  in.

40. *Heterograpsus sanguineus*.

*Grapsus sanguineus*. De Haan, Faun. Japon. Crust. p. 58, pl. xvi, fig. 3, (1835).

*Heterograpsus sanguineus*, M. Edw. Ann. Sci. Nat. (ser. 3) xx, p. 193, (1853); Heller, Voy. Novara, Crust. p. 52, (1865).

Carapace punctate, not transversely lineolate in front. Lateral margins three toothed, the teeth acute. Sides below the middle oblique, with the upper margin carinate. Front truncate, half as wide as the carapace, and as well as the lateral margins very finely granulate. Arm trigonal, dilated at the apex, with the upper and inner keels acute, entire, the outer obtuse. Wrist quadrate, convex above, with a single spine at the inner angle. Hands equal (in the female), with the upper margin obtuse, entire, and, as well as the mobile finger, smooth. Legs glabrous, the middle ones the longest, thighs carinate in front, the carina unidentate at the apex; tarsi of the second pair fasciculate in front, the fasciculi minute, black, and placed in longitudinal series, tarsi of the following legs subglabrous. Nails of the second pair convex, acute at the apex, of the following pairs compressed, all six-sulcate, sulci fasciculate, fasciculae as above. Sixth joint of the abdomen sub-emarginate at apex, seventh dilated, short, trigonal, half as wide as the penultimate joint. Colour blood-red, yellow banded.

with a straight longitudinal median band, and an arcuate one on each side. Length  $\frac{7}{8}$  in.; breadth 1 in. (De H.).

Auckland (Heller); Japan (De Haan; Coll Brit. Mus.).

This species has yellow-banded legs, and the wrist and hand spotted. The spots are shown in De Haan's figure of the species.

#### 41. *Heterograpsus maculatus*.

*Heterograpsus maculatus*, M. Edw. Ann. Sci. Nat. (ser. 3) xx. p. 193, (1853).

This species is very near the American *H. marmoratus*, but has the gastric region more convex, and the epibranchial lobes separated from the mesobranchial lobes by a transverse line, curved very distinctly in the shape of an S, and formed of a series of small pits. Colour reddish. arm with circular spots extending to the fingers. (M. E.)

Auckland (Heller); Polynesia (M. Edw.).

It seems to me very possible that this species is identical with the preceding.

#### PLANES.

*Planes*, (Leach, M. S.), Bowdich, Excurs. Madeira and Porto Santo p. 15, fig. 2. (1825); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 332, (1852).

*Nautilograpsus*, M. Edw. Hist. Nat. Crust. ii, p. 89, (1837).

Carapace longer than broad, nearly quadrate, front straight, sides very slightly curved. External maxillipeds having between them a vacant space when closed, the third joint somewhat cordate in shape. Legs short and smooth, tarsi armed with spines.

#### 42. *Planes minutus*.

*Cancer minutus*, Linn. Syst. Nat. (ed. xii), p. 1048, (1766).

*Nautilograpsus minutus*, M. Edw. Hist. Nat. Crust. ii, p. 90, (1837).

*Planes Lineana*, (Leach, M. S.) Bell Brit. Crust. p. 135, (1853).

*Planes minutus*, List. Crust. Brit. Mus. p. 42, (1847, sine descr.); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 346, (1852).

Carapace smooth and glabrous, a small tooth, which is sometimes obliterated, behind the external orbital angle. Anterior legs stout, smooth, wrist with a small tubercle on its inner side. Ambulatory

41 2, 3,

doubtful ?

legs broad, compressed, and thickly ciliated above. Length  $\frac{5}{8}$  in.; breadth nearly  $\frac{3}{4}$  in. (M. E.).

New Zealand (Coll. Brit. Mus.).

This species is pelagic in its habits, very variable in its marking, and is very commonly and widely distributed throughout the tropical and temperate seas.

#### VARUNA.

*Varuna*, M. Edw. Dict. Class. Hist. Nat. xvi, p. 511, (1829); Hist. Nat. Crust. ii, p. 94, (1837).

*Trichopus*, De Haan, Faun. Japon. Crust. p. 32, (1835).

Carapace flattened, with the sides three-toothed, somewhat arcuate anteriorly, straight and oblique posteriorly. Front with the anterior margin straight. External maxillipeds with a lozenge-shaped vacant space when closed, the third joint produced at the antero-external angle, the palpus broad. Ambulatory legs compressed, expanded, and ciliated. Abdomen in both sexes seven-jointed.

#### 43. *Varuna litterata*.

*Cancer litteratus*, Fabr. Ent. Syst. Suppl. p. 342, (1798); Herbst, Krabben, iii, p. 58, pl. xlviii, fig. 4, (1799).

*Trichopus litteratus*, De Haan, Faun. Japon. p. 32, (1835).

*Varuna litterata*, M. Edw. Hist. Nat. Crust. ii, p. 95, (1837).

Carapace slightly punctate above, and marked in the middle with an H, formed by the grooves which separate the branchial and cardiac regions, &c. Lateral margins thin, and armed with three very wide teeth. A granulous line upon each branchial region, extending from the base of the last tooth to the point of insertion of the last leg, at some distance from the lateral margin, which is also sharp and granulous. Front margin of the arms with strong rounded teeth, hands slightly compressed, fingers curved downward and a little inward; ambulatory legs large, flattened and ciliate on the margins. Length  $1\frac{3}{4}$  in.; breadth  $1\frac{1}{8}$  in. (M. E.).

Auckland (Heller).

This species is found in the Indian Ocean, amongst the East Indian Islands, at the Philippines, on the Coast of Australia, Japan, &c.

## Sub-Family II. SESARMINÆ.

*Sesarminæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i. p. 333, (1852).

Internal antennæ concealed by the front. Third joint of the external maxillipeds crossed by an oblique, usually piliferous, crest. (Body usually thick and convex).

## CYCLOGRAPSPUS.

*Cyclograpsus*, M. Edw. (part) Hist. Nat. Crust. ii, p. 77, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 359, (1852).

Carapace flat above, curving slightly downward anteriorly. Front straight. Antero-lateral margins thin, entire. Eyes short. Third joint of the external maxillipeds with the anterior margin truncate, or slightly emarginate. Abdomen of the male scarcely narrower at base than the adjacent part of the sternum.

The animal is smooth, entirely destitute of spines and tubercles, or hairs, except on the tarsi of the ambulatory legs.

The three species of *Cyclograpsus* figured by MM. Jacquinot and Lucas on plate vi of the Atlas of the Voyage au Pole Sud do not really belong to this genus.

44. *Cyclograpsus lavauxi*.\*

*Cyclograpsus audouinii*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 359, pl. xxiii, fig. 2, (1852), nec Edwards.

*Cyclograpsus Lavauxi*, M. Edw. Ann. Sci. Nat. xx, p. 197, (1853).

*Cyclograpsus whitei*, M. Edw. Ann. Sci. Nat. xx, p. 197, (1853).

Very near the *C. Audouinii*, but with the tarsi longer and more slender. Carapace and legs nearly smooth, with marbled spots, (M. E.).

New Zealand (Coll. Paris, Brit. Mus.).

The *C. whitei* is said to differ from *C. lavauxi* only in the somewhat wider carapace, and in the form of the third joint of the external maxillipeds, which is rather longer and less dilated

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\* Under the name of *Gnathochasmus barbatus*, Macleay, White has united this species and *C. punctatus*, M. Edw. from the Cape of Good Hope (List. Crust. Brit. Mus. p. 40, 1847).

externally, and is probably only a variety of *C. lavauxi*. Both species inhabit New Zealand.

*Cyclograpsus lavauxi* differs from *C. punctatus*, M. Edw. and *C. lewis*, Hess. in the marbled colours of the carapace, and from *C. cinereus*, Dana, in the wider triangular abdomen of the male.

#### CHASMAGNATHUS.

*Chasmagnathus*, De Haan, Faun. Japon. Crust. p. 27, (1835).

*Cyclograpsus*, M. Edw. (part) Hist. Nat. Crust. ii, p. 77, (1837).

Carapace very thick, convex, sub-quadrate, with the sides toothed, very slightly arcuate anteriorly, and the front curving regularly downward. External maxillipeds leaving a wide lozenge-shaped space when closed, the third joint truncate or slightly excavate above. Eyes very short. Anterior legs smooth, with the hands enlarged in the male. Ambulatory legs slightly compressed.

#### 45. *Chasmagnathus subquadratus*.

*Chasmagnathus subquadratus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 363, pl. xiii, fig. 5, (1852).

Carapace convex, smooth, somewhat punctate posteriorly: front and antero-lateral margins as in *C. lewis*. Antero-lateral margin with two incisions, sides but slightly arcuate, præmedial arcelet hardly distinct before or elsewhere. Posterior part of outer maxillipeds and adjoining part of sternum very short hirsute. Feet nearly as in *C. lewis*. Hand not granulate, minute punctate. Pterygostomial region very short reticulate. Fifth joint of second feet tomentose above and on anterior surface, but not below. Abdomen broader than usual at base and longer ciliate, sides excavate. (D.).

New Zealand? New South Wales? (Dana).

The outer maxillipeds, and the surface of the sternum between the buccal area and apex of the abdomen, is more hairy than in *C. lewis*.

I have seen no specimens of this species, but I doubt if it be distinct from *C. lewis*.

#### 46. *Chasmagnathus lævis*.

*Chasmagnathus lævis*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 365, pl. xxiii, fig. 7, (1852).

Carapace convex, smooth, hardly granulous, somewhat areolate, front arcuate, slightly excavate at middle, but without a point near the margin as in *C. granulatus*, pramedial areolet abrupt anteriorly. Epistome in no part more prominent than the front. Anterior feet of male equal, hand slightly granulate, not thin above. Posterior feet narrower than in *C. granulatus*, fifth joint of second pair tomentose above and below and on the anterior side. Sides of abdomen nearly straight, obsoletely excavate. Length  $\frac{3}{4}$  in.; breadth nearly 1 in. (D.).

New South Wales, Sydney (Dana); New Zealand (Coll. Brit. Mus.).

The specimens in the collection of the British Museum are of a dark purple-red, spotted with yellow. The eye peduncles are very short, and in this they agree well with Dana's figure of the species. The hands are nearly smooth.

#### HELICE.

*Helice*, De Haan, Faun. Japon Crust. p. 28, (1835); Dana, U.S. Explor. Exped. xiii. Crust. part i, p. 333, (1852).

Carapace sub-quadrate with the sides straight, the edges sharp-incised. Front inclined downward, slightly concave above, broadest at base, where it is about one-third the width of the carapace. Eyes short, not quite reaching to the external orbital angle. External maxillipeds with the third joint short, truncate above. Anterior legs large, hand high, smooth, or slightly granulated. Ambulatory legs with slender unarmed tarsi. Abdomen of ♂ seven-jointed, narrow at base.

Distinguished from the preceding genus by the proportionately narrower front, longer eye-peduncles, and narrower male abdomen.

#### 47. *Helice crassa*.

*Helice crassa*, Dana, U.S. Explor. Exped. xiii. Crust. part. i, p. 367, pl. xxiii, fig. 8, (1852).

Carapace sub-quadrate, lateral margin with two emarginations anteriorly, front half as long as breadth of carapace. Hand short and broad, (or high), above subcarinate: externally nearly smooth, minutely granulate. Third joint of following feet sub-acute above. Pterygostomian region granulate, thin pubescent. Length  $\frac{5}{8}$  in.; breadth  $\frac{3}{4}$  in. (D.).

New Zealand (Coll. Brit. Mus.); Auckland (Heller).

The colour (in dried specimens) is brown, with lighter patches. Dana found this species at Illawarra, New South Wales.

#### 48. *Helice lucasi*.

*Helice lucasi*, M. Edw. Ann. Sci. Nat. xx, p. 190, (1853).

Very near *Helice latreillii* (*Cyclograpsus latreillii*, M. Edw. Hist. Nat. Crust. ii, p. 80, 1837), but the third joint of the external maxillipeds is shorter, there is no fourth marginal tooth, and there exists a small longitudinal crest on the lower third of the external surface of the hand. (M. E.).

New Zealand (M. Edw.).

I have seen no specimens of this species.

#### SESARMA.

*Sesarma*, Say, Journ. Acad. Nat. Sci. Philad. i, p. 76, (1817); M. Edw. Hist. Nat. Crust. ii, p. 71, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 333, (1852).

*Pachysoma*, De Haan, Faun. Japon. Crust. p. 33, (1835).

Carapace quadrate, often transversely lineolate, the lateral margins toothed or entire. Front abruptly vertically deflexed, usually more than half the breadth of the carapace, and divided above into several lobes by longitudinal grooves in the front part of the carapace. Pterygostomian regions reticulated. External maxillipeds with the third joint longer than broad, more or less rounded at the summit. Ambulatory legs ciliate, with the tarsi unarmed.

#### 49. *Sesarma pentagona*.

*Sesarma pentagona*, Hutton, Trans. New Zeal. Inst. p. 279, (1875).

Carapace subquadrate, smooth, broader than long; anterior lateral margin with two teeth; front nearly vertical, with four rounded projections; lateral regions obliquely striated, a pentagonal mark in the centre, the apex prolonged to the front, which it divides. Area on each side of the mouth below with moniliform transverse striae. Arms trigonal, striated on the outside, hands smooth outside, and with a few scattered granules inside; fingers smooth. Legs with the third joint very broad, compressed, acute above, and armed with a single tooth at

the apex, smooth; outer joints and claws tomentose. Length .67 in.; ratio of length to breadth 1.127 in. (H.).

New Zealand (Mus. Wellington).

This species is near the *S. tetragona*, Edw., and in the absence of figures or specimens I am not sure whether it may not be identical with it or one of the allied species.

### Sub-Family III. PLAGUSINE.

*Plagusinae*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 333, (1852).

Internal antennæ exposed, and each visible from above, in a longitudinal sinus of the front. Third joint of the external maxillipeds small, and not crossed by an oblique piliferous crest. (Body very much depressed.)

### PLAGUSIA.

*Plagusia*, Latr. (part) Gen. Crust. et Ins. i, p. 33, (1806); M. Edw. (part) Hist. Nat. Crust. ii, p. 90, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 333, (1852).

Carapace wide, and very much depressed, with the lateral margins toothed. Third joint of the external maxillipeds scarcely narrower than the second at the summit, rarely longer than broad. Anterior legs in the male with the hand robust, longitudinally costate, scarcely compressed.

#### 50. *Plagusia chabrus*.

*Cancer chabrus*, Linn. Mus. Lud. Ulr. p. 438, (1764); Syst. Nat. p. 1044, (1766).

*Plagusia tomentosa*, M. Edw. Hist. Nat. Crust. ii, p. 92, (1837).

*Plagusia capensis*, De Haan, Faun. Japon. Crust. p. 58, (1855).

Front very broad, at least as broad as long, terminated anteriorly by a granulous border, curved, and armed above with two acute spines. Carapace slightly depressed. Hands with several rows of granules below. Legs very much flattened, pubescent below as well as above, the fourth pair the longest, armed with teeth throughout nearly their whole length. Abdomen of ♀ with seven distinct joints. Length  $1\frac{1}{2}$  in.; breadth  $1\frac{3}{4}$  in. (M. E.).

Inhab. New Zealand (Dana; Coll. Brit. Mus.).

*Tarmonia*

This species is found at the Cape of Good Hope, Australia, and Chili.

## LEIOLOPHUS.

*Plagusia*, M. Edw. (part) Hist. Nat. Crust. ii, p. 90, (1837).

*Acanthopus*, De Haan, Faun. Japon. Crust. p. 29, (1835), nom. usit.

Carapace with the front and lateral margins spinous toothed, very greatly flattened (even more than in *Plagusia*). External maxillipeds with the third joint oblong, much narrower than the second at the summit. Anterior legs in the male with the hand smooth, very much expanded and compressed.

As the name *Acanthopus* has been more than once preoccupied in Entomology, I propose to designate this genus *Leiolophus*, in allusion to the smooth elevated lines or ridges with which the carapace and ambulatory legs are usually marked.

51. *Leiolophus planissimus*.

*Cancer planissimus*, Herbst, Krabben iii, p. 3, pl. lix, fig. 3, (1799).

*Plagusia clavimana*, Latr. Gen. Crust. et Ins. i, p. 34, (1806); Edw. Hist. Nat. Crust. ii, p. 92, (1837); Règne Animal de Cuv. pl. xxiii, fig. 3; White, Dieffenb. New Zealand ii, p. 266, (1843).

*Plagusia serripes*, Lam. Hist. An. sans Vert. p. 247, (1818).

*Acanthopus planissimus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 372, (1852).

Front very narrow, much longer than wide, and ending in two small spines. Body very much flattened. Carapace much longer than wide, pubescent. Front margin of the epistome with a spine, which projects beneath the front. Anterior legs short, hands greatly expanded. Ambulatory legs very long, with the upper margin armed with teeth throughout nearly their whole length, the third pair the longest of all, being twice the length of the carapace. Antepenultimate joint of the abdomen coalescing with the preceding joint in both sexes. Length  $\frac{3}{4}$  in.; breadth  $\frac{5}{8}$  in. (M. E.).

New Zealand (Mus. Paris).

*L. planissimus* is found on the coasts of Australia and the Philippines, throughout the islands of the Pacific, at Chili, and California, and at Madeira. Probably the West Indian form, separated by M.

Def. 2. 7.

Found at Cape St. Mary, Falkland

Milne Edwards under the name of *A. gibbesii*, is not distinct. Stimpson united it with the *planissimus*.

M. Milne Edwards, in his description of this species given above, probably makes mention only of the median lobe of the front. There are, in adult specimens, six marginal frontal spines, two to each lobe, and six behind them, twelve in all. The third joint only, of the ambulatory legs, is armed with a series of spines.

### Family III. PINNOTHERIDÆ.

*Pinnothériens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 28, (1837).

*Pinnotheridæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 309, (1852).

Carapace obese or depressed, rounded on the sides, of soft consistency. Eyes very short, imbedded in the orbits. Buccal organs very variable. Margin of the efferent branchial channel partly defined by a ridge on the palate. Abdomen of the male narrow, toward the base much narrower than the adjacent part of the sternum. Legs usually small, weak.

The species are all small.

#### Sub-Family I. PINNOTHERINÆ.

*Pinnotherinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 378, (1852).

Usually obese, sometimes depressed. Second joint of the external maxillipeds small or obsolete.

#### PINNOTHERES.

*Pinnotheres*, Latr. Hist. Nat. Crust. vi, p. 78, (1803); M. Edw. Hist. Nat. Crust. ii, p. 30, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 378, (1852).

Body very obese, surface perfectly smooth. Front not united with the epistome. Fossæ of the internal antennæ often coalescent. Eyes very small, placed near to one another. Buccal cavity rounded in front, second joint of the external maxillipeds small or obsolete. Ambulatory legs slender, sub-equal.

52. *Pinnotheres pisum*.

*Cancer pisum*, Linn, Syst. Nat. ed. xii, p. 1039, (1766).

*Pinnotheres pisum*, Latr. Hist. Nat. Crust. vi, p. 85, (1803); M. Edw. Hist. Nat. Crust. ii, p. 31, (1837).

*Pinnotheres mytilorum*, M. Edw. Ann. Sci. Nat. (ser. 3) xx, p. 217, pl. x, fig. 1, (1853).

Carapace soft. Front prominent in the male, not projecting beyond the curved line formed by the front part of the carapace in the female. Lower margin of the hands ciliated. Abdomen of the male with the last joint smaller than the penultimate, of the female circular. Length and breadth of ♀ about  $\frac{1}{2}$  in. (M. E.).

Auckland (Heller); New Zealand (Coll. Brit. Mus.).

Dr. Heller (Voy. Novara, Crust. p. 67) states that he is unable to distinguish the specimens of *Pinnotheres* collected at Auckland from the common European species, with which they agree in the form of the carapace, anterior legs, outer maxillipeds, and abdomen, the only difference being that the fifth pair of legs is a little less hairy in the New Zealand specimens. The same is true of two female examples from New Zealand in the Collection of the British Museum. Dr. Heller further observes that the specimens from Auckland inhabited shells of the genus *Mytilus*, as is commonly the case with the European species. I am informed by my friend, Mr. E. A. Smith, that the New Zealand Mussel is not even to be distinguished *specifically* from the English one—an interesting fact, which confirms Dr. Heller's observations on the *Pinnotheres*.

53. *Pinnotheres latipes*.

*Pinnotheres latipes*, Jacquinot and Lucas, Voy. Pole Sud. Zool. iii, Crust. p. 57, pl. v, fig. 16, (1853).

Carapace broader than long, convex, smooth, front wide, truncate. Eyes very small. Anterior legs robust, elongate, with the third and fourth joints canaliculate, hand smooth, mobile finger with a tubercle near its base, lower finger with a tubercle at its base. Ambulatory legs broad, compressed, and (apparently) canaliculate. (J. & L.).

New Zealand, Raffles Bay (Hombr. and Jacq.).

This description was drawn up by MM. Jacquinot and Lucas from the figure in the Atlas of the Voyage, and the markings, which they thought represented canaliculations, seem to me to be only bands of

darker colour. Nevertheless, this species, if correctly drawn, differs from all others in the compressed, flattened, and expanded ambulatory legs, and I have seen no specimens resembling it.

#### Sub-Family II. HYMENICINÆ.

*Hymenicinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 378, (1852).

Body very much depressed, sub-orbicular, or sub-triangular, slightly produced, often rostrate, anteriorly. Second joint of the external maxillipeds more than half the length of the third joint.

#### HALICARCINUS.

*Halicarcinus*, White, Ann. Mag. Nat. Hist. xviii, p. 178, (1846).

Carapace generally broader than long, the edge of the strongly depressed upper surface with two teeth or angles on each side. Front tridentate, internal antennæ visible between the frontal lobes. Four last pairs of legs cylindrical, and free from hairs, claws considerably curved and compressed. Abdomen of male six-jointed, concave on each side, about the middle. Outer maxillipeds, as in *Hymenosoma*, covered on the outside with short hairs.

The abdomen of the male is concave, not "deeply notched" on each side as stated in White's description.

#### 54. *Halicarcinus planatus*.

*Cancer planatus*, Fabr. Ent. Syst. ii, p. 446, (1793).

*Leucosia planata*, Fabr. Ent. Syst. Suppl. p. 350, (1798).

*Hymenosoma Leuchii*, Guerin. Icon. pl. x, fig. 2, Voy. Coquille ii, p. 22, (1828).

? *Hymenosoma tridentatum*, Jacquinet and Lucas, Voy. Pole Sud Zool. iii, p. 60, pl. v, fig. 27, (1853).

*Halicarcinus planatus*, White, Ann. Mag. Nat. Hist. xviii, p. 178, pl. ii, fig. 1, (1846).

*Halicarcinus ovatus*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 109, (1858).

Carapace quite flat above, with a transverse groove separating the gastric from the cardiac regions, and a longitudinal groove on each side of these regions. Antero-lateral margins with two small acute

teeth. Anterior legs of the male very much enlarged, hand smooth and swollen, fingers straight, with a space between them when closed. Length  $\frac{1}{2}$  in.; breadth  $\frac{5}{8}$  in.

Auckland (Heller); New Zealand (Coll. Brit. Mus.).

It is widely distributed in the Southern Seas, being very common at the Falkland Islands and Kerguelen Island; and is also found on the Australian Coast.

? Var. *orbiculus*, with the teeth of the antero-lateral margins obsolete.

? *Cancer orbiculus*, Fabr. Ent. Syst. ii, p. 444, (1793).

*Leucosia? orbiculus*, White, Dieffenb. New Zealand ii, p. 266, (1843).  
New Zealand (Coll. Brit. Mus.).

The type specimen of the *C. orbiculus* of Fabr. is in the Collection of the British Museum. It is very much injured, but I think it can be nothing but a specimen of *H. planatus* with the marginal teeth obsolete.

#### HYMENICUS.

*Hymenicus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 387, (1852).

Carapace depressed, flat, sub-orbicular. Front with a short, rounded or trilobate beak, the first (inner) antennæ not being seen in an upper view, the base being wholly concealed beneath the carapace. Third joint of the external maxillipeds rather larger than the second. Feet slender, hand of moderate size.

#### 55. *Hymenicus varius*.

*Hymenicus varius*, Dana, Proc. Acad. Nat. Sci. Philad. p. 254, (1851); U.S. Explor. Exped. Crust. part i, p. 387, pl. xxiv, fig. 9, (1852).

*Hymenicus novizealandiæ*, Dana, Proc. Acad. Nat. Sci. Philad. p. 254, (1851).

Carapace smooth, naked, flat, nearly orbiculate, or ovato-orbiculate very slightly wider than long, front projecting and trilobate. Antero-lateral margin with two obsolescent teeth. Abdomen of male narrow oblong, sub-triangular, first segment broadest and triangulate on either side, penult. narrower than preceding, last oblong sub-triangular, rounded at apex. Anterior feet of moderate size, eight following very

slender, nearly or quite naked. Colour various, greenish black, mottled, or dirty white or greyish. Length 2 to 3 lines. (D.).

New Zealand ; Bay of Islands (Dana) ; Auckland (Heller).

Distinguished by its trilobate front.

#### 56. *Hymenicus pubescens*.

*Hymenicus pubescens*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 388, pl. xxiv, fig. 11, (1852).

Carapace pubescent, very nearly orbiculate or hardly ovato-orbiculate, arcuate behind, beak small, quite simple, rounded, margin pubescent, whole margin of carapace entire, unarmed. Abdomen of male narrow, linear, sub-triangular, penult. joint and two preceding nearly equal, slightly narrowing posteriorly, last segment sub-triangular, a little oblong, obtuse. Feet short, pubescent, the anterior of moderate size, the others slender, but less so than in *H. varius*. Length  $1\frac{1}{2}$  to 2 lines. (D.).

New Zealand ; Bay of Islands (Dana) ; Auckland (Heller).

Distinguished from the *Hymenicus depressus*, by the absence of the small tooth, outside the eyes. Both this and the foregoing species are unknown to me. From their small size they may be young forms.

#### 57. *Hymenicus depressus* ?.

*Hymenosoma depressum*, Jacquinot and Lucas, Voy. Pole Sud Zool. iii, p. 62, pl. v, fig. 34, (1855).

Carapace longer than broad, depressed ; front dentiform. Anterior legs rather swollen, very short, the fingers elongated, narrow-ciliated on the inner margins, the ambulatory legs very much elongated, slender, smooth. Colour reddish-yellow. Length about  $\frac{3}{4}$  in. ; breadth about  $\frac{7}{8}$  in. (J. & L.).

Auckland Islands (Hombron and Jacquinot). Under stones at low tide.

The carapace is represented as nearly circular, the front very narrow, not longer than the eyes, and of equal width throughout. There is apparently a small tooth outside the eyes. Third joint of the external maxillipeds much the largest. I have not seen specimens of this species.

## ELAMENA.

*Elamena*, M. Edw. Hist. Nat. Crust. ii, p. 33, (1837).

Carapace depressed, flat, and sub-triangular in form. Innêr antennæ completely concealed by the front. Buccal cavity completely defined in front by a transverse margin. Third joint of the external maxillipeds nearly as large as the second. Anterior legs large and stout. Ambulatory legs long and very slender.

58. *Elamena quoyi*.

*Elamene quoyi*, M. Edw. Ann. Sci. Nat. (ser. 3), xx, p. 223, pl. xi, fig. 3, (1853).

Carapace broader than long, and without marginal spines. Legs short. (M. E.).

New Zealand (Coll. Mus. Paris).

M. Edwards only gives the above short diagnosis of this species ; in the figure the rostrum is represented as very short, broad, and obtuse, not projecting beyond the eye-peduncles, carapace with the sides arcuate. Anterior legs short and rather slender, the whole animal destitute of hairs.

59. *Elamena whitei*. Pl. 1, fig. 4.

*Elamena whitei*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 221, (1876).

*Halicarcinus depressus*, White, Ann. Mag. Nat. Hist. xviii, p. 178, (1846), nec *Hymenosoma depressum*, Jacq. and Lucas.

Carapace sub-triangular. Front between the eyes broad lamellate, and concave above, projecting considerably beyond them, and suddenly narrowing towards the extremity, which is acute. There is a small tooth external to the eyes. Anterior legs in the male very long, slender, and hairy, without spines. Length and breadth rather more than  $\frac{1}{2}$  in.

New Zealand : Bay of Islands (Coll. Brit. Mus.).

The specimens referred to *H. depressum* by White, differ from the figure in the Atlas of the Voyage au Pole Sud, in several important particulars, as will be seen from the above description, and I have thought it advisable to give them a distinct specific designation. From

*H. pubescens* this species differs both in the form of its front, and in the existence of a tooth exterior to the eyes.

The *Elamena pilosa* of A. M. Edw., N.A., Mus. H. N. ix, p. 322, pl. xviii, fig. 6, resembles this species, but is distinguished by its hairy carapace, &c.

#### Family IV. GECARCINIDÆ.

*Gecarciniens*, M. Edw. Hist. Nat. Crust. ii, p. 16, (1837).

*Gecarcinidæ*, Dana, U.S. Explor. Exped. xiii. Crust. part i, p. 308, (1852).

Carapace very convex, broad in front, the branchial regions very much swollen, the sides rounded. Eyes short. Margin of the efferent branchial channel not defined by a longitudinal ridge on each side of the palate. Abdomen of the male broad at base, the second segment nearly covering the whole breadth of the sternum. Legs large. Species terrestrial.

#### CARDISOMA.

*Cardisoma*, Latr. Encycl. Méth. x, p. 685, (1825); M. Edw. Hist. Nat. Crust. ii, p. 22, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 375, (1852).

Body very thick and convex, front less than half the width of the carapace. External maxillipeds leaving, when closed, a lozenge shaped hiatus, the third joint shorter than the second, truncate, or slightly excavate at the summit, the fourth joint exposed, inserted at the antero-external angle of the third joint. Anterior legs in the male large, smooth. Ambulatory legs more or less hairy, tarsi armed with series of spines.

#### 60. *Cardisoma hirtipes*.

*Cardisoma hirtipes*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 377, pl. xxiv, fig. 2, (1852).

Carapace longitudinally convex, lateral margin having a border anteriorly, and a minute point near the post-orbital angle, præ-median areolet near the margin of the front quite abrupt, pterygostomian region pilose. Process between orbit and outer antenna triangular trihedral. First joint of outer antennæ rectangular, truncate across

act 2.3.

above. Anterior feet of male short but stout, sub-equal, hand punctate, shorter than breadth of carapace, along upper margin to finger much shorter than high, fingers much gaping. Posterior feet rough hairy. Length  $22\frac{1}{2}$  lines; breadth 28 lines. (D.).

Auckland (Heller); Fiji Is. (Dana).

The species of this genus are separated by characters of very slight importance, and perhaps only one species inhabits the whole Asiatic region.

#### Sub-Tribe IV. OXYSTOMATA.

*Orbiculata*, Latr. (part) Fam. Nat. p. 271, (1825).

*Oxystomes*, M. Edw. (part) Hist. Nat. Crust. i, p. 265, (1834).

*Leucosoidea v. Oxystomata*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 389, (1852).

Carapace varying greatly in shape, transverse, arcuate anteriorly, or sub-globose. Branchiæ 7-9 in number. Antennary region very small, antennæ minute. Epistome rudimentary. Buccal cavity more or less triangular in outline, produced and narrowed anteriorly. Efferent channel passing out at the middle of the palate, which is produced forwards. Male genital appendages inserted in the basal joint of the fifth pair of legs.

#### Family I. CALAPPIDÆ.

*Calappiens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 100, (1837).

*Calappida*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 390 (1852).

Afferent canal to the branchiæ entering behind the pterygostomian regions. Genital appendages of the male exerted from the base of the fifth pair of legs. Terminal joints of the external maxillipeds not concealed beneath the second and third joints.

#### CALAPPA.

*Calappa*, Fabr. Ent. Syst. Suppl. p. 345, (1798); M. Edw. Hist. Nat. Crust. ii, p. 102, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 390, (1852).

Carapace very convex, broad behind, arcuate in front, with the latero-posterior margins produced over the ambulatory legs, and forming large vaulted lateral expansions. Terminal joints of the external

maxillipeds not concealed. Anterior legs large, and capable of being applied closely to the body, hands compressed, with a high dorsal ridge. Ambulatory legs slender and of moderate length, tarsi styli-form. Abdomen of ♂ five to seven-jointed.

### 61. *Calappa hepatica*.

*Cancer hepaticus*, Linn. Syst. Nat. p. 1048, (1766).

*Calappa tuberculata*, Fab. Ent. Syst. Suppl. p. 345, (1798); Herbst, Krabben u. Krebse i, pl. xiii, fig. 78, (1796); M. Edw. Hist. Nat. Crust. ii, p. 106, (1837).

Carapace tubercular, and granulous above, with about a dozen triangular, very distinct teeth upon the antero-lateral margin; and four wide, flat, acute teeth upon the front margin of the clypeiform wings of the carapace, which are very large. Posterior margin of the carapace entire, outer surface of the hands tubercular, but without spines. Length nearly 2 in.; breadth  $3\frac{1}{4}$  in. (M. E.).

Auckland (Heller).

This species is found on the shores of various groups of islands in the Pacific, on the coasts of Australia, and at the Mauritius.

In the very large series of specimens of this species in the Collection of the British Museum, there are almost invariably ten teeth on the antero-lateral margins.

## Family II. LEUCOSIIDÆ.

*Leucosiens*, M. Edw. Hist. Nat. Crust. ii, p. 118, (1837).

*Leucosida*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 390. (1852).

Afferent canal to the branchiæ entering at the antero-lateral angle of the palate. Genital appendages of the male exerted from the sternum. Terminal joints of the external maxillipeds concealed by the preceding. Legs grossorial.

## PHLYXIA.

*Phlyxia*, Bell, Trans. Linn. Soc. xxi, p. 303, (1855); Cat. Leucosiadae in Brit. Mus. p. 18, (1855).

Carapace rhomboidal, with three tubercles behind. Orbits emarginate above, with two fissures. Antennary fossæ communicating with

the orbits. Inner antennæ elongate. External maxillipeds with the palpus broad, external margin curved, narrowed anteriorly, second joint of the external maxillipeds with the sides parallel, third joint triangular. Abdomen in both sexes with the third to the sixth segment coalescent.

## 62. *Phlyxia lævis*.

*Phlyxia lævis*, Bell, Trans. Linn. Soc. xxi, p. 305, pl. xxxiv, fig. 3, (1855); Cat. Leucosiadæ in Brit. Mus. p. 18, (1855).

Carapace rhomboidal, smooth; rostrum obtuse, slightly emarginate. Margin of the branchial region with a single minute tooth, posterior margin with three obtuse teeth. Anterior legs not twice as long as the carapace. Arm three-sided, triangular, granulated, hand half the length of the arm, smooth, slightly carinated on the outer side, fingers hardly deflexed. Length and breadth nearly  $\frac{5}{12}$  in. (B.).

New Zealand (Coll. Mus. Paris; Brit.).

## Tribe II. ANOMOURA.

*Anomoures*, M. Edw. Hist. Nat. Crust. i, p. 247, (1834).

*Anomoura*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 398, (1852).

Abdomen sometimes extended backward, sometimes inflexed beneath the body, and nearly always bearing more or less well developed appendages upon its antepenultimate segment. Sternum usually linear between the last three pairs of legs.

Scarcely any single character can be mentioned absolutely characteristic of the whole group of *Anomoura*. Some species show their degradation from the *Brachyura* type in one direction, some in another. The abdomen is, however, almost always more developed than in the *Brachyura*, and is furnished with appendages, and shows a greater or less approximation to the extended abdomen of the *Macroura*. The species are generally recognizable as intermediate in structure between the true *Brachyura* and *Macroura*.

## Section I. ANOMOURA SUPERIORA.

*Anomoura superiora*, Dana, U.S. Explor. Exped. xiii, Crust part i, p. 400, (1852).

Eyes not anterior to the first pair of antennæ. Second pair of antennæ sometimes posterior, but not exterior to the eyes. Abdomen narrow, often adpressed to the sternum, without caudal appendages.

### Sub-Tribe I. DROMIDEA.

*Dromiens* and *Homoliens*, M. Edw. Hist. Nat. Crust. ii, p. 197, (1837).

*Dromidea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 400, (1852).

Carapace sub-globose, sub-triangular, or sub-quadrate. Eyes placed near to one another. The buccal cavity quadrilateral. Anterior legs with a well developed hand. The posterior pair of ambulatory legs smaller than the preceding, raised above the rest, and placed sub-dorsally upon the carapace, terminating in a curved, and more or less prehensile claw.

### CRYPTODROMIA.

*Cryptodromia*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 63, (1858).

Carapace convex, pubescent, scarcely pilose. Palate with a ridge on each side. The sternal *sulci* in the female remote from one another, only produced to the segment bearing the second pair of legs, terminating in tubercles. Legs like those of *Dromia*, but nodose.

Species of small size.

#### 63. *Cryptodromia lateralis*.

*Dromia lateralis*, Gray, Zool. Miscell. p. 40, (1842).

*Cryptodromia lateralis*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 226, (1858).

Carapace sub-globose; back evenly convex, front rather produced, deeply two cut, with a central tubercle beneath; sides rather produced, with two large, and one hinder smaller denticulation, sides of the front edge concave, with a smaller tubercle over the centre of each eye. Length 7 lines; breadth  $6\frac{1}{2}$  lines. (G.).

Auckland (Heller); New Zealand (Coll. Brit. Mus.).

Specimens in the British Museum Collection, which I think belong to this species, have the front three lobed, the median lobe deflexed, the lateral lobes triangular. Antero-lateral margins with two teeth

and a smaller tooth upon the pterygostomian region. Anterior legs with arm and wrist tuberculated, hand granulous externally, and tuberculated above; ambulatory legs with the distal extremities of the joints nodose. Found also in Australia and Tasmania.

## Section II. ANOMOURA MEDIA.

*Anomoura media*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 400, (1852).

Eyes not anterior to the first pair of antennæ. Second pair of antennæ posterior and exterior to the eyes. Abdomen inflexed, but not closely adpressed to the sternum, with caudal appendages.

### Sub-Tribe II. HIPPIDEA.

*Hippiens*, M. Edw. Hist. Nat. Crust. ii, p. 200, (1837).

*Hippidea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 400, (1852).

Carapace oblong, convex, and rounded above. Either the external or internal antennæ very long. External maxillipeds somewhat operculiform, with the terminal joints considerably developed. First pair of legs monodactyle or subchelate, the three following pairs with the terminal joints more or less expanded, lamellate. Fifth pair of legs filiform, inflexed.

### REMIPES.

*Remipes*, Latr. Gen. Crust. et Ins. i, p. 45, (1806); M. Edw. Hist. Nat. Crust. ii, p. 204, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 405, (1852).

Carapace regularly oval, convex, not one and a half times as long as broad. Front rather wide and truncate, or obscurely two-lobed. Orbits with the external angle projecting beyond the level of the front. Eyes scarcely retractile, peduncle composed of two distinct portions. Internal antennæ inserted beneath the eyes, large, with long multi-articulated flagella. External antennæ short and very broad. External maxillipeds short and broad, with the third joint operculiform, the three terminal joints constituting a semi-prehensile organ. Anterior legs very long, broad at base, terminal joint styliform, acute, and slightly flattened, terminal joints of the next two pairs expanded and lamellate,

of the fourth pair nearly conical. Fifth pair of legs slender and concealed beneath the carapace. Sternum linear. Abdomen long, terminal segment far exceeding in length the rest of the abdomen.

#### 64. *Remipes marmoratus*.

*Remipes marmoratus*, Jacquinot and Lucas, Voy. Pole Sud Zool. iii, p. 97, pl. viii, fig. 22, (1855).

Regularly oval. Carapace elongate, narrow, transversely rugose; front narrow, notched in the middle, with the lateral angles rounded, sides of the carapace with a groove which is marked with rather strong punctures, which are not very closely placed. Internal antennæ cinereous, short, smooth. External antennæ slender. Anterior legs whitish, with ashy rings, and brown ciliæ. Ambulatory legs with ashy spots. Colour of carapace, ashy grey, marbled with brown. Length about  $1\frac{1}{2}$  in.; breadth nearly  $\frac{1}{2}$  in. (J. & L.)

not 1.2

New Zealand, Raffles Bay (Hombroton and Jacquinot).

This species has the external antennæ more slender and elongate, and the frontal lobes, (if the figure be correct), more prominent than in the other species of the genus. I have seen no specimens.

### Sub-Tribe III. PORCELLANIDEA.

*Porcellaniens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 167, (1837).

*Porcellanidea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 400, (1852).

Carapace flattened, more or less orbiculate in outline, the front usually prominent. External antennæ with the flagellum very long. External maxillipeds imperfectly operculiform, the third joint rather shorter than the second, the fourth articulated with the third at its antero-external angle. Anterior legs large, more or less compressed. Three following legs gressorial, with styli-form tarsi. Fifth pair of ambulatory legs slender and inflexed.

### PETROLISTHES.

*Petrolisthes*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 227. (1858).

Carapace depressed, sub-ovate, not broader than long, the front triangular, prominent, margin more or less undulated, toothed or entire.

Eyes rather large. Antennæ with the peduncle more or less cristate, the first joint of the external antennæ short, not reaching the margin of the carapace. Hands broad, depressed. Tarsi of the ambulatory legs short, rather robust, with a single claw.

This genus is particularly well represented on the Pacific shores of America, and affords an interesting proof of the affinity of the New Zealand Crustacean Fauna to that of those regions.

#### Sub-Genus I. PETROLISTHES.

Sides of the rostrum entire. Lateral margins of the carapace with only a single post-ocular spine, or smooth. Anterior legs with the arm and hand broad, of moderate length; arm usually with teeth on the anterior margin.

#### 65. *Petrolisthes elongatus*.

*Porcellana elongata*, M. Edw. Hist. Nat. Crust. ii, p. 251, (1837); White, Dieffenb. New Zealand ii, p. 265, (1843).

*Petrolisthes elongatus*, Miers, Zool. Erebus and Terror, Crust. p. 3, pl. iii, fig. 3, (1874).

Carapace faintly granulated, gastric region with two slight elevations, and separated from the rest of the carapace by a well marked groove, lateral margins of the carapace thin and sharp, front triangular, entire, but slightly inclined, very prominent, with a deep median groove. Anterior legs large, posterior margin of the wrist with two or three spinous teeth, anterior margin with a very obtuse tooth at the base of its front margin. Colour reddish-yellow. Length  $\frac{5}{6}$  in.; breadth  $\frac{3}{4}$  in. (M. E.).

New Zealand (Heller; Coll. Mus. Paris; Brit.); Bay of Islands (Dana).

This species also occurs, but rarely, on the Australian Coast. It is apparently a very common species in New Zealand.

#### Sub-Genus II. PETROCHELES.

*Petrocheles*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 222, (1876).

Sides of the rostrum spinose. Lateral margins of the carapace with a series of spines. Anterior legs elongated, slender, arm with a series of spines on the anterior margin.

The two following species, for which I constitute this sub-genus, have somewhat the aspect of *Galathea*, from which, however, they are at once distinguished by the form of the external maxillipeds, which is that of the *Porcellanidea*.

66. *Petrocheles spinosus*. Pl. I, fig. 5.

*Petrocheles spinosus*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 222 (1876).

Carapace depressed, broader behind, almost entirely covered with a close short pubescence, lateral margins with a series of ten or eleven small spines. Front prominent, lateral margins with three or four spinules. Anterior legs unequal, somewhat elongated, closely pubescent, granulous above, arm with a series of four or five spines on the anterior margin; hand elongated, fingers hairy on their inner margins, and not quite meeting at base when closed. Ambulatory legs with the superior margins spinulous and hairy. Length of carapace  $\frac{7}{12}$  in.; breadth  $\frac{1}{2}$  in.

New Zealand (Coll. Brit. Mus.).

A single, much injured specimen exists in the Collection. A specimen from Australia has, in addition, two spines on the carapace at the base of the front, two longitudinal series of eight spines each on the upper and posterior surface of the arm, the upper margin of the mobile finger spinulous. For this I have proposed the name of *P. australiensis*.

### Section III. ANOMOURA INFERIORA.

*Anomoura inferiora*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 401, (1852).

Eyes anterior to the first pair of antennæ. Second pair of antennæ posterior and exterior to the eyes. Abdomen elongate, scarcely inflexed, with caudal, and often ventral appendages.

### Sub-Tribe IV. PAGURIDEA.

*Paguriens*, M. Edw. Hist. Nat. Crust. ii, p. 167, (1837).

*Paguridea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 401, (1852).

Carapace more or less elongated, and of softer consistency behind. Eyes pedunculate, not retractile, and directed forwards. External maxillipeds pediform. Abdomen usually soft, unsymmetrical, with unequal appendages. Anterior legs with a well developed hand. Fourth and fifth pairs of ambulatory legs short, raised above the rest, and usually didactyle.

#### EUPAGURUS.

*Eupagurus*, Brandt, in Middendorf's Sibirische Reise, Zool. i, p. 105, (1851).

*Bernhardus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 440, (1852).

Front acute in the middle. Ophthalmic segment exposed, without a mobile scale. Eye peduncles of moderate size. External antennae with a long flagellum, the basal scale slender. External maxillipeds rather large, distant from one another at the base. Anterior legs unequal, the right the largest, fingers not spoon-excavate at the tips. Fourth pair of ambulatory legs scarcely subchelate. Abdomen unsymmetrical, soft, without calcareous plates.

#### 67. *Eupagurus cristatus*.

*Pagurus cristatus*, M. Edw. Ann. Sci. Nat. (ser. 2) vi, p. 269, (1836); Hist. Nat. Crust. ii, p. 218, (1837).

Median tooth of the anterior margin of the carapace rather prominent. Anterior legs granulous or slightly spinous. Upper and lower margin of the wrist thin, having the shape of a denticulated crest. Hands slightly compressed, with one or two thin, prominent, more or less denticulated, longitudinal ridges, which are rather differently disposed on the two sides of the body, and in the two sexes. Ambulatory legs thin, compressed, and finely denticulated on their upper margin; tarsus long, curved and compressed, but not twisted. Three false legs small, and with two lamellae, fixed to the abdomen, a very few hairs upon the legs. (M. E.).

New Zealand (Quoy and Gaimard).

This species, as appears from the description of M. Milne Edwards, is distinguished from *Eu. nova-zealandiae* by the form of the wrist. I have seen no specimens agreeing with the description in this respect, the specimens referred to *Eu. cristatus* by White, in the List of

Crustacea in the British Museum, have the wrist rounded above and below, and granuli-spinulous, and agree indeed in all respects with the description of *Eu. novæ-zealandiæ*. The *Eu. tricarinatus* of Stimpson, seems to be nearly allied to this species. *Eupagurus Gayi*, of Nicolet, in Gay's Chili, p. 190, pl. i, fig. 6, (1849), may be identical with this or with the next species.

#### 68. *Eupagurus novæ-zealandiæ*.

*Pagurus cristatus*, List. Crust. Brit. Mus. p. 59, (1847), sine descr.; Dieffenb. New Zealand ii, p. 266, (1843), nec. Edw.

*Bernhardus novi-zealandiæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 440, pl. xxvii, fig. 1, (1852).

Peduncles of eyes hardly shorter than anterior margin of carapace, much longer than acicle of outer antennæ, which is hirsute on inner side, cornea not oblique, short, basal scale rather narrow, inciso-denticulate at apex. Anterior feet very unequal, nearly naked, carpus somewhat pubescent towards apex, granuli-spinulous, larger hand oblong, rather longer than wrist, with six lines of small rounded tubercles, the marginal being included, the mobile finger carinate and crenulate, outer surface with one series of tubercles, and other smaller tubercles. Ambulatory feet with the margins densely hirsute. Colour dark to grayish green; granules of hand, base of joints of six anterior legs and tips of inner antennæ blue. Length  $1\frac{1}{2}$  to 2 in. (D.).

New Zealand (Dana; Coll. Brit. Mus.); Auckland (Heller).

A specimen from the Falkland Islands is in the Collection of the British Museum.

#### 69. *Eupagurus spinulimanus*. Pl. I, fig. 6.

*Eupagurus spinulimanus*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 222, (1876).

Carapace with the median rostral tooth nearly obsolete. Eyes slender, longer than the front margin of the carapace, their basal scales small, with a short spine at their antero-internal angles. External antennæ with a short spine external to the basal scale, which is slender, linear, ciliated at the extremity, and shorter than the eyes; flagella with series of three and five joints, alternately annulated with red and white. Anterior legs clothed with short dense hair, and with the wrist and hand spinulous, the larger leg with a series of larger spines on the

upper inner margin of the wrist; hand ovate, with the spinules arranged in two longitudinal lines, reaching to the base of the upper margin of the fingers, elsewhere scattered; smaller hand with a group of larger spinules in the centre of the upper surface of the palm. Ambulatory legs hairy, the hairs more dense on the tarsi, which are slender, longer than the penultimate joint, ante-penultimate joint of legs of second pair with a series of spinules on its upper surface. Colour light pink, with here and there spots of a darker colour. Length from anterior margin of carapace to base of abdomen about 1 in.

New Zealand (Coll. Brit. Mus.).

The abdomen is unfortunately almost entirely destroyed in the single specimen before me, and the total length cannot be given, but this is a much larger animal than *Eu. novæ-zelandiæ*, and the hands are spinulose and hairy, not granulous and naked, as in that species. In *Eu. cristatus*, the hand has one or two prominent denticulated crests, according to the description of M. Milne Edwards.

From *Eupagurus japonicus*, Stimpson, this species differs in its longer slender tarsi. *Eu. acantholepis* of the same author has the wrist slightly canaliculate above, *Eu. constans* has a prominent rostral tooth. In none of these species is mention made of *two* series of spinules upon the palm.

#### ANICULUS.

*Pagurus*, M. Edw. (part) Hist. Nat. Crust. ii, p. 213, (1837).

*Aniculus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 460, (1852).

Front acute in the middle. Ophthalmic segment scarcely exposed, but with a mobile scale. Eye peduncles very long and slender. Antennæ slender, with a short stout basal scale, and a naked flagellum. External maxillipeds approximated to one another at the base. Legs short stout, marked with transverse grooves, each bordered with a close fringe of hairs. Anterior legs very short, subequal; fingers opening vertically, spoon-excavate, with black corneous tips. Ambulatory legs with the coxæ approximated, the fourth pair subchelate. Abdomen soft, unsymmetrical; of the male without genital appendages.

#### 70. *Aniculus typicus*.

*Pagurus aniculus*, Fabr. Ent. Syst. ii, p. 468, (1793); Quoy and

*ndr n. 27.*

Gaim. Voy. Uranie, p. 531, pl. lxxix, fig. 1, (1824); M. Edw. Hist. Nat. Crust. ii, p. 230, (1837).

*Aniculus typicus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 461, pl. xxix, fig. 1, (1852).

Rostral tooth large and triangular, but little prominent. Ocular peduncles much narrowed towards the middle, and of the same length as the front margin of the carapace and the basal joint of the internal antennæ; their basal scales very broad, triangular, and near to one another. Scale of the external antennæ very short. Anterior legs short, robust, of nearly the same thickness, and marked with transverse striæ, (which occupy their whole width, and are very distant from one another), and with small black spines and hairs towards the extremity; fingers very short, with a very thick black nail. Legs of the two following pairs short, thick, rounded, slightly compressed, with transverse lines like the former; tarsi very short. Abdomen of the female with two large transverse horny plates above, which have the posterior margin lobate, the three first oviferous false legs large, terminating in two ciliate joints, with a large foliaceous plate near their base, which unites with a large lamellar tegumentary fold placed obliquely on the under side of the abdomen, and forms a very capacious oviferous pouch; fourth false leg nearly rudimentary. Colour yellowish, washed with red, hairs yellow. Length 4 in. (M. E.).

Auckland (Heller).

This species is found on the shores of various islands in the Pacific, and on the coast of Australia. Specimens are in the Collection of the British Museum.

#### PAGURUS.

*Pagurus*, M. Edw. (part) Hist. Nat. Crust. ii, p. 213, (1837); Dana, U.S. Explor. Exped. xiii, Crust part. i, p. 449, (1852).

Front straight in the middle. Ophthalmic segment exposed, with a mobile scale. Eye peduncles stout, and usually constricted in the middle, with the basal scales broad. External antennæ with the flagellum long, naked, the basal scale short. External maxillipeds approximated at the base. Anterior legs unequal, the left the largest, fingers opening vertically, with corneous tips, more or less spoon-excavate. Ambulatory legs with the coxæ approximated at the base, the fourth pair chelate. Abdomen soft, unsymmetrical, of the male without genital appendages.

71. *Pagurus pilosus*.

*Pagurus pilosus*, M. Edw. Ann. Sci. Nat. (ser. 2) vi, p. 282, pl. xiv, fig. 1, (1836); Hist. Nat. Crust. ii, p. 233, (1837); White, Dieffenb. New Zeal. ii, p. 266; (1843).

Rostral tooth wide, and scarcely projecting. Ocular peduncles cylindrical, less prominent than the basal part of the internal antennæ, much shorter than the front margin of the carapace, armed above with a longitudinal series of little spines, the basal scales small, acute, and remote from one another. Flagellum of the external antennæ thick and short. Anterior legs very unequal, with spinous tubercles and spines, clothed externally with long, close, flexible hairs, which completely conceal the surface of the hand; left leg the largest, the hand swollen, the fingers compressed. Ambulatory legs clothed with long, close hairs. Abdominal plates of the male very small, separated in the middle line by a membranous space, with two pair of abdominal appendages, followed by three false legs, terminating in a single plate, which is very large and much elongated. In the female these appendages have two large terminal plates. Length 3 in. (M. E.).

New Zealand (Coll. Mus. Paris).

This species I have not seen.

72. *Pagurus imbricatus*.

*Pagurus imbricatus*, M. Edw. Ann. Sci. Nat. (ser. 3) x, p. 61, (1848).

Ocular peduncles of moderate thickness, and scarcely reaching beyond the base of the external antennæ. Left hand stout, short, and covered with scarcely prominent tubercles, whose bases have a border of close-set short hairs, so as to resemble imbricated scales. Left leg of the third pair marked with two series of similar lines, placed transversely on the outer surface of the tarsus and penultimate joint. Colour, whitish, mingled with pale red. (M. E.).

"Ruffles Bay." Raffles Bay? (Hombron and Jacquinot).

There are two specimens from Shark's Bay, W. Australia, which probably belong to this species, in the collection of the British Museum.

CLIBANARIUS.

*Pagurus*, M. Edw. (part) Hist. Nat. Crust. ii, p. 213, (1837).

*Clibanarius*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 461, (1852).

Front acute in the middle, ophthalmic segment not exposed. Eye peduncles very long and slender. External antennæ with the basal scale short. External maxillipeds approximated at the base. Anterior legs similar, sub-equal, hand small, fingers opening horizontally, spoon-excavate, and corneous at the tips. Ambulatory legs smooth, usually marked with longitudinal coloured streaks, coxæ approximate at base, the fourth pair chelate. Abdomen unsymmetrical, short, of the male without genital appendages.

### 73. *Clibanarius cruentatus*.

*Pagurus cruentatus*, M. Edw. Ann. Sci. Nat. x, p. 62. (1848).

Anterior legs small and scarcely spinose. Ambulatory legs slender, nearly smooth, and moderately hairy. Colour, blood-red, with a number of white spots. (M. E.).

New Zealand (Quoy and Gaimard).

I have not seen this species.

### 74. *Clibanarius barbatus*.

*Clibanarius barbatus*, Heller, Voy. Novara, Crust. p. 90, pl. vii, fig. 5, (1865).

Carapace rather setose, nearly naked in the middle, with the gastric region rounded in front and divided through the middle line, narrowed and truncate behind. Median tooth of the front acute, sub-carinate. Eyes greatly elongated, slender, reaching beyond the peduncle of the antennæ. Basal scale very acute. Ophthalmic scales bidentate, remote from one another. Anterior legs equal, wrist and hand spinose and pilose above. Legs of the second and third pair densely pilose above and below, with the finger little compressed, scarcely shorter than the tarsus, the nail acute. Legs of uniform colour, becoming red towards the extremity. Length  $1\frac{3}{4}$  in. (H.).

Auckland (Heller, Coll. Brit. Mus.).

Distinguished from its congeners by the dense hairiness of the legs.

*C. cruentatus*  
Heller 2.3.

## Sub-Tribe V. GALATHEIDEA.

*Galatheides*, M. Edw. Hist. Nat. Crust. ii, p. 270, (1837).

*Galatheidea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 401, (1852).

Carapace elongated, of hard crustaceous consistency, and with a deep groove above, partly defining the gastric region. Internal antennæ short, external antennæ elongated. External maxillipeds pediform. Sternum wider behind. Abdomen elongated, rounded above, of crustaceous texture, with elongated appendages beneath, and terminal appendages fan-shaped and expanded as in the *Macroura*. Anterior legs large, perfectly chelate. Three following pairs with styliform tarsi; fifth pair weak, inflexed.

## MUNIDA.

*Munida*, Leach, Diet. Sci. Nat. xviii, p. 52, (1820); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 478, (1852).

*Galathea*, M. Edw. (part) Hist. Nat. Crust. ii, p. 273, (1837).

Carapace depressed, marked with transverse ciliated lines, which present an imbricated appearance: antero-lateral margins spinose. Front composed of three long, distinct spines. Anterior legs generally more elongated and slender, and less compressed than in *Galathea*; spinose. Ambulatory legs slender.

This genus was not considered distinct from *Galathea* by M. Milne Edwards, but has been sustained by Bell, and most succeeding authors.

75. *Munida sub-rugosa*.

*Galathea sub-rugosa*, Hist. Crust. Brit. Mus. (1847), sine descr.

*Munida sub-rugosa*, Miers, Zool. Erebus and Terror, Crust. p. 3, pl. iii, fig. 2, (1874).

Carapace oblong, the sides slightly curved, the lateral margins with seven or eight spines. Middle spine of front projecting considerably beyond the eyes, lateral ones not quite half as long as the middle spine, and not projecting beyond the eyes. A second smaller spine behind each of the lateral frontal spines. A spine on either side of the middle line in the gastric region. Second, third, and fourth abdominal segments with a spine on either side of the middle line. Arms now

wanting in both of the specimens in the Museum. Length of carapace to tip of rostrum  $\frac{5}{8}$  in.

Auckland Islands, Rendezvous Cove (Coll. Brit. Mus.).

I think it quite possible that the *Grimothea gregaria*, Leach, very common at the Falklands and in the Straits of Magellan, is the immature condition of *M. sub-rugosa*. The only difference of any importance between them consists in the elongated foliaceous external maxillipeds of *G. gregaria*, on which Leach established the genus *Grimothea*, and it is also a much smaller species. But in a large series of specimens in the National Collection, named, I think rightly, by Dr. Cunningham *M. sub-rugosa*, and obtained at various points at the Southern extremity of the American continent, there is considerable variation in the length of the external maxillipeds. On the other hand, specimens agreeing with *G. gregaria* in all respects have just been received by the British Museum from New Zealand. I have not however been enabled to observe a complete gradation between the two species. The hands in *G. gregaria* are granulous, in *M. sub-rugosa* they are usually spinulous.

### Tribe. III. MACROURA.

*Macroura*, Latr. (part) Fam. Nat. p. 274. (1825).

*Macroures*, M. Edw. (part) Hist. Nat. Crust. i, p. 247, (1834).

*Macroura*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 497, (1852).

Abdomen elongate, extended backward, with lamellar appendages beneath. Appendages to the penultimate segment large, laterally expanded, and constituting, with the terminal segment, a fan-like swimming apparatus.

Sternum usually linear throughout its length. Antennæ very greatly developed, inner without fossettes. External maxillipeds nearly always pediform. Buccal cavity not distinctly defined in front.

### Sub-Tribe I. THALASSINIDEA.

*Thalassinids*, M. Edw. Hist. Nat. Crust. ii, p. 303, (1837).

*Thalassinidea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 500, (1852).

Carapace usually deep and laterally compressed, with two longitudinal, and usually a dorsal suture. Scale of the external antennæ small or obsolete. Anterior legs largely developed, usually laterally compressed, and adapted to burrowing. The integument of the body is almost membranaceous in texture.

#### Family I. GEBIIDÆ.

*Gebide*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 508, (1852).

External maxillipeds pediform. Caudal and other abdominal appendages broad.

#### GEBIA.

*Gebia*, Leach, Trans. Linn. Soc. xi, p. 342, (1815); M. Edw. Hist. Nat. Crust. ii, p. 312. (1837): Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 509, (1852).

Carapace with a short triangular rostrum. Internal antennæ very short; external antennæ slender, without any basal scale. External maxillipeds pediform. Anterior legs with the hand elongate, compressed, imperfectly subchelate, the upper mobile finger closing against a rudimentary inferior immobile finger. Ambulatory legs monodactyle, first pair somewhat expanded and compressed, tarsus styliform. Abdomen long, and expanded posteriorly, without branchial appendages, caudal appendages broad.

#### 76. *Gebia danai*.

*Gebia hirtifrons*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 511, pl. xxxii, fig. 2, (1852), nec White.

*Gebia danai*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 223, (1876).

Scabrous surface of front part of carapace not reaching more than half way to dorsal suture, and the points mostly in six nearly longitudinal lines. Hand with the outer surface smooth, no spinules or denticulations, and few hairs on the upper margin; on lower margin small denticulations, and rather hairy; lower finger slender, and somewhat incurved; caudal segment not broader than long. Flagella of inner antennæ a little shorter than the last joint of base. Outer antennæ

about as long as abdomen. A spine at lower apex of wrist. Length nearly 2 in. (D.).

New Zealand, Bay of Islands (Dana); South side of Davis Straits (Coll. Brit. Mus.).

I have given above Dana's description of the species he refers to *G. hirtifrons*, a specimen in the British Museum Collection agrees well with it. The front is strongly three-lobed, the lobes triangular, acute, the middle one the longest.

In the typical specimen of *G. hirtifrons* in the Collection of the British Museum, the front is triangular, hairy and scabrous, hardly, if at all, three-lobed; the hand slender, hairy on its outer surface, and not denticulated below, the immobile finger quite rudimentary. Wrist with a spine at its upper apex, and one on the inner surface, but none at the lower apex. The specimen was obtained during the Antarctic Expedition, but is without any definite indication of habitat.

## Sub-Tribe II. ASTACIDEA.

*Macroura Astacina*, De Haan, (part) Faun. Japon. Crust. p. 142, (1841).

*Astacidea*, Dana, U.S. Explor. Exped. xiii. Crust. part i, p. 512, (1852).

Carapace often marked with a dorsal transverse suture, with the longitudinal sutures obsolete. Basal scale of the external antennæ small, obsolete, or large and well developed. Anterior legs stout, didactyle or monodactyle. Carapace of hard texture. Branchiæ penicillate.

## Family I. ASTACIDÆ.

*Astaciens*, M. Edw. Hist. Nat. Crust. ii, p. 326, (1837).

*Astacula*, Dana, U.S. Explor. Exped. xiii. Crust. part i, p. 520, (1852).

Body elongated, sub-cylindrical; carapace rostrate. External antennæ long, with a basal scale. Anterior legs large, with a well developed chelate hand, second and third pair slender, with a small didactyle hand, fourth and fifth pair nearly always monodactyle. Abdomen of nearly the same width as the body throughout.

## PARANEPHROPS.

*Paranephrops*, White, in Gray's Zool. Miscell. ii, p. 79, (1842); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 523, (1853).

Rostrum broad, armed on either side with teeth or spines. Basal scale of the external antennæ longer than the peduncle of the antennæ. Anterior legs somewhat elongated, and armed with series of spines. Abdomen of male without supplementary legs; terminal segment formed of a single piece. Terminal segment and appendages to the penultimate segment not semi-membranaceous.

77. *Paranephrops planifrons*.

*Paranephrops planifrons*, White, Zool. Miscell. p. 79, (1842); Dieffenb. Voy. New Zealand ii, p. 267, (1843); Miers, Zool. Erebus and Terror, Crust. p. 4, pl. iii, fig. 1, (1874).

*Paranephrops tenuicornis*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 527, pl. xxxiii, fig. 4, (1852).

Carapace nearly cylindrical, surface somewhat scabrous, with a short median ridge behind the rostrum, two spines on each side of the carapace behind the eyes, and several spines on the lower surface beneath the enlarged base of the external antennæ. Rostrum elongate, triangular, margins raised, with three or four spines. Basal scale of the external antennæ very large, narrowing anteriorly, with a deep longitudinal groove above, reaching beyond the extremity of the rostrum. Anterior legs elongated, slender, arm with a series of spines extending along the whole length of the inferior margin; hand slender, armed with spines ranged in longitudinal series, spines longest on the upper margin, palm about twice as long as wrist; fingers spinose and hairy. Four succeeding pairs of legs short, slender, slightly hairy. Length about 3 in. (W.).

New Zealand (Coll Brit. Mus.). Auckland (Heller).

I unite the *P. tenuicornis*, Dana, with *P. planifrons*, the prominence of the spines on the hands and the number of spines on the rostrum being subject to variation.

78. *Paranephrops setosus*.

*Paranephrops setosus*, Hutton, Ann. Mag. Nat. Hist. (ser. 4) xii, p. 402, (1873).

Carapace with a strong transverse furrow, and two longitudinal furrows behind it; sides thorny, with many short spines projecting forward. Beak reaching beyond the peduncle of the inner antennæ, broad, flattened, and rather hollowed out above, with four teeth on its sides, and two teeth at the sides of the base; a slight median ridge behind, which extends to the anterior of the two spines at the sides of the base of the beak. Basal scales of the external antennæ extending slightly beyond the thickened basal joint, and with a strong spine close to their base. The first two joints of the arms, (anterior legs), with two rows of spines inside, wrists spined all round, hands spined on the sides and below, and a central row of spines outside, outside covered with distant, long, stiff hairs, the tips of which are often split, hands longer than the fingers, which are spinous on the outer edge. Legs slender. Olivaceous brown, reddish on the centre of the carapace, and first and second abdominal rings below paler, tinted with green round the base of the legs and on the abdominal rings. Spines and tubercles of the hands and fingers black, with yellow tips, spines on the carapace black. Length  $5\frac{2}{3}$  in. (H.).

New Zealand (Coll. Brit. Mus.); near Invercargill, Otago, and R. Avon, near Christchurch, Canterbury (Hutton).

This species is at once distinguished by the numerous spines on the sides of the carapace. The specimen in the Collection of the British Museum bears the name of "*P. horridus*, S." in, I think, Dr. Semper's handwriting, but I cannot discover that this name has ever been published.

79. *Paranephrops zealandicus*.

*young of the carapace*

*Astacus zealandicus*, White, Proc. Zool. Soc. p. 123, (1817); Ann. Mag. Nat. Hist. (ser. 2) i, p. 225, (1818).

*Paranephrops zealandicus*, Miers, Zool. Erebus and Terror, Crust. p. 4, pl. ii, fig. 2, (1874).

Carapace smoothish, beak as long as the peduncle of the outer antennæ, wide, depressed, with a slight keel near the base, the edges thickened, and with five or six small denticulations. Hands somewhat compressed, the outer and inner edges spined, the spines of the inner edge the longer, the hand with many longitudinal rows of hairs in tufts, wrist with three spines on the inner edge, and a deepish groove above, the caudal plates all of a crustaceous substance, the upper side

with many small tufts of depressed hairs. Length nearly 3 in. (W.).  
New Zealand (Coll. Brit. Mus.).

This species must be referred to *Paraupehrops*, both on account of the hairy and spinose anterior legs, and the absence of the supplementary abdominal legs in the males, which are found in *Astacus*.

## Family II. PALINURIDÆ.

*Langoustiens*, M. Edw. Hist. Nat. Crust. ii, p. 289, (1837).

*Palinuridæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 515, (1852).

Body subcylindrical, carapace more or less spinose. Antennary segment greatly developed; antennæ very long, external antennæ especially enormously developed, cylindrical, without a basal scale. External maxillipeds small, pediform. Legs all monodactyle, the anterior pair usually shorter and rather stouter than the rest. Sternum somewhat triangular in shape, broadest behind. Abdomen very large, terminal segment and appendages to the penultimate segment semi-membranaceous.

## PALINURUS.

*Palinurus*, Fabr. (part) Ent. Syst. Suppl. p. 376, 400, (1798); M. Edw. (*Sous-genre Langoustes ordinaires*) Hist. Nat. Crust. ii, p. 292, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 519, (1852); Heller, Voy. Novara, Crust. p. 94, (1865).

Carapace with a small rostrum. Antennary segment very narrow above. External antennæ nearly in contact with one another at their base, and concealing the bases of the internal antennæ, the flagella of which are very short.

### 80. *Palinurus lalandii*.

*Palinurus lalandii*, M. Edw. Hist. Nat. Crust. ii, p. 293, (1837).

Carapace armed with spines and covered with large oval depressed tubercles, which are separated at their base by close, short hairs. Rostrum with the lateral spines smooth above and below, and not projecting nearly so far as the small median spine, below the base of which are two small spines. Abdomen entirely covered with flattened

squamiform tubercles, the posterior margins of which are fringed with very short hairs. A single tooth upon the posterior margin of the lateral spines of the abdomen. Internal antennæ short. Anterior legs very large, short, with two very strong conical teeth above, one upon the second joint, and the other upon the lower margin of the arm; following legs granulous above. Colour brown red, irregularly spotted with yellow. (M. E.).

New Zealand? Cape of Good Hope (Edwards).

### 81. *Palinurus edwardsii*.

*Palinurus edwardsii*, Hutton, Trans. New Zeal. Inst. p. 279, (1875).

*Male*.—Carapace beaked, armed with spines and large oval depressed tubercles, separated by rows of short hairs. Beak small, compressed, curved upwards, and with two small spines at its base. Spines on each side of the beak compressed and smooth. Abdomen transversely sulcated, and covered with flat tubercles, each segment with a row of short hairs on its posterior margin. A single tooth on the posterior margin of the lateral lobes of the abdominal segments. Anterior legs with a strong spine on the inferior margin of the second and third joints, none on the penultimate joint. The superior margin of the distal extremity of the third joint of the last four pairs of legs armed with two spines, a smaller one in front of the larger. Colour dark brownish-purple; abdomen the same, marbled with yellow; legs and caudal appendages reddish-orange, more or less marbled with purple.

*Female*.—Has a spine on the inferior margin of the distal extremity of the penultimate joint of the last pair of legs. Length  $9\frac{1}{2}$  in. (H.).

New Zealand (Coll. Brit. Mus.); Otago Heads (Mus. Wellington). Common.

Differs from *P. lalandii* in its much smaller size, in the shape of the beak, in having no spine on the penultimate joint of the anterior legs, and in having a second small spine at the distal extremity of the third joint of the last four pairs of legs.

Found also at the island of St. Paul, in the Indian Ocean. The specimens from New Zealand, in the Collection of the British Museum, that have been referred to *P. lalandii*, belong to this species; and hence I am in doubt whether *P. lalandii* be also an inhabitant of the New Zealand Seas. It was formerly considered a common New Zealand species.

## Sub-Tribe III. CARIDEA.

*Salicoques*, M. Edw. (part) Hist. Nat. Crust. ii, p. 338, (1837).

*Caridea*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 501, (1852).

Carapace smooth, without sutures. External antennæ with a large basal scale. The first and second pair of legs chelate, one pair or both often more or less enlarged; third pair not chelate. (Branchiæ foliate. Carapace of thin texture).

Prof. Dana, in his sub-divisions of the *Caridea*, based upon the researches of De Haan, relies mainly upon the form of the mandibles, which he considers offer four distinct types of structure. But while the great importance of these researches in any system of classification cannot be denied, this system is not free from the defects which always exist when the modifications of a single organ are taken as the basis of a system of classification, and which have already caused the rejection of several of De Haan's genera by succeeding carcinologists. For example: by uniting in one group all the genera in which the mandible is of the first type, *i.e.*, simple, slender, and inflexed, genera are introduced, which differ very greatly in external form and structure from the typical *Crangonidæ*; as in the case of *Cyclorhynchus* and *Gnathophyllum*, where the form of the mandible approaches the second type, to which these genera already belong in external characteristics. Moreover the difference between the third and fourth of the types instanced by Dana, is, I think, only one of *degree*. I may add, that the mandibles being covered externally by the three pairs of maxillipeds, are often very difficult of observation in dried specimens. I have, therefore, in the following arrangement of the families, while not neglecting other characteristics, paid regard primarily to modifications of the form of the two anterior pairs of legs, upon which Dana has based his sub-families, and which lead to an arrangement of the families at least as natural as that of Dana.

## Family I. CRANGONIDÆ.

*Crangoniens*, M. Edw. Hist. Nat. Crust. ii, p. 339, (1837).

*Crangonidæ*. sub-family *Crangoninaæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 532, (1852).

Legs of the first pair more robust than those of the second pair, with the mobile finger closing against the anterior margin of the palm,

the immobile finger more or less rudimentary, and spiniform. Second pair of legs with the wrist never annulated. Mandibles simple, usually slender and incurved. Sternum usually triangular, broader at base.

#### RHYNCHOCINETES.

*Rhynchocinetes*, M. Edw. Hist. Nat. Crust. ii, p. 382. (1837).

Carapace of normal shape, rounded above. Rostrum very large, lamellate, compressed and articulated with the front. Eyes prominent, and when retracted downward, received into a cavity in the upper surface of the peduncle of the superior antennæ. Inferior antennæ with a very long and stout flagellum. External maxillipeds pediform, elongate, slender cylindrical. Abdomen convex and geniculated above as in *Hippolyte*. Anterior legs stout, with a well-formed hand, but with the immobile finger somewhat rudimentary. Second pair more slender, chelate, wrist not annulate, tarsi of the last three pairs very short.

This genus was referred by M. Milne Edwards to his *Palemoniens*, and by Dana to the *Alpheinae*. It appears to me that it has upon the whole more affinity with the *Crangonidae*, different as it appears at first sight from the typical form, on account of its large anterior legs, with the somewhat rudimentary immobile finger, the carpus of the second pair of legs which is never annulate, and the broad, triangulate sternum. The mandibles, though broad and stout, are not bilobed.

#### 82. *Rhynchocinetes typus*.

*Rhynchocinetes typus*, M. Edw. Ann. Sci. Nat. (ser. 2) vii. p. 165, (1837); Hist. Nat. Crust. ii, p. 383. (1837); Gay, Chili, iii, p. 216, pl. i, fig. 7, (1849); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 568, pl. xxxvi, fig. 7, (1852).

Carapace with four spines, three upon the front margin and one in the middle line, behind the median marginal spine. Rostrum very large, laterally compressed, upper margin with two distant teeth near its base, and seven or eight closely placed teeth at the extremity, lower margin with about twenty large teeth. External maxillipeds often longer than the rostrum, tipped with spines. Anterior legs large, fingers short, and rather spoon-excavate, hairy above, wrist with a

spine above. Tarsi spinulous below. Length often nearly 4 in. (M. E.).

New Zealand (Coll. Brit. Mus.).

Found also on the coasts of Australia and Chili.

### Family II. ATYIDÆ.

*Alphéens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 345, (1837).

*Atyidæ*, sub-family *Atyinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 533, (1852).

First and second pair of legs both small, weak, fingers ciliate. Hand articulated with wrist by the middle of its lower margin. Wrist of the first and sometimes of the second pair of legs lunate-excavate anteriorly, of the second pair never annulated. Mandibles broad at top, slightly bilobed, not palpigerous.

### CARIDINA.

*Caridina*, M. Edw. Hist. Nat. Crust. ii, p. 362, (1837).

Carapace with a well developed rostrum. Internal antennæ with two multiarticulate flagella, of which one is thickened at the base. External maxillipeds long, slender, and pediform. Thoracic legs without an accessory palpus. Anterior legs short, with the wrist nearly triangular, broadest and lunate-excavate in front. Hand articulated with the wrist at its lower angle, fingers lamellar, and spoon-excavate at the extremities. Second pair longer and more slender, wrist of normal shape. Hand similar to that of first pair.

### 83. *Caridina curvirostris*.

*Caridina curvirostris*, Heller, Voy. Novara, Crust. p. 105, (1865).

Rostrum reaching beyond the antennal appendages, slender, greatly reflexed at the end, 12-dentate above, the teeth rather distant, the two last placed on the carapace, posterior to the eyes, the 2-3 front approximated at the apex; five dentate below. Legs of the first pair with the wrist shorter than the hand, of the second pair with the wrist slender, and longer than the hand. Legs of the second pair

reaching a little beyond the peduncle of the antennæ. Tarsi and fingers of the posterior legs spinulous below. Length about  $2\frac{1}{4}$  in. (H.).

Auckland (Heller).

I have seen no specimens of this species.

#### ATYA.

*Atya*, Leach, Zool. Miscell. iii, (1817); M. Edw. Hist. Nat. Crust. ii, p. 347, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 533, (1852); Alph. M. Edw. Ann. Soc. Entom. France (ser. 4) iv, p. 150, (1864).

Carapace with a short depressed rostrum. Internal antennæ with two flagella. External maxillipeds small, concealed by the first two pair of legs, in both of which the hand is articulated by the middle of the lower margin, divided nearly to its base, the fingers long ciliated at their extremity. Third pair of legs very long and thick, fourth and fifth of normal shape.

#### 84. *Atya pilipes*.

*Atya pilipes* Newport, Ann. Mag. Nat. Hist. xix, p. 160, (1847); Alph. M. Edw. Ann. Soc. Entom. France (ser.4) iv, p. 150, (1864).

Carapace and abdomen smooth. Beak simple, triangular, very short, with a slight median ridge. Fourth and fifth pair of legs nearly equal, thighs of legs having upon the external surface an oblique groove bordered with a fringe of dense fine hairs. Length  $1\frac{3}{8}$  in. (N.).

New Zealand? Fiji Islands, Ovalau (Coll. Brit. Mus.).

This species was described by Mr. Newport (l.c. p. 158), as obtained at "Apia, Upolu, New Zealand." The type specimen was presented by him to the British Museum, and is registered as coming from New Zealand. Apia, in the Island of Upolu, is in the Samoan Group of Islands, as Mr. Dana notes, (see note to p. 533 of part i, of the Crust. U.S. Explor. Exped.), and as specimens of this species, obtained from the Fiji Islands, are now in the collection of the British Museum, little doubt can be entertained but that Samoa is the correct locality of the type-specimen of the species, and that it has been erroneously included in the New Zealand Fauna.

## Family III. ALPHEIDÆ.

*Alphéens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 345, (1837).

*Palémoniens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 367, (1837).

*Alpheide*, sub-family *Alpheinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 534, (1852).

*Crangonide*, sub-family *Lysmatinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part. i, p. 533, (1852).

Rostrum usually short or obsolete. First pair of legs thicker than the second. Second pair slender, elongated, with the wrist annulated. Mandibles bilobed, or rarely simple, and incurved, not palpigerous.

## HIPPOLYTE.

*Hippolyte*, Leach, (part) Trans. Linn. Soc. xi, p. 347, (1815); M. Edw. (part) Hist. Nat. Crust. ii, p. 370, (1837); Dana, (part) U.S. Explor. Exped. xiii, Crust. part i, p. 534, (1852).

Rostrum long and laterally compressed, nearly always dentate, immobile, prolonged backward upon the surface of the carapace as a crest. Eyes prominent. Internal antennæ rather short, with two flagella, of which one is larger. External maxillipeds slender, rather long. First pair of legs short, but stouter than the rest. Second pair with the wrist multi-articulate. Abdomen suddenly deflexed in the middle. Caudal appendages lanceolate. ciliate on the margins.

85. *Hippolyte spinifrons*.

*Hippolyte spinifrons*, M. Edw. Hist. Nat. Crust. ii, p. 377, (1837); White, Dieffenb. New Zeal. ii, p. 267, (1843).

Rostrum rising near the middle of the gastric region, scarcely reaching beyond the first joint of the internal antennæ, nearly straight, slender, without teeth below, with five teeth above; suborbital spines very large and strong. External maxillipeds very long, ending in a cylindrical joint which reaches considerably beyond the scale of the external antennæ. Anterior legs of moderate size, not reaching beyond the peduncle of the external antennæ. Second pair as long as the third pair, with a multi-articulate wrist. Abdomen not geniculate, terminal plate armed with two pairs of strong spines. Length rather more than 1 in. (M. E.).

New Zealand (Mus. Paris).

I have seen no specimens of this species.

## VIRBIUS.

*Hippolyte*, Leach, (part) Trans. Linn. Soc. xi, p. 347, (1815); M. Edw. (part) Hist. Nat. Crust. ii, p. 370, (1837); Dana, (part) U.S. Explor. Exped. xiii, Crust. part i, p. 534, (1852).

*Virbius*, Stimpson, Proc. Acad. Nat. Sci. Philad. p. 35, (1860).

Resembles *Hippolyte*, but with the back of the carapace and rostrum ecarinate. Mandibles not palpigerous. External maxillipeds short, with an outer but not an inner palpus. Legs without a palpiform appendage. Legs of the first pair with the wrist excavate anteriorly, of the second pair with the wrist triarticulate.

The rostrum, which rises from the anterior margin of the carapace, and the few jointed wrist, are external characteristics which sufficiently distinguish this genus.

86. *Virbius bifidirostris*. Pl. II, fig. 1.

*Virbius bifidirostris*, Miers, Ann. Mag. Hist. (ser. 4) xvii, p. 224, (1876).

Carapace smooth, with two minute spines on each side below the eyes. Rostrum slender, longer than the carapace, and nearly as long as the scale of the external antennæ, with two teeth on the upper margin, placed at some distance from one another, and another minute near the apex, which thus appears bifid, lower margin with seven teeth. Scale of the external antennæ without a spine at base, but with a small spine at the distal extremity of the outer margin. External maxillipeds about reaching to the end of the peduncle of the outer antennæ, terminal joint dilated and minutely spinulous. First pair of legs very short, when directed forward not reaching to the end of the external maxillipeds. Second pair of legs with the joints of the wrist short, the second joint the shortest. Terminal segment of abdomen and caudal appendages slender. Length  $1\frac{1}{2}$  in.

New Zealand (Coll. Brit. Mus.).

## ALPHEUS.

*Alpheus*, Fabr. Ent. Syst. Suppl. p. 380, (1798); M. Edw. Hist. Nat. Crust. ii, p. 343, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 534, (1852).

Rostrum very short. Eyes concealed beneath the carapace. Internal antennæ with two flagella. Anterior legs very large, unequal, one hand greatly developed, of variable shape, chelate, with the moveable finger uppermost.

### 87. *Alpheus socialis*.

*Alpheus socialis*, Heller, Voy. Novara, Crust. p. 106, pl. x, fig. 1, (1865).

Rostrum very short, triangular, rising between the bases of the eyes, divided from the orbits by a deep groove, reaching to scarcely half the length of the first joint of the peduncle of the antennules. Orbits armed with a spinule in front, a little shorter than the rostrum. The basal scale of the antennules of the length of the first joint, the second joint twice as long as the first. Antennæ armed at the base with a long and acute spine, nearly reaching to the end of the second joint of the peduncle of the antennules. Their basal scales very narrow in front, nearly triangular, shorter than the peduncles, with a large apical spine reaching beyond the end of the peduncle of the antennules. Anterior legs unequal, with the larger hand a little twisted outwardly towards the extremity; the palm compressed, the margins entire, the upper margin with two longitudinal ridges, the surface thinly pilose; the fingers very short pilose. Legs of the second pair longer than those of the third pair, last pair rather robust, with the meros unarmed, the tarsus spinulose below, the finger acute, short. Length about  $\frac{3}{4}$  in. (H.).

Auckland (Heller); New Zealand (Coll. Brit. Mus.).

Also found at Sydney (Heller).

### 88. *Alpheus novæ-zealandiæ*. Pl. II, fig. 2.

*Alpheus novæ-zealandiæ*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 224, (1876).

Rostrum triangular, acute, rising at a considerable distance behind the bases of the eyes, separated from the orbits by a deep and wide groove, and projecting beyond the frontal margin of the carapace to nearly the extremity of the first joint of the inner antennæ. Interocular part of the frontal margin of the carapace straight, without spinules, considerably more prominent than the part exterior to the

eyes. External antennæ with a very short spine at base, and another at the end of the last joint of the peduncle, the basal scale about equalling the length of the peduncle. Anterior legs with the hand elongate, twisted somewhat outwardly, with an oblique ridge above and below, without grooves or notches, except a short transverse groove behind the base of the mobile finger, which is short, rounded above and compressed. Wrist of the second pair of legs with the first, (proximal), and second joints long, nearly equal, together exceeding in length the three last joints which are all short. Legs clothed with scattered hairs. Length about 2 in.

New Zealand (Coll. Brit. Mus.).

This species is allied to the *Alpheus gracilipes*, Stimpson, from Tahiti, but in that species the larger hand is straight, and the orbits acute in front. From *A. socialis* it is distinguished by the absence of spinules on the upper orbital margin, the shorter basal spine of the external antennæ, &c.

#### BETAEUS.

*Betaeus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 558, (1852).

Resembles *Alpheus*. Front without a beak. Anterior hands more or less inverted, the mobile finger being the lower or outer.

#### 89. *Betaeus æquimanus*.

*Betaeus æquimanus*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 560, pl. xxxv, fig. 11. (1852).

Front with a deep emargination in place of beak. Basal scale of outer antennæ a little shorter than base, outer spine very short; basal spine of inner pair very long, second joint much shorter than first. Anterior legs equal, hand smooth, compressed, fingers very short. Legs of second pair longer than third, first joint of wrist more than twice as long as second; second, third, and fourth very short. Third joint of following legs wholly unarmed. Length  $1\frac{1}{2}$  in. (D.).

New Zealand; Bay of Islands (Dana). Along shores of Black Rocks among seaweed.

I have not seen specimens of this species.

## ALOPE.

*Alope*, White, Proc. Zool. Soc. p. 123, (1847); Ann. Mag. Nat. Hist. (ser. 2) i, p. 225, (1848).

Carapace smooth. Beak short, serrated above, buried in a deep groove, which has a spine on each side in front. Eyes with a thick short peduncle, situated in a hollow on each side, and with a spine external to them on each side of the carapace, which is shorter than the inner spine. Inner antennæ thick, each with two flagella, of which one is very short. Outer antennæ with the basal scale longer than the joints of the peduncle, the flagellum very long. External maxillipeds very large, from the base nearly as long as the animal, first joint the longest, third joint more than twice as long as the second, compressed, blunted at the end. Anterior legs robust, with well developed chelæ; second pair very slender, chelate, with many jointed wrist, (as in *Alpheus*); remaining legs slender, claws serrated below.

90. *Alope palpalis*.

*Alope palpalis*, White, Proc. Zool. Soc. p. 124, (1847); Ann. Mag. Nat. Hist. (ser. 2) i, p. 225, (1848); Miers, Zool. Erebus and Terror, Crust. p. 4, pl. iv, fig. 1, (1874).

Beak four-toothed above, entire below, about twice as long as the spine on each side. Terminal segment of the tail with a longitudinal median groove above, and with two pairs of small spines at its extremity. Anterior legs with the hand rough, the fingers opening horizontally. Length  $2\frac{1}{4}$  in.

New Zealand (Coll. Brit. Mus.). Found also upon the Australian Coast.

White's typical specimen has the carapace abnormally wide, and the beak broken off at the extremity, which occasioned some errors in his description of the genus.

## Family IV. PALAEMONIDÆ.

*Alphéens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 345, (1837).

*Palemoniens*, M. Edw. (part) Hist. Nat. Crust. ii, p. 367, (1837).

*Palaemonidæ*, sub-families *Palaemoninæ* and *Oplophorinæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 535 and 536, (1852).

Second pair of legs much larger and longer than the first, wrist never annulate. Mandibles deeply bilobed, often palpigerous. Rostrum well developed.

#### PALAEMON.

*Palaemon*, Fabr. Ent. Syst. Suppl. p. 378, (1798); M. Edw. Hist. Nat. Crust. ii, p. 387, (1837); Dana, U.S. Explor. Exped. xiii. Crust. part i, p. 535, (1852).

Carapace somewhat compressed, and rounded above, with a marginal spine below the eyes, and sometimes a second spine placed behind it upon the hepatic region. Rostrum long, laterally compressed and dentated. Eyes prominent, not concealed by the carapace. Internal antennæ with three flagella. External maxillipeds slender. Mandibles with a three-jointed palpus. First and second pair of legs chelate, the first pair slender, the second much longer and larger, not lamellate. Abdomen large.

#### Sub-Genus I. LEANDER.

*Leander*, Desm. Ann. Soc. Ent. France vii, p. 87, (1849).

Carapace with a lateral spine on the front margin, and a second marginal or submarginal spine placed beneath it, but without a spine on the hepatic region behind the upper marginal spine. (Species usually of small size. Legs of the second pair not so greatly developed as in *Palaemon*).

#### 91. *Leander affinis*.

*Palaemon affinis*, M. Edw. Hist. Nat. Crust. ii, p. 391, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 584, pl. xxxviii, fig. 5, (1852).

*Palaemon quoianus*, M. Edw. Hist. Nat. Crust. ii, p. 393, (1837); White, Dieffenb. Voy. New Zealand ii, p. 268, (1843).

Beak a little longer than scale of outer antennæ, usually seven-toothed above, and four-toothed below, a little recurved, sometimes appearing bifid at apex. Hands all very slender, first pair shorter than wrist, second pair considerably longer than wrist, fingers less than half the length of the hand, a little hairy within. Following legs

very slender, unarmed and naked, except a few hairs at tips of joints. Two of the flagella of the inner antennæ united to eighth or ninth joint. Outer maxillipeds short, about reaching to apex of base of outer antennæ. Extremity of abdomen very narrow, having three minute spinules, and between them two longish setæ. Colour nearly pellucid, with some bright green lines of extreme delicacy along the carapace and the abdomen; four posterior legs with two red spots, one at either extremity of the femur, second pair with three red spots, one in either hand at the base of the fingers. Length about 2 in. (D.).

New Zealand (Coll. Mus. Paris; Brit.; Dana).

*P. quoianus*, M. Edwards, is described by him as follows:—

Rostrum straight, robust, about as long as the scale of the external antennæ, with six teeth above, and three below, not bifid at the extremity, terminating in a single point, behind which are placed, one immediately above the other, the first tooth of the upper and of the lower series. Two spines on each side, on the front margin of the carapace. Second pair of legs short, cylindrical, slender, scarcely reaching beyond the lamellar appendages of the antennæ; hands as long as the wrist, scarcely swollen, fingers very short. Length about 1 in.

It will be seen from the above description, that *P. quoianus* is principally characterized by its non-bifid rostrum, (which has only six teeth above and three below), and shorter hands. But the number of teeth varies slightly in a large series of specimens, while the bifid appearance is caused by the greater or less approximation of the anterior tooth of the upper series to the apex of the rostrum—also a variable character. The length of the hands of the second pair also depends greatly upon the age and sex of the specimen, and upon the whole, I am inclined to unite *P. affinis* and *quoianus*. This species seems to be very common in New Zealand, and is also found at the Falkland Islands, and Cape of Good Hope.

## 92. *Leander natator*.

*Palæmon natator*, M. Edw. Hist. Nat. Crust. ii, p. 393, (1837).

*Leander erraticus*, Desm. Ann. Soc. Ent. France p. 87. (1849).

Rostrum about the length of the basal scale of the external antennæ, narrow at base, but very wide at the end, almost lance-shaped, with

eleven or twelve teeth above, scarcely dentate below. Second pair of legs of moderate length, very slender towards the base, but narrowing to the extremity; palms ovoid; fingers slender, and straight to near the end. Last abdominal segment terminating in three spines, and two rather long bristles. Length about  $1\frac{1}{4}$  in. (M. E.).

New Zealand (Coll. Brit. Mus.).

- doubtfully

This common and very widely distributed pelagic species is usually found associated with *Planes minutus*. The rostrum varies very greatly in width, (or depth).

#### Sub-Genus II. PALÆMON.

Carapace with a single lateral spine on the front margin of the carapace, and behind it a second spine, on the hepatic region. (Species often attaining a large size, and with the second pair of legs greatly developed).

#### 93. *Palæmon ornatus*.

*Palæmon ornatus*, Olivier, Encycl. viii, p. 660, (1812); M. Edw. Hist. Nat. Crust. ii, p. 396, (1837).

Rostrum nearly straight, not reaching to, or at least not reaching beyond the end of the lamellar appendage of the external antennæ, and armed with eight or ten small teeth on its upper, and two or three on its lower margin. Legs of the second pair very long, slender, and as it were chagrinatè; wrist about as long as the palm of the hand; fingers cylindrical, somewhat hooked at the end, with a tooth on the mobile, and two near the base of the immobile finger. In young specimens these teeth are scarcely visible, but they become very strong as the animal increases in age. Following legs nearly smooth, with the tarsus extremely short. Last abdominal segment obtuse, and with a semicircular margin with a spine on each side. Length often about 6 in. (M. E.).

247 2. 2

Auckland (Heller).

This common and widely distributed species is found at the Mauritius, on the Australian Coast, at the Fiji Islands, New Hebrides, &c.

It sometimes attains a very large size.

## Order II. STOMAPODA.

*Stomapoda*, Latr. Fam. Nat. p. 282, (1825).

*Stomapodes*, M. Edw. Hist. Nat. Crust. i, p. 235, (1834).

*Anomobranchiata v. Stomapoda*, Dana, U.S. Explor. Exped. xiii, Crust. part. i, p. 8, (1852).

Branchiæ not enclosed beneath the carapace, but pendent from the base of the thoracic legs, or at the base of the abdominal appendages, or entirely wanting. (The first two and sometimes all three pairs of maxillipeds are pediform. The legs are usually palpigerous, one or two of the posterior pairs are often wanting. The abdominal appendages are often obsolete).

### Family I. SQUILLIDÆ.

*Squilliens*, M. Edw. Hist. Nat. Crust. ii, p. 509, (1837).

*Squillidæ*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 615, (1852).

Carapace nearly quadrilateral, with two longitudinal grooves above, and leaving exposed the two first segments of the head and several segments of the body. Frontal plate mobile, and separated by a suture from the carapace. Internal antennæ with three flagella. External antennæ short, bearing a large oval, often foliaceous scale. Second pair of maxillipeds very greatly developed and prehensile, with the inferior margin of the last two joints usually armed with spines. Three first pairs of thoracic legs shorter, prehensile, applied to the buccal cavity, with the penultimate joint expanded; the succeeding pairs slender. Abdomen very large, with largely developed branchial appendages. The terminal segment and appendages to the penultimate segment greatly developed.

### SQUILLA.

*Squilla*, Fabr. (part) Ent. Syst. Suppl. p. 511, (1798); M. Edw. Hist. Nat. Crust. ii, p. 517, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 615, (1852).

Body compactly articulated. Carapace very short, narrower in front, often costate, leaving nearly five posterior segments of the abdomen exposed. Abdomen longitudinally costate above, its caudal

segment about as long as broad, with a high longitudinal median ridge, and with six or eight large marginal spines, which are not mobile.

94. *Squilla nepa*.

*Squilla nepa*, Latr. Encycl. Méth. x, p. 471, (1825), not synon.; M. Edw. Hist. Nat. Crust. ii, p. 522, (1837).

*Squilla oratoria*, De Haan, Faun. Japon. Crust. p. 223, pl. li, fig. 2, (1850).

Rostral plate semi-oval. Carapace much retracted in front, expanded and rounded behind, with five longitudinal crests above, (one median, and two branchial on each side); the latero-anterior angles spiniform, and much produced forwards, extending beyond the median portion of the frontal margin; its posterior margin with a median tooth, of triangular form, and directed backwards. Large prehensile limbs, with the terminal joint rather short, geniculate, and armed with six spines. Length often about 5 in. (M. E.).

not 2, 3

Auckland (Heller).

This widely distributed species may be distinguished from others of the genus which have the terminal joint of the large prehensile legs six-spined, by the form of the first of the four exposed thoracic segments; which has the lateral margins notched, with a larger terminal, and smaller lateral, lobe. This peculiarity is noted both in the descriptions of De Haan and Latreille. The abdomen has on each segment, (except the last), eight longitudinal ridges, which terminate posteriorly in spines on the fourth, fifth, and sixth segments. The last segment has eight thickened marginal spines, and a longitudinal median ridge.

It is found on the coasts of China and Japan, India, Australia, the Philippines, Chili, &c.

GONODACTYLUS.

*Gonodactylus*, Latr. Encycl. Méth. x, p. 473, (1825); M. Edw. Hist. Nat. Crust. ii, p. 528, (1837); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 615, (1852).

Body somewhat loosely articulated, not longitudinally costate, with the exception of the last two abdominal segments. Terminal joint of the large prehensile legs swollen at the base, close to its articulation with the wrist. Caudal segment terminating or not, in two mobile spines.

95. *Gonodactylus trispinosus*.

*Gonodactylus trispinosus*,\* List. Crust. Brit. Mus. p. 85, (1847), sine descr. : Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 623, (1852): Heller, Voy. Novara, Crust. p. 126, (1865).

Carapace nearly oblong, unarmed. Front with three spines, one longer median, and two lateral. Anterior legs with the second joint very large, the terminal unarmed. Abdomen with the antepenultimate segment slightly, and the terminal segment closely, longitudinally rugose; terminal segment concave above, with four rounded prominences or tubercles at base, and three placed in a triangle on the upper surface, which is longitudinally rugose; posterior margin crenate. Length about  $1\frac{1}{2}$  in. (D.).

Auckland (Heller).

Found also at the Fiji Islands, and at Swan River, Australia, where the type specimen in the Collection of the British Museum was obtained.

## II. EDRIOPHTHALMATA.

*Edriophthalmata*, Leach, Linn. Trans. xi, p. 307, (1815).

*Edriophthalmes*, M. Edw. Hist. Nat. Crust. i, p. 234, (1834).

*Edriophthalmia*, Dana, (part) U.S. Explor. Exped. xiii, Crust. part i, p. 8, (1852).

Malacostracous Crustacea, with mandibles and maxillipeds adapted for mastication, sessile eyes, and destitute of a carapace. (No branchiæ properly so called, respiration being effected by the modification, wholly or in part, of some of the thoracic or abdominal appendages.)

### Tribe I. ISOPODA.

*Isopoda*, Latr. (part) Fam. Nat. p. 290, (1825); M. Edw. Hist. Nat. Crust. i, p. 234, (1834); Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 12, (1852).

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\* It is evident, from this and other references in his Volumes, that Dana had seen proofs of the then unpublished plates of the Crustacea of the "Erebus and Terror," by which he was enabled to identify the specimens collected by him, with White's undescribed species. He has, in some instances, added descriptions and thereby has secured the priority of nomenclature. Four of these plates, with descriptive text by myself, have been published lately by Mr. Janson with the remainder of the unpublished stock of the work. Of the other plates no proofs could be discovered at the time; one has since been brought to light, and the figure of *Scrolis latifrons* has been reproduced from it for this Catalogue.

Body convex and rounded above, not laterally compressed. The seven pair of thoracic legs consisting of an anterior series of three, and a posterior series of four pairs. Segments of the abdomen, (the last excepted), short, and often more or less coalescent. Abdominal appendages of the first five segments foliaceous, and used for respiration, of the sixth segment operculiform, lamellate or styliiform. Terminal segment large, destitute of appendages.

### Sub-Tribe I. IDOTEIDEA.

*Idoteides*, M. Edw. (part) Hist. Nat. Crust. iii, p. 121, (1840).

*Idoteaidea*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 696, (1853).

Body oblong-oval, oblong, or linear in form. Posterior pair of abdominal appendages enlarged, operculiform, closing over the other (branchial) abdominal appendages.

### Family I. IDOTEIDÆ.

*Idoteoides*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 697, (1853).

Legs all similar, sub-preheusile, or adapted for walking.

### IDOTEA.

*Idotea*, Fabr. (part) Ent. Syst. Suppl. p. 302. (1798).

*Idotea*, Latr. Hist. Nat. Crust. et Ins. vi, p. 360, (1803); M. Edw. Hist. Nat. Crust. iii, p. 125, (1840).

*Idotea*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 698, (1853).

Body elongated. Head quadrilateral, broader than long. Eyes placed laterally. External antennæ much longer than the internal, and terminating in a multi-articulate flagellum. Maxillipeds very large. Seven segments of the body all of nearly the same shape and size. Abdomen with several of the seven segments short, usually more or less coalescent, the terminal segment very large, its appendages greatly developed, covering the whole inferior surface of the abdomen, and closing like doors over the branchial appendages.

96. *Idotea argentea*.

*Idotea argentea*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 698, pl. xlvi, fig. 1, (1853).

? *Idotea compacta*, List. Crust. Brit. Mus. p. 95, (1847), sine descr.

Long sub-elliptical, truncate or slightly excavate in front; surface even and smooth, epimerals rather broad, entire. Abdomen broad oblong, a little narrower behind, and broad truncato-rotund at apex. Eyes prominent, situated on the angles of the head. Inner antennæ hardly half as long as base of outer, last joint as long as two preceding, very minutely setulose on the outer side. Outer antennæ nearly half as long as the body, flagellum seven-jointed, and shorter than the base, setæ minute, and rather few. Colour silvery, with a bluish shade, which is deeper towards the sides. Length five lines. (D.).

New Zealand? (Dana).

Dana considers that a specimen six lines long, which he obtained near New Zealand, and which differs in having the flagellum of the outer antennæ about as long as the base and eight-jointed, surface minutely scabrous under a high magnifier, probably belongs to this species.

The specimens in the Collection of the British Museum, which I refer with some doubt to this species, have the body broadest in the middle, somewhat approaching the form of *Edotea*, and the terminal segment of the abdomen usually, but not always, marked with a white band on its posterior margin. Length  $\frac{3}{4}$  in.

There are specimens from the coast of New South Wales, and one from Borneo, in the Collection. The latter was named by White *I. compacta*, in the List of Crustacea in the British Museum.

*Idotea margaritacea*, (Dana, U.S. Explor. Exped. Crust. part ii, p. 700, pl. xlvi, fig. 2); has the three teeth of the front very low; one in either angle, the third less distinct, in the middle of the front, the outer subacute, the spaces between low concave. Inner antennæ extending to apex of antepenultimate joint of base of outer antennæ, with a few short setæ at apex on either side. Outer antennæ with the flagellum but four or five-jointed. Surface of the joints very minutely scabrous when seen under a high magnifier. Colour bluish, with the back pearly white. It was obtained between New-Holland and Northern New Zealand, and differs from the preceding somewhat in its antennæ and front of head; and the body is not quite so much narrowed behind. I think that it is probably only a variety of *I. argentea*.

doubtful

97. *Idotea affinis*.

*Idotea affinis*, M. Edw. Hist. Nat. Crust. iii, p. 133, (1840).

? *Idotea nitida*, Heller, Voy. Novara, Crust. p. 131, pl. xii, fig. 1, (1865).

Thorax narrow, oblong, convex, with the segments of nearly equal width throughout, first three segments with the anterior and posterior lateral angles somewhat produced and rounded, epimeral pieces oblong, rather narrow. Antennæ reaching usually to the posterior margin of the third thoracic segment, with the two last joints of the peduncle subequal, longer than the preceding, flagellum with about twenty joints. Abdomen two-jointed, second joint incised on the sides, terminal joint long, with the posterior margin concave, the lateral angles acute or obtuse. Length  $1\frac{3}{4}$  in. ; breadth  $\frac{3}{8}$  in. (H.).

New Zealand; Auckland (Coll. Brit. Mus.).

This species varies slightly in the number of the joints of the external antennæ, and the more or less acute latero-posterior angles of the last abdominal segment. The specimens in the British Museum seem to a certain degree intermediate between *I. affinis*, M. Edw., as described by Heller, from the Cape, and *I. nitida* from St. Paul Island.

98. *Idotea elongata*. Pl. II, fig. 3.

*Idotea elongata*, List. Crust. Brit. Mus. p. 95, (1847), sine descr. ; Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 225, (1876).

Elongate-linear, regularly rounded, so as to appear cylindrical from above. Segments of thorax longer than broad, with the epimeral pieces in a lateral view very narrow-linear, and coalescent with the thoracic segments, the lines of union indicated by sutures on the sides, beneath greatly developed, and sheathing the base of the legs. Head usually coalescent with the first thoracic segment. Antennæ as in *I. affinis*, flagella about 22-jointed, terminal segment of the abdomen with a rather deep rounded excavation at its extremity, the latero-posterior angles rounded. Length  $1\frac{5}{8}$  in. ; breadth not  $\frac{1}{4}$  in.

Auckland Islands (Coll. Brit. Mus.).

This species is distinguished by its much narrower, more convex body ; the longer thoracic segments, and the much narrower epimeræ, which are linear in a lateral view.

## Sub-Tribe II. ONISCOIDEA.

*Asellotes*, M. Edw. (part) Hist. Nat. Crust. iii, p. 137, (1840).

*Cloportides*, M. Edw. Hist. Nat. Crust. iii, p. 151, (1840).

*Oniscoidea*, Dana, U.S. Explor. Exped. Crust. part ii, p. 713, (1853).

Body usually oblong, or oblong oval, terminal segment not greatly developed. Posterior pair of abdominal appendages usually styliiform, rarely obsolete, terminal or sub-terminal, (never closing over the other branchial appendages, as in the *Idoteide*, or large, lamellate, and natatorial as in the *Cymothoidæ*).

## Family I. ARMADILLIDÆ.

*Cloportides terrestres*, M. Edw. (part) Hist. Nat. Crust. iii, p. 158, (1840).

*Armadillidæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 715, (1853).

Body oblong, regularly convex, and rounded above, closely articulated. Segments of the abdomen distinct, terminal segment small. Caudal appendages small, lamellate, not exerted beyond the abdomen. Mandibles not palpigerous. Internal antennæ very small.

## Sub-Family. ARMADILLINÆ.

*Armadilliens*, M. Edw. Hist. Nat. Crust. iii, p. 175, (1840).

*Armadilline*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 715, (1853).

Caudal appendages visible from above, between the two last segments of the abdomen.

## ARMADILLO.

*Armadillo*, Latr. (part) Hist. Crust. et Ins. vii, p. 47, (1804); Brandt, Conspectus, p. 191, (1832); M. Edw. Hist. Nat. Crust. iii, p. 177, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 715, (1853).

Apical joint of the lateral caudal appendages very small, inserted in the middle of the inner lateral margin of the enlarged basal joint. First segment of the body with the posterior margin straight, not produced backward at the infero-posterior angle.

99. *Armadillo speciosus*.

*Armadillo speciosus*, Dana, U.S. Explor. Exped. xiv, Crust. part. ii, p. 718, pl. xlvii, fig. 2, (1853).

Body very convex, finely granulate. Head nearly truncate in front. Segments of thorax laterally not acute, anterior largest. Segments of abdomen with their margins closely in contact throughout, the last much broadest at apex, and with the sides excavate. Caudal appendages narrow, apex truncate, margins entire, nearly parallel, naked, basal portion rectangular, produced inward. Antennæ slender, flagellum distinctly shorter than fifth joint. Colour dark brown, with a few small yellow spots, segments laterally a little reddish, also margin of abdomen the same. Length nearly  $\frac{7}{8}$  in. (D.).

New Zealand; near Bay of Islands (Dana). In moist soil among leaves in the crater of Taiaimai,

In this species, if the figure be correct, there is a single transverse line of granules on each segment.

100. *Armadillo inconspicuus*. Pl. II, fig. 4.

*Armadillo inconspicuus*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 225, (1876).

Convex, with the sides parallel, very finely and closely punctate. Head transverse, eyes small. Posterior margins of the segments of the thorax straight. First segment broadest, lateral margins with a groove for the reception of the second segment when the animal is rolled up. Following segments of about equal width, sides rounded. Segments of the abdomen very short, and closely applied to one another, sides truncate; terminal segment very little broader at the base than at the extremity, sides concave. Terminal (lateral) joint of the caudal appendages minute, basal produced portion of the penultimate joint rounded, not rectangular. The antennæ are imperfect. Length  $1\frac{5}{2}$  in.

New Zealand (Coll. Brit. Mus.).

Distinguished from the preceding by the punctulation of the thorax, and the form of the terminal segment and caudal appendages.

## CUBARIS.

*Cubaris*, Brandt, Conspectus Monogr. Crust. Oniscodorum p. 189, (1832).

*Armadillo*, M. Edw. (part) Hist. Nat. Crust. iii, p. 178, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 715, (1853).

Characters of *Armadillo*, but with the first thoracic segment bent obliquely backward at its infero-posterior angle, the posterior margin concave or angulate, the lateral margin often somewhat recurved. (Body somewhat more loosely articulated than in *Armadillo*).

101. *Cubaris rugulosus*. Pl. II, fig. 5.

*Cubaris rugulosus*. Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 225, (1876).

Moderately convex, rather loosely articulated, surface of the segments uneven, faintly rugose. Head very broad and transverse, front margin revolute, first segment of the thorax with two slight depressions, diverging anteriorly, on the upper surface, sides of the segment directed obliquely backwards, so that the lower half of the posterior margin forms a distinct angle with the upper half. Succeeding segments very narrow-transverse, each with an impressed line running parallel to its posterior margin, the second, third, fourth and fifth narrowed on the sides, which have their inferior margins rounded, the sixth and seventh segments broader on the sides, with the inferior margins truncate. Abdomen very short, with the segments (the last excepted) nearly linear-transverse, terminal segment much the broadest at base, with the sides at first suddenly converging, and then parallel. Caudal appendages with the inner (terminal) joint reaching to the end of the produced portion of the penultimate joint. Colour yellowish, margins of a darker colour and blotches of the same. Length  $\frac{1}{3}$  in.

New Zealand (Coll. Brit. Mus.).

#### SPHERILLO.

*Spherillo*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 719, (1853).

Caudal appendages having two branches, both lateral, and small, and short styliform. The two branches of the caudal appendage are both situated on the inner margin of the base, one near the medial line of the abdomen, and the other on the inner side of the base, not far from the apex. The outer branch is visible in a dorsal view

between the last abdominal segment and the base of the caudal appendage, and sometimes it is not distinguished at all in a ventral view, when distinct in a dorsal.

I have not seen specimens of the three following species.

102. *Spherillo monolinus*.

*Spherillo monolinus*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 719, pl. xlvii, fig. 3, (1853).

Head arcuate in front. Segments of thorax transversely marked with a beaded ridge, and laterally truncate, anterior segment longest and marked with two beaded ridges. Abdomen semicircular, third, fourth, and fifth segments laterally obtuse, the last with a nearly subquadrate apex, and much broader at base. Caudal appendages subtriangular, shorter than breadth at base, inner margin broadly excavate. Antennæ nearly naked, flagellum hardly shorter than preceding joint. Length 4 lines. (D.).

New Zealand, Auckland (Heller); Wykare River, near Bay of Islands, (Coll. Dr. C. Pickering; Dana). Under rotten wood.

103. *Spherillo spinosus*.

*Spherillo spinosus*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 723, pl. xlvii, fig. 6, (1853).

Body bristled throughout with sub-acute spines, margin either side a little produced, and segments laterally truncate. Head nearly trapezial, arcuate in front, and a little broader than behind. First segment of thorax largest; segments of abdomen laterally obtuse; the last subquadrate, not broader at base, truncate at apex. Colour chestnut brown, with brownish yellow along margin and irregularly spotted along the back. Length 3 lines. (D.).

New Zealand, near Bay of Islands, (Coll. Dr. C. Pickering; Dana). Under bark of pine trees.

104. *Spherillo danæ*.

*Spherillo danæ*, Heller, Voy. Novara, Crust. p. 134, pl. xii, fig. 4, (1865).

Body very convex, minutely and closely granulate, head transverse, a little sinuate behind. First segment of the body larger than the rest.

Abdomen rounded at the extremity. External caudal appendages nearly triangular, with the inner branch short, conical, scarcely conspicuous above. Antennæ reaching to half the length of the second segment. Length nearly  $\frac{1}{3}$  in. (H.).

Auckland (Heller).

## Family II. ONISCIDÆ.

*Cloportides maritimes*, M. Edw. Hist. Nat. Crust. iii, p. 152, (1840).

*Cloportides terrestres*, M. Edw. (part) Hist. Nat. Crust. iii, p. 158, (1840).

*Oniscidæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 714, (1853).

Body moderately convex, and usually loosely articulated. Segments of the abdomen distinct, terminal segment small. Caudal appendages exerted, styliform. Mandibles not palpigerous. Internal antennæ very small.

### Sub-Family I. ONISCINÆ.

*Porcellionides*, M. Edw. Hist. Nat. Crust. iii, p. 159, (1840).

*Oniscinæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 715, (1853).

External antennæ geniculate at the fifth joint. Base of the caudal appendages very short, with two very unequal rami, of which the longer is exerted externally, the other internal, and placed beneath the abdomen. (Maxillipeds three-jointed, the two last joints small).

The minute terminal jointed appendage to the antennæ that is found in some species of *Oniscinæ*, is not considered in enumerating the joints of the flagellum.

### ONISCUS.

*Oniscus*, Latr. Hist. Nat. Crust. et Ins. vii, p. 33, (1804); M. Edw. Hist. Nat. Crust. iii, p. 162, (1840); Dana, (sub-gen.) U.S. Explor. Exped. xiv, Crust. part ii, p. 715, (1853).

Body oblong-oval, moderately convex, loosely articulated. External antennæ subcylindrical, with their base partly concealed by the front of the head, eight-jointed; the three terminal joints constituting the flagellum.

105. *Oniscus pubescens*.

*Oniscus pubescens*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 730, pl. xlvi, fig. 2, (1853).

Body pubescent, subelliptic. Abdomen abruptly much narrower than thorax, short, not longer than broad, last segment very short transverse, and not produced backward. Head transverse, a little shorter and narrower than next segment. Thoracic segments nearly equal in length, last on either side acute, but hardly prolonged. Caudal stylets quite small, shorter than abdomen, branches very unequal, very slender, acute. Antennæ finely hirsute. Colour brown and brownish-white, with irregular bands and spots of deeper brown. Length 3 lines. (D.).

New Zealand, ten miles up the Whykare River (Dana). Under rotten wood in forests.

I have not seen specimens of this species.

## PORCELLIO.

*Porcellio*, Latr. Hist. Nat. Crust. vii, p. 45, (1804); M. Edw. Hist. Nat. Crust. iii, p. 165, (1840); Dana, (sub-gen.) U.S. Explor. Exped. xiv, Crust. part ii, p. 715, (1853).

Characters generally of *Oniscus*, but with the external antennæ seven-jointed, the flagellum containing only two joints, (besides the minute jointed terminal appendage).

Scarcely distinct as a genus from *Oniscus*, of which this group is considered a sub-genus by Dana. Most authors however have regarded it as a genus.

106. *Porcellio graniger*. Pl. II, fig. 6.

*Porcellio graniger*, List Crust. Brit. Mus. p. 99, (1847), sine descr.; Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 226, (1876).

Oblong-oval, moderately convex, granulate; the granules seriate along the posterior margin of each segment, and partly seriate elsewhere. Head transverse, with the antero-lateral lobes narrow, and very prominent. Eyes small, black. Segments of the thorax slightly tending backward at their latero-posterior angles. Segments of the abdomen very short, smooth on the sides, and with the latero-posterior angles acute, directed backward, terminal segment triangular, acute,

concave above, narrowed posteriorly, scarcely reaching beyond the latero-posterior angles of the penultimate segment. Caudal appendages very short, reaching a little beyond the apex of the terminal segment, the larger (exserted) ramus ovate. Legs armed with slender acute spines. Colour light chestnut brown. Length  $\frac{3}{8}$  in.

New Zealand (Coll. Brit. Mus.).

Specimens from Tasmania and Melbourne are rather narrower and of a darker colour, but I do not consider them specifically distinct.

*P. graniger* is very nearly allied to *P. gemmulatus*, Dana, from California; but differs in the much shorter broader-ovate caudal appendages, and in the spines of the legs, which are not laminated as in that species.

#### 107. *Porcellio zealandicus*. Pl. II, fig. 7.

*Porcellio zealandicus*, List. Crust. Brit. Mus. p. 99, (1847), sine descr.; Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 225, (1876).

Elongate oblong, finely granulous, the granules seriate on the posterior margin of each segment. Head small, transversely oblong, with the latero-anterior angles not prominent. Segments of the thorax (the last excepted), with the posterior and infero-lateral margins straight, the infero-posterior angles obtuse, last segment of the thorax broad, with the posterior margin concave, the infero-lateral margin straight, the infero-posterior angle acute. Segments of the abdomen considerably narrower than those of the thorax, short; terminal segment equilaterally triangular, slightly concave above, sides straight. Caudal appendages with the base shorter than the terminal segment, the longer (exserted), ramus narrow, acute, projecting beyond the terminal segment to a distance equal to its own length. External antennæ very long and hairy. Length nearly  $\frac{1}{3}$  in.

New Zealand (Coll. Brit. Mus.).

#### Sub-Family II. SCYPHACINÆ.

*Scyphacinæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 716, (1853).

External antennæ not geniculate at the fifth joint. Base of the caudal appendages short or oblong, the inner ramus sometimes altogether exposed. (Maxillipeds two-jointed, the second joint lamellate).

## SCYPHAX.

*Scyphax*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 733, (1853).

Eyes quite large. Antennæ pediform, not geniculate at the fifth articulation, flagellum 1-3 jointed, the minute apical excluded. Terminal joint of maxillipeds broad and serrately lobed. Stylets as in the *Oniscinæ*. Feet of the seventh pair much smaller than the others, weak.

108. *Scyphax ornatus*.

*Scyphax ornatus*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 734, pl. xlvi, fig. 5, (1853).

Body elliptic, abdomen not abruptly narrower than thorax. Head not shorter than following segment, transversely elliptical, eyes occupying the whole of the lateral margin. Segments of thorax subequal. Abdomen six-jointed, two anterior segments partly concealed by thorax, last segment very much narrower than preceding, and widest at base. Caudal stylets as long as abdomen, branches little unequal, minutely hirsute. Antennæ a little longer than half the body. Antennæ and feet minutely hirsute. Length 6-10 lines.

New Zealand; Bay of Islands; Parua Harbour (Dana). Found in the sand, and often seen running on the beach.

Colour variegated, irregularly spotted with bright yellow-red, brownish-red, and jet black, producing a beautiful appearance; antennæ colourless, or nearly so. Body quite evenly elliptical, surface indistinctly a little spinulose. Posterior angles of thorax acute. Last abdominal segment subtriangular, with apex truncate, not more than half the width of the preceding. Caudal stylets have the branches straight, the base fills up the interval between the last two abdominal segments. Legs have second, third, and fourth joints subequal. Antennæ have last three joints together, (corresponding to flagellum), but little longer than the preceding one, and this a little longer than the next preceding, the first three about equal in length to last three. (D.).

Dana figures and describes a smaller specimen, found in and upon the same beach, which he suspects may be the young of the above. The general form is the same. All the specimens obtained were about two lines long. The last segment of the abdomen does not project at

all between the stylets, so as to separate their bases, on the contrary these stylets are close alongside of one another from their bases, moreover, they project but very little beyond the outline of the abdomen, the large branch being very short and obtuse, and not long and subulate as in the adult *ornatus*, and the smaller branch quite slender and arising from a point far anterior to the base of the larger branch. Head short transverse. Eyes rather large and prominent. Antennæ short, curving outward, with five basal joints and a terminal flagellum, which is indistinctly 5-6 jointed, surface minutely spinulose. Last thoracic segment not shorter than the preceding, and last pair of thoracic legs of the usual size and character. Abdomen filling the concavity below the last thoracic segment, and forming a semicircle beyond it. Last abdominal segment smallest; third, fourth, and fifth segments much produced backward on either side. Surface of thorax and abdomen with a few very short scattered spinules.

Dana observes, that, if this be a distinct species, it is also a distinct genus, the seventh pair of legs being of full size, and that it may be named *Actæcia euchroa*, as designated in his earlier MSS.

109. *Scyphax intermedius*. Pl. II, fig. 8.

*Scyphax intermedius*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 227, (1876).

Resembles *S. ornatus*, Dana, but with the terminal segment broadest at base, covering the bases of the penultimate segment, then suddenly narrowing, subacute at the extremity, with the lateral margins concave, the part between the bases of the caudal stylets being of a triangular shape with a slight depression on its upper surface. Length  $\frac{3}{4}$  in.

New Zealand (Coll. Brit. Mus.).

In the single adult specimen of this species in the Museum Collection, the caudal stylets have unfortunately been broken off, and only the basal joints are left; these, though not quite close to one another, are much less widely separated than the same joints in Dana's figure of *S. ornatus*. The broad and truncate terminal abdominal segment of *S. ornatus* is, however, so unlike the usual form of this organ in the *Oniscidae*, that I cannot help thinking that there is some error in the figure and description of Dana.

## Sub-Family III. LIGINÆ.

*Cloportides maritimes*, M. Edw. Hist. Nat. Crust. iii, p. 152, (1840).

*Lygina*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 716, (1853).

External antennæ not decidedly geniculate at the fifth joint, terminating in a multiarticulate flagellum. Base of the caudal appendages very long and exerted, with two long setiform rami. (Maxillipeds four-jointed, elongated).

## LIGIA.

*Ligia*, Fabr. Ent. Syst. Suppl. p. 301, (1798); M. Edw. Hist. Nat. Crust. iii, p. 153, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 716, (1853).

Carapace but slightly convex, nearly oval, with the abdominal segments narrower than those of the thorax. Head small. External antennæ very long. Internal antennæ rudimentary. Base of the caudal appendages not furcate at the apex, elongated, with two slender styliform rami.

110. *Ligia novæ-zealandiæ*.

*Lygia novi-zealandiæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 739, pl. xlix, fig. 2, (1853).

Elliptical. Surface of thorax and abdomen covered with very short hairs. Abdomen not suddenly narrower than thorax, last segment arcuate behind, and angles short, acute. Base of caudal stylets nearly as long as abdomen, branches quite unequal, scabrous, the longer hardly as long as thorax. Antennæ as long as the body, finely scabrous, flagellum 18-21 jointed. Length 6 lines. (D.).

New Zealand (Coll. Brit. Mus.); Bay of Islands (Dana). Under kelp &c.

The third, fourth, and fifth segments of the abdomen are much prolonged backward on either side.

In the British Museum specimens the rami of the caudal appendages are equal, except in one specimen, where they are slightly unequal.

## Sub-Tribe I. CYMOTHOIDEA.

*Spheromiens*, M. Edw. Hist. Nat. Crust. iii, p. 197, (1840).

*Cymothoudiens*, M. Edw. (part) Hist. Nat. Crust. iii, p. 226. (1840).

*Cymothoidea*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 745, (1853).

Body usually convex, oblong, or oblong-oval in form. Terminal segment of the abdomen large, often scutiform. Posterior pair of appendages large, lamellate, natatorial, and applied to the sides of the terminal segment.

#### Family I. CYMOTHOIDÆ.

*Cymothodiens parasites*, M. Edw. Hist. Nat. Crust. iii, p. 247, (1840).

*Cymothoideæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 745, (1853).

Body more or less oval and convex, with the abdomen 4-6 jointed, the segments, (the last excepted), very short. Head small. Antennæ inserted beneath the head. Epimeræ conspicuous. All the legs terminating in a large curved claw. Caudal appendages free, placed laterally, very rarely ciliated. Branchiæ scarcely ever ciliated. Maxillipeds large, 3-4 jointed, operculiform, the terminal joints very small.

Species parasitic.

#### Sub-Family I. CYMOTHOINÆ.

*Cymothoinæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 746, (1853).

Caudal appendages not ciliated. Segments of the abdomen free.

#### CERATOTHOA.

*Cymothoa*, Fabr. (part) Ent. Syst. ii, p. 503, (1793); Leach, (part) Dict. Sci. Nat. xii, p. 352, (1818); M. Edw. (part) Hist. Nat. Crust. iii, p. 264, (1840).

*Ceratothoa*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 747, (1853).

Body very convex. Head deeply encased in the anterior segment of the thorax, (the antero-lateral lobes of which do not, however, reach to its anterior margin), narrowed anteriorly, and subacute at the extremity, which does not cover the bases of the antennæ. Abdomen at base very much narrower than the thorax, six-jointed, the first five segments very short, the last broad, transverse. First, (inner), pair

of antennæ shorter than the second, bases in contact, first two or three joints dilated and flattened. Second pair slender. Femoral joints of the last four pairs moderately thickened and dilated. Caudal appendages small.

111. *Ceratothoa banksii*.

*Cymothoa Banksii*, Leach, Diet. Sci. Nat. xii, p. 353, (1818); M. Edw. Hist. Nat. Crust. iii, p. 273, (1840). ?

Convex, smooth, with the first three segments longer, (in a longitudinal sense), than the rest; the first the longest. Head about as broad as long, encased for about half its length in the first thoracic segment, narrowing to its anterior extremity, which is rounded, the sides more decidedly convergent beyond the extremity of the antero-lateral lobes of the first thoracic segment. Eyes scarcely visible. First thoracic segment with the antero-lateral lobes broad at base, acute at their extremities. Abdomen with the first five segments very short, the sixth, (last), transverse, with the posterior margin nearly straight. Caudal appendages very short, with the rami slender acute, nearly equal. Superior, (internal), antennæ very short, not reaching backward to the anterior margin of the first thoracic segment, inferior slightly longer. Femoral joints of the last four pairs of legs produced backward into a thin laminated plate, the posterior margin of which is rounded. Length  $1\frac{3}{8}$  in.

New Zealand (Coll. Brit. Mus.).

M. Milne Edwards gives the Cape of Good Hope (Mus. Paris), as the habitat of this species, but his description of the head does not seem to me to apply well to the type of *C. banksii* in the Collection of the British Museum, and there is a probability of the species being distinct.

112. *Ceratothoa lineata*. Pl. III, fig. 1.

*Ceratothoa lineata*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 227, (1876).

Moderately convex, nearly smooth, terminal segment faintly punctulated. Head small, narrowed anteriorly, front slightly curved downward. Eyes large. First segment of the body longer than the rest, antero-lateral lobes produced very slightly forward, so that the head is not as deeply encased as in *C. banksii*. Epimeral pieces of the last

four thoracic segments large. Terminal segment of the abdomen large, almost semicircular in outline, rather broader than long, with a faintly marked raised longitudinal median line. Caudal appendages slender, projecting slightly beyond the posterior margin of the abdomen, outer rather the longest. Antennæ slender. Femoral joints of the ambulatory legs scarcely enlarged. Length  $\frac{5}{6}$  in.

New Zealand (Coll. Brit. Mus.).

This species is distinguished by the form and markings of the terminal segment of the abdomen. A single specimen, probably young, is in the Collection of the British Museum. It ought perhaps to be referred to the genus *Cymothoa*, as the front is slightly inflexed, and conceals the bases of the slender antennæ, but it has not the deeply encased head, and the greatly enlarged femoral joints of the legs of the species of that genus.

#### LIRONECA.

*Lironeca*, Leach, Dict. Sci. Nat. xii, p. 551, (1818); M. Edw. Hist. Nat. Crust. iii, p. 259, (1840); Dana, U.S. Explor. Exped. xiv. Crust. part ii, p. 747, (1853).

Body oval, rather flattened, and often obliquely distorted. Head small, front narrow, slightly involuted. Segments of the abdomen very short; penultimate segment about as wide as the last segment of the thorax. Epimeræ not greatly produced backward. Femora of moderate width, never greatly dilated, expanded and thickened as in *Cymothoa*. Caudal appendages short.

#### 113. *Lironeca novæ-zealandiæ*. Pl. III, fig. 2.

*Cymothoa novæ-zealandiæ*, List Crust. Brit. Mus. p. 110, (1847), sine descr.; Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 227, (1876).

Moderately convex. Head small, about as long as broad, widest in the middle, with the sides converging to the back and front, deeply encased within the first segment of the body. The seven segments of the thorax of nearly equal width, slightly roughened on the sides, each with a faintly marked groove, produced for a short distance inwards, and obliquely forwards from the lateral margin. Segments of the abdomen (the last excepted), very narrow; last segment transverse, surface uniformly and faintly wrinkled, posterior margin with a nearly semicircular outline, entire. Caudal appendages very small, outer ramus slightly the larger. Colour dark brown. Length  $1\frac{1}{3}$  in.

New Zealand (Coll. Brit. Mus.).

## NEROCILA.

*Nerocila*, Leach, Dict. Sci. Nat. xii, p. 351, (1818); M. Edw. Hist. Nat. Crust. iii, p. 250, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 747, (1853).

Elongate oval, moderately convex. Head very small, produced anteriorly beyond the bases of the antennæ. Abdomen of moderate length, of equal width throughout. Segments of the body and the epimeræ produced backward into long acute spines. Femora narrow. Caudal appendages elongate, rami usually unequal.

114. *Nerocila imbricata*.

*Cymothoa imbricata*, Fabr. Ent. Syst. ii, p. 503, (1793).

*Cilonera Mac Leayi*, (Leach, M.S.), White, Dieffenb. Voy. New Zealand ii, p. 268, (1843).

*Nerocila imbricata*, List Crust. Brit. Mus. p. 108, (1847), sine descr.

Rather narrow oval, moderately convex, smooth. Head flat, produced forward, rounded in front, and terminating behind in a median rounded lobe, which is received into a corresponding excavation in the front margin of the first segment of the body. First three segments of the body with the lateral margins entire, the remainder with a transverse groove, produced for a short distance inward and forward, the sixth and seventh segments produced backward at the latero-posterior angle. Last segment of the tail with the margin rounded on the sides, extremity sub-acute. Caudal appendages with the rami unequal, the inner very obliquely truncate at the extremity, the outer longer, narrower, and acute at the extremity. Antennæ small, hidden beneath the front. Epimeræ acute, produced backward, but not beyond the posterior margin of the segments of the body. Length  $1\frac{1}{4}$  in. New Zealand (Coll. Brit. Mus.).

## Family II. ÆGIDÆ.

*Cymothodiens errans*, M. Edw. Hist. Nat. Crust. iii, p. 233, (1840).

*Ægide*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 745, (1853).

Body oval and convex. Head of moderate size. Abdomen longer than in the *Cymothoidæ*, 4-6 jointed. Antennæ rising from the front margin, not from beneath the front of the head. Epimeræ conspicuous. Legs of the first three pairs terminating or not in a large curved claw,

of the remaining pairs simply adapted for walking. Caudal appendages rather large, placed laterally, ciliated on the margins. Branchiæ ciliated. Maxillipeds elongated, 4-6 jointed, all the joints lamellate, the terminal joints short and broad.

Sub-Family I. *ÆGINÆ*.

*Æginæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 747, (1853).

Legs of the first three pairs with strong curved claws, of the remaining pairs with small claws.

*ÆGA*.

*Æga*, Leach, Linn. Trans. xi, p. 369, (1815); M. Edw. Hist. Nat. Crust. iii, p. 238, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 747, (1853).

Moderately oval and convex. Eyes large. Front not prominent. External antennæ separated from each other by a process of the epistome. Internal antennæ approximated at base, very short, with the basal joints broad and flattened, occupying the front margin of the head. Caudal appendages flattened, reaching about to the extremity of the terminal segment.

115. *Æga novæ-zealandiæ*.

*Æga novi-zealandiæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 767, pl. li, fig. 2, (1853).

Body naked, rather narrow. Head very short. First thoracic segment longest, others sub-equal. Abdomen not abruptly narrower than thorax, gradually narrowing, six-jointed, posterior segment broad, but not transverse, not triangular, broadly rounded at extremity, and ciliate. Caudal appendages not longer than abdomen. Colour, dirty brown. Length 3 lines. (D.).

New Zealand; Bay of Islands (Dana).

On bait while fishing. This species I have not seen.

Sub-Family II. *CIROLANINÆ*.

*Cirolaninæ*, Dana, U.S. Explor. Exped. xiv, Crust part ii, p. 748, (1853).

Legs all formed for progression, with small claws.

## CIROLANA.

*Cirolana*, Leach, Dict. Sci. Nat. xii, p. 347, (1818); M. Edw. Hist. Nat. Crust. iii, p. 235, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 748, (1853).

Convex, rather narrow, oblong-ovate. Eyes small, granulated, Internal antennæ very short. External antennæ long, inserted beneath the others, separated at base by a narrow process of the epistome. Abdomen rather short, six-jointed.

116. *Cirolana rossii*. Pl. III, fig. 3.

*Cirolana Rossii*, List. Crust. Brit. Mus. p. 106, (1847), sine descr.; Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 228, (1876).

Convex, smooth. Head quadrangular, broader than long, encased in the first segment of the body. Eyes narrow-oblong, black; extending along the sides of the head from the front margin of the first segment of the body, nearly to the bases of the antennæ. Segments of the body smooth, the first the widest. Last segment of the tail slightly rounded on the sides, obtuse at the apex. Legs hairy, the hairs more dense on the four last pairs, which are not spinous. Caudal appendages ciliate, the outer narrower, acute at the extremity. Length nearly 1 in.

New Zealand; Auckland Islands (Coll. Brit. Mus.).

This species in every respect bears a very close resemblance to *C. spinipes*, S. Bate and Westwood, of Europe. A comparison of the British and New Zealand specimens shows that the stiff hairs or slender spines of the legs are similar in the two species; but a more reliable character seems to me to exist in the form of the eyes, which are small in *C. spinipes*, long, narrow-oblong, in *C. rossii*. From *C. hirtipes*, M. Edw. this species seems to differ in the shape of the head, which is broader than long, &c., but the figure of *Cirolana hirtipes* very much resembles *C. rossii*.

## Family III. SPILAEROMIDÆ.

*Spheromiens*, M. Edw. Hist. Nat. Crust. iii, p. 197, (1840).

*Spheromidæ*, Dana, U.S. Explor. Exped. xiv, Crust. part iii, p. 746, (1853).

Body usually oblong-oval, convex. Head transverse. Abdomen very short, 1-2 jointed, the five first segments more or less coalescent.

Antennæ inserted upon, not beneath the front margin of the head. Epimeræ not visible. Legs all adapted for walking, rarely with the two first pairs terminating in a strong curved claw. Inner ramus of the caudal appendages immobile, or sometimes obsolete. Branchiæ ciliated. Maxillipeds elongated, 5-6 jointed, and usually palpiform.

#### Sub-Family I. SPHAEROMINÆ.

*Spheromine*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 748; (1853).

Legs all adapted for walking. External ramus of the caudal appendages capable of being folded beneath the inner ramus.

#### SPHAEROMA.

*Sphaeroma*, Latr. (part) Hist. Nat. Crust. vii, p. 11, (1804); M. Edw. Hist. Nat. Crust. iii, p. 202, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 748, (1853).

Oblong-oval, convex. Head broad. Eyes small, circular, received in an emargination of the first segment of the body. First segment of the body the largest, the rest subequal, marked on the sides with an oblique line indicating the coxæ, seventh segment without a dorsal spine. Terminal segment of the abdomen large, convex, rounded and entire at its extremity. Antennæ separated at base by a small frontal process, the inner very broad at the base, the outer longer. Rami of the caudal appendages oval, lamellate, subequal.

So far as I can ascertain, no remarkable sexual differences exist in this genus, such as are found in *Zuzara* and other genera.

#### 117. *Sphaeroma gigas*.

*Sphaeroma gigas*, Leach. Dict. Sci. Nat. xii, p. 346, (1818); M. Edw. Hist. Nat. Crust. iii, p. 205, (1840).

Broad oblong-oval, slightly and regularly convex, nearly smooth. Head small, transverse-oblong, anterior margin with a very small lobe between the enlarged bases of the superior antennæ. First segment of the body rather the longest, the rest short, subequal, slightly tending backward on the sides, and with the infero-posterior angle subacute. Inferior lateral margins of all the segments grooved. Abdomen two-jointed, the terminal joint large, convex, smooth, sub-

triangular, rounded at posterior extremity. Rami of the caudal appendages narrow-oval, rounded at the extremity. Colour light brown, margins of segments yellowish. Length nearly 1 in.

Auckland Islands (Coll. Brit. Mus.). Very abundant at the Falkland Islands and Cape Horn.

*S. lanceolata*, White, from the same regions of S. America, of which there are no specimens from the Aucklands in the Collection of the British Museum, differs only in the rami of the caudal appendages, which are narrower-lanceolate and acute at the extremity, and in the absence of the lateral marginal groove on the thoracic segments. These differences may prove to be only sexual.

#### 118. *Sphaeroma verrucauda*.

*Sphaeroma verrucauda*, List Crust. Brit. Mus. p. 102, (1847), sine descr.; Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 779, pl. lii, fig. 6, (1853).

Oblong-oval, convex, somewhat tomentose. Head very broad transverse, with a small median frontal lobe between the bases of the antennæ, as in *S. gigas*. Segments of the body short, faintly rugose on the sides, which tend backward, each with a slight transverse ridge near the posterior margin. Abdomen very broad, finely granulous. two-jointed, first segment with impressed lines on the sides, indicating the coalesced segments of which it is composed, the inferior lateral, and posterior part of the segment broad, rounded: terminal segment with the sides convergent, straight, truncate posteriorly, with three short longitudinal lines of larger granules on its upper surface. Caudal appendages short, rami subequal acute, the outer ramus serrated on its outer margin. Length about  $\frac{1}{2}$  in.

New Zealand (Coll. Brit. Mus.); Bay of Islands (Dana); Auckland, Hobson's Bay (Coll. Brit. Mus.).

Specimens from Port Jackson, Australia, are also in the Collection of the British Museum.

The habits of this species are curious. Dana found it in rotten wood in cavities bored by *Teredo*; and the specimens from Hobson's Bay, in the Collection of the British Museum, inhabit similar cavities in a piece of sandstone. It is to be noted that these examples are much more hairy than those from Australia in the Collection.

119. *Sphaeroma obtusa*.

*Sphaeroma obtusa*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 779, pl. lii, fig. 5, (1853).

Body smooth, naked. Feet smooth, nearly naked. Segments of thorax similar. Last abdominal segment sub-triangular, the sides towards apex abruptly convergent, apex obtuse, ventral cavity broad behind. Caudal lamellæ shorter than abdomen, entire, both truncate at apex. Feet smooth, nearly naked, all equally slender, second pair longer than first or third. Colour, dull yellow or brownish yellow. Length 3 lines. (D.).

New Zealand; Bay of Islands, along shores of Parua Harbour, (Dana).

## ISOCLADUS.

*Isocladus*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 228, (1876).

Convex, somewhat widening posteriorly. Seventh segment of the body in the male with a long median dorsal spine. Terminal segment of the body narrowing posteriorly, and acute at the extremity. Caudal appendages subequal, of a slightly sigmoid shape, and acute at the extremity.

The females in this genus, and in the two allied genera mentioned below, are smaller than the males, and do not increase so much in width posteriorly; the spine of the seventh thoracic segment is absent; the rami of the caudal appendages are shorter, and there are usually two small prominences on the upper surface of the last abdominal segment.

The nearly allied genus *Zuzara*, of Leach, (Dict. Sci. Nat. xii, p. 344, 1818), has unequal caudal appendages, and the abdomen truncate at the extremity, with a median terminal spine. *Cyclura*, of Stebbing, (Journ. Linn. Soc. xii, p. 146, 1874), has the caudal appendages broad, unequal, and rounded at the extremity.

120. *Isocladus armatus*.

*Sphaeroma armata*, M. Edw. Hist. Nat. Crust iii, p. 210, (1840); White, Dieffenb. New Zeal. ii, p. 268, (1843); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 780, pl. lii, fig. 7, (1853).

Smooth, seventh segment of the body with a conical median tooth directed backward. Last segment of the tail triangular, terminating in a large obtuse tooth, which reaches beyond the plates of the terminal

appendages, the inner plate truncated, the outer acute, and curving outward at the extremity. Length 3 lines. (M. E.).

New Zealand (Coll. Mus. Paris); Bay of Islands (Dana).

In the specimens referred to this species by Dana, the tooth of the seventh thoracic segment is sometimes obsolescent; last segment of the abdomen triangular, sides obsoletely sinuous, apex narrow and obtuse, dorsal surface near base with two slight prominences, cavity below narrow at apex, caudal lamellæ not reaching to apex of abdomen, inner truncate, outer acuminate, tip curved outward a little, &c. Colour whitish, bluish-white; also brownish, with whitish spots.

121. *Isocladus spiniger*. Pl. III, fig. 4 ♂ : 4 a, ♀.

*Sphaeroma diadema*, (part) List Crust. Brit. Mus. p. 104, (1847), nec Leach.

*Sphaeroma spinigera*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 780, pl. lii, fig. 8, (1853).

Near *S. armata* in form, caudal lamellæ, and abdomen above and below. Body more depressed, smooth, naked, apex of abdomen more blunt. Tooth of seventh thoracic segment elongate, spiniform, longer than half the abdomen. Caudal lamellæ broader, and extending a little beyond the abdomen, outer near its apex obsoletely serrulate. Colour brown, or brownish-green; some specimens with a longitudinal medial broad line of emerald green. Length 3-4 lines. (D.).

New Zealand (Coll. Brit. Mus.); Bay of Islands, along shores of Parua Harbour (Dana). In bored wood and in pools of water.

In most of the specimens in the Collection of the British Museum the dorsal spine curves very slightly downward, and does not project as far as the extremity of the terminal segment.

Var. *recurvatus*. Pl. III, fig. 4 b.

In this variety, the dorsal spine is curved slightly upward at its extremity, and projects about as far as the extremity of the last abdominal segment.

CYMODOCEA.

*Cymodocea*, Leach, Dict. Sci. Nat. xii, p. 341, 342, (1818); M. Edw. (part) Hist. Nat. Crust. iii, p. 212, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 748, (1853).

Moderately convex, slightly widening posteriorly. Head transverse, with a small median frontal lobe. Eyes small, lateral, situated on a lobe that is received into a corresponding excavation in the front margin of the first thoracic segment. Segments of the thorax short. Abdomen two-jointed, terminal segment tuberculate or rugose above, posterior margin notched, with a median lobe in the centre of the notch. Caudal appendages thick, usually short, rami equal, or rather unequal.

122. *Cymodocea granulata*. Pl. III, fig. 5.

*Cymodocea granulata*, Miers, Ann. Mag. Hist. (ser. 4) xvii, p. 229, (1876).

Moderately convex, nearly smooth. Head small, frontal lobe very small, obtuse. Lateral margins of the segments of the thorax all with a narrow marginal line, with the postero-lateral angles acute. Antero-lateral lobe of the first segment of the thorax narrow-triangular, acute, produced forward beneath and beyond the eyes. Postero-lateral lobe of the last segment of the thorax produced backward, and terminating in a short spine, curving upward; posterior margin of the segment nearly straight. Last segment of the abdomen broad, convex, granulous and slightly hairy, with a slight, more distinctly granulous elevation on its upper surface near its base, emargination quadrangular with the median lobe narrow. Rami of caudal appendages unequal, the inner not quite reaching to the extremity of the segment, broad, truncate at the end, the outer nearly as long again, narrowing to the extremity, which is acute. Upper antennæ much enlarged at base, the second joint received into an emargination of the first joint. Length about  $\frac{1}{2}$  in.

New Zealand (Coll. Brit. Mus.).

There are also specimens in the Collection from Flinder's Island and Tasmania.

123. *Cymodocea convexa*. Pl. III, fig. 6.

*Cymodocea convexa*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xvii, p. 229, (1876).

More convex than *C. granulata*, and not so narrow in front. Head larger. Seventh segment of the thorax without a postero-lateral spine. Terminal segment of the abdomen very large, more convex in

its anterior half, which has four obscure tubercles arranged in a transverse series, posterior emargination wider and not so deep as in *C. granulata*, with the median lobe triangular. Caudal appendages short, not reaching nearly to the posterior emargination; rami subequal, obtuse at the extremity. Length nearly  $\frac{1}{2}$  in.

New Zealand (Coll. Brit. Mus.).

In two out of the three specimens in the British Museum Collection the tubercles are very obscurely marked.

## Tribe II. ANISOPODA.

*Isopoda*, M. Edw. (part) Hist. Nat. Crust. i, p. 234, (1834).

*Anisopoda*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 694, (1853).

Body varying in shape, not laterally compressed. The seven pairs of thoracic legs consisting of an anterior series of four, and a posterior series of three pairs. Segments of the abdomen (the last excepted) usually short. Abdominal appendages of the first five segments foliaceous, and perfectly branchial: or elongate, ciliated, and imperfectly branchial; of the sixth segment operculiform, lamellate, styliform, or obsolete. Terminal segment usually large, destitute of appendages.

### Sub-Tribe I. SEROLIDEA.

*Serolidea*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 789, (1853).

Caudal appendages lamellate, placed laterally.

#### Family I. SEROLIDÆ.

*Cymothodiens ravisseurs*, M. Edw. Hist. Nat. Crust. iii, p. 228, (1840).

*Serolidæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 790, (1853).

Three first pairs of abdominal appendages free, sub-natatorial, two following pairs branchial, lamellate; last pair as in the *Cymothoidæ*. Internal antennæ inserted beneath the front of the head.

#### SEROLIS.

*Serolis*, Leach, Dict. Sci. Nat. xii, p. 339, (1818); M. Edw. Hist. Nat. Crust. iii, p. 228, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 790, (1853).

Very much flattened, oval. Head encased in and coalescent with the first segment of the body. Eyes placed on protuberances on the upper surface of the head. Five succeeding segments of the body presenting indications of a division into three lobes, of which the lateral are formed by the greatly developed epimeral pieces, or coxæ. Seventh segment rudimentary. Abdomen composed of only three distinct segments, of which the last is very large and scutiform. Antennæ large, compressed; superior pair short, with the peduncle four-jointed, inferior with the peduncle five-jointed, two last joints elongate. First pair of legs with a large subchelate hand, second pair with a smaller hand in the male, in the female all the legs, except the first, are adapted for walking.

#### 124. *Serolis paradoxa*.

*Oniscus paradoxus*, Fabr. Mantissa, i, p. 240, (1787).

*Serolis Fabricii*, Leach, Diet. Sci. Nat. xii, p. 340, (1818); M. Edw. Hist. Nat. Crust. iii, p. 231, (1840); Grube, Archiv. f. Naturg. xli, p. 209, (1875).

*Serolis paradoxa*, Aud. and M. Edw. Archiv. Mus. Hist. Nat. ii, p. 28, (1841).

*Serolis Orbignyana*, M. Edw. Hist. Nat. Crust. iii, p. 232, (1840); Grube, Archiv. f. Naturg. xli, p. 209, 225, (1875).

*Serolis Orbignyi*, Aud. and M. Edw. Archiv. Mus. Hist. Nat. ii, p. 25, pl. ii, fig. 8-9, (1841).

Depressed, nearly smooth, or with faint punctulations near the posterior margin of each segment. Head rugose between the eyes. Segments of the thorax with the posterior margin sinuated, the two or three last segments curving backward, so that the postero-lateral angle of the last segment projects backward to a distance equal to two-thirds the length of the last abdominal segment. Last segment of the abdomen flat, subtriangular, with the apex appearing slightly emarginate, with five straight longitudinal ridges, of which two parallel to the posterior margin of the penultimate segment, two superficial and diverging posteriorly, one longitudinal and median, this latter is interrupted near its base, and the basal part terminates in a small spine. Caudal appendages very small, the outer ramus a little smaller than the inner one. Length usually rather more than 1 in.

New Zealand (Coll. Brit. Mus.).

Very abundant at the Falkland Islands.

The *S. Orbignyana* of M. Edwards is the true *paradoxa* of Fabricius, as I am convinced by a comparison of the type specimen of Fabricius, in the Banksian Collection, with the figure of Audouin and Milne Edwards. The emargination of the posterior extremity of the last abdominal segment is rather apparent than real; this part is, in fact, arched in a vertical sense. This peculiarity is not observable in younger specimens, and the posterior margin then appears entire, of the form figured as *S. paradoxa* by Audouin and Milne Edwards,

125. *Serolis latifrons*. Pl. III, fig. 7.

*Serolis latifrons*, List Crust. Brit. Mus. p. 186, (1847), sine descr.; Miers, Ann. Mag. Nat. Hist. p. 74, (1875).

Convex, with a series of impressed lines and punctulations near the posterior margin of each segment. Segments of the body with the posterior margin sinuated, but not greatly produced backward, (as in some species of the genus). Last segment of the tail large, subtriangular, with a semicircular notch at its extremity, a high longitudinal central ridge extending from the base of the segment to the terminal notch, and with a less elevated ridge on either side, rising near and continued for some distance parallel to the base of the segment, then curving backward, and terminating before reaching the lateral margin. Caudal lamellæ narrow, acuminate, the outer one very small, not half the length of the inner. Colour brown, with irregular paler patches. Length 1 in.

Auckland Islands, Rendezvous Cove (Coll. Brit. Mus.).

### Tribe III. AMPHIPODA.

*Amphipoda* and *Lamodipoda*, Latr. Fam. Nat. p. 285, 287, (1825); M. Edw. Hist. Nat. Crust. i, p. 234, (1834).

*Amphipoda*, Dana, U.S. Explor. Exped. xiii, Crust. part i, p. 11, (1852); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 1, (1862).

Body rounded above, and laterally compressed. The seven pair of thoracic legs consisting of an anterior series of four pairs, (of which the first two have a more or less perfectly chelate hand), and a posterior series of three pairs. Branchial vesicles pendent from the thoracic limbs. Segments of the abdomen distinct, the abdomen usually elongated, but sometimes rudimentary. Abdominal appendages of the first three segments elongate, ciliated, and flexible; of the three succeeding pairs styliform, terminal segment small, or rudimentary.

## Sub-Tribe I. GAMMARIDEA.

*Crevettines*, M. Edw. Hist. Nat. Crust. iii, p. 8, (1840).

*Gammaridea*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 806, (1853).

*Gammarina*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 4, (1862).

Body of normal shape; head moderate. Eyes small, rounded. Abdomen narrow, of normal shape. Antennæ normally developed, with a peduncle and multi-articulate flagellum. Coxæ, (or epimeræ), squamiform, and usually large enough to protect the branchial sacs. First three pairs of swimming legs consisting of ciliated double branched flexible appendages, three last pairs of stiff normally double branched stylets. Maxillipeds elongated, and covering the preceding appendages of the mouth, one or both of the first two pairs of walking legs subchelate.

## Family I. ORCHESTIDÆ.

*Orchestide*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 827, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 4, (1862).

Antennæ similar, the upper much shorter than the lower, and without a secondary appendage. Coxæ largely developed. Last pair of caudal appendages never longer than the preceding, unbranched, and with the spines never developed into hooks. Hairs on the entire animal short and stiff. Mandibles without an appendage.

The habits of the animals are terrestrial or subaquatic. They construct no home to rest in, and their mode of progression when out of the water is by leaps.

## TALITRUS.

*Talitrus*, Latr. Hist. Crust. vi, p. 294, (1803); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 5, (1862).

Superior antennæ short and rudimentary. Inferior antennæ with the two basal joints absorbed into the frontal wall of the head. Maxillipeds not unguiculate. First pair of legs not having a subchelate hand in either sex, second pair of legs often smaller than the first pair, imperfectly subchelate in both sexes. Coxæ of the fifth pair of legs subequally bilobed, and nearly as deep as the coxæ of the preceding pair. Posterior pair of caudal appendages unbranched.

I have seen no specimens of the two following species.

126. *Talitrus brevicornis*.

*Talitrus brevicorne*, M. Edw. Hist. Nat. Crust. iii, p. 15, (1840).

*Talitrus brevicornis*, White, Dieffenb. New Zeal. ii, p. 268, (1843); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 854, p. lvi, fig. 6, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 9, pl. i a, fig. 6, (1862), copied from Dana.

M. Milne Edwards merely says of this species, that it is very near to the *Talitrus saltator*, of Europe, but with the antennæ so short, that they scarcely reach the third segment of the body.

The specimens referred to it by Dana, are described by him as being near *Orchestoidea novæ-zealandiæ*. The second pair of legs has a similar hand, but the position of the finger is more oblique, the inferior antennæ are shorter, flagellum 12-14-jointed, the joints of the antennæ, the legs, and the caudal stylets have fewer spinules. The fourth pair of legs is shorter than the third, and the tarsus is stouter and gibbous below, whereas the tarsi of all the other legs are slender and nearly straight.

New Zealand (Mus. Paris); Bay of Islands (Dana).

127. *Talitrus?* *novæ-zealandiæ*.

*Orchestia*, (*Talitrus*), *novi-zealandiæ*, Dana, U.S. Explor. Exped. xiv, Crust. part. ii, p. 852, pl. lvi, fig. 5, (1853).

*Orchestoidea?* *Novi-zealandiæ*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 10, pl. i, fig. 2, (copied from Dana).

*Female*:—Epimerals (coxæ) large, naked, edged with minute spinules. Inferior antennæ half as long as the body; setæ very short, flagellum scarcely longer than basal part, joints transverse, 25 to 27 in number. Superior antennæ more than half the length of base of inferior. Anterior feet stout, elongate, unguiculate, second pair slightly shorter, the fifth joint a little smaller than the preceding, subspatulate, finger minute, fixed on its upper margin. Feet of five posterior pairs densely setulose along the margin, the setules in part as long as diameter of joints; of the three posterior pairs, the last longest, the first but half the last, basal joint very broad. Length 10 lines. (D.).

New Zealand; Bay of Islands (Dana). Under seaweed along the shores.

This animal Dana thinks may possibly prove to be the female of *Talorchestia quoyana*.

Mr. Spence Bate, while referring it with doubt to the genus *Orchestoidea*, sees "no insurmountable barrier to its being a variety only of *Talitrus brevicornis*, from which the description hardly differs in a specific degree."

#### TALORCHESTIA.

*Talorchestia*, Dana, U.S. Explor. Exped. xiv, Crust part ii, p. 851, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 14, (1862).

First pair of legs small, subcheliform in the male, simply unguiculate in the female. Second pair of legs chelate, with the hands greatly developed in the male, weak in the female.

#### 128. *Talorchestia quoyana*.

*Orchestia Quoyana*, M. Edw. Hist. Nat. Crust. iii, p. 19, (1840); Règne Animal Cuvier, pl. lix, fig. 4; White, Dieffenb. New Zeal. ii, p. 268, (1843).

*Talorchestia? Quoyana*, Dana, U.S. Explor. Exped. xiv. Crust. part ii, p. 846, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 16, pl. ii, fig. 7, (1862).

Superior antennæ reaching considerably beyond the extremity of the of the penultimate joint of the inferior antennæ, which is extremely short, while the following joint is very long. Second pair of legs with the hands very large, nearly oval, and armed with two large broad acute teeth, placed one at the point of union of the inferior (or proximal) and anterior margins, the other towards the front of the anterior margin. Finger strong and regularly arcuate. Last pair of legs narrow, their first joint greatly dilated behind. Last segment of the abdomen short, rounded, with a spinous margin. Stylets of the last pair of false legs, (caudal appendages), slender and elongate. Length about 1 in. (M. E.).

New Zealand (Mus. Brit. Paris.); Bay of Islands (Dana).

#### ORCHESTIA.

*Orchestia*, Leach, Trans. Linn. Soc. Vol. xi, p. 356, (1815); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 17, (1862).

Like *Talitrus*, but having the two anterior pairs of legs furnished with subcheliform hands, the first pair small in both sexes, the second

pair large and powerful in the male, small in the female. Last segment single, well developed,

129. *Orchestia aucklandiæ*.

*Orchestia aucklandiæ*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 17, pl. i a, fig. 3. (1862).

*Male*:—Eyes very small, round. Superior antennæ reaching to the extremity of the penultimate joint of the peduncle of the inferior. Inferior antennæ nearly  $\frac{1}{3}$  the length of the animal. First pair of legs having the carpus longer than the hand, with a tubercle on the inferior margin, the palm produced into a rounded tubercle. Second pair of legs broader at the palm than at the carpus, palm slightly oblique, the inferior half raised higher than the half nearest the base of the finger, and fringed with short, equidistant, solitary hairs; a notch near the inferior angle separates a tooth from the rest of the palm: finger excavated near the base.

*Female*:—Differs in having the first pair of legs longer and slighter, the second pair with the carpus longer than the hand, and not inferiorly tuberculated. Animal generally very smooth, clean, and free from hairs. Length rather more than 1 in. (S. B.).

Auckland (Coll. Paris Mus.).

130. *Orchestia novæ-zealandiæ*.

*Orchestia novæ-zealandiæ*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 20, pl. iii, fig. 5. (1862).

*Female*:—Upper antennæ reaching beyond the extremity of the penultimate joint of the lower. Lower antennæ more than half as long as the animal, the flagellum longer than the peduncle and spinous; the penultimate is nearly as long as the ultimate joint of the peduncle. The first pair of legs with the hand well developed, and longer than the carpus, finger scarcely longer than the palm. The second pair of legs with the hand and carpus about equal in length, the finger falls considerably short of the extremity of the hand. Fifth pair of legs as long as the sixth and seventh. Thigh long. Length  $\frac{1}{4}$  in. (S. B.).

New Zealand (Coll. Brit. Mus.).

131. *Orchestia telluris*.

*Orchestia telluris*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 20, pl. iii, fig. 6, ♂, pl. iv, fig. 4, ♀, (1862).

*Male*:—Eyes round, large. Upper antennæ reaching rather beyond the extremity of the penultimate joint of the peduncle of the lower. Lower antennæ short, being scarcely one-fourth the length of the animal, the flagellum not quite so long as the peduncle, the penultimate joint of the peduncle shorter than the ultimate. First pair of legs with the carpus a little longer than the hand, with a small protuberance: finger slight, reaching beyond the extremity of the palm, which itself is considerably produced. The second pair of legs with the hand triangular, with an indentation in the palm corresponding to a protuberance in the finger. Fifth and sixth pairs of legs subequal; seventh, much longer, the carpus with a large squamiform plate, which is concave on the side next the animal, convex upon the opposite.

*Female*:—Differs in having the upper antennæ rather shorter. First pair of legs with the palm convex, the meros with an indentation (in the dried specimen). Second pair of legs with the finger articulating remotely from the apex of the hand, which is turned up at the extremity. Three posterior legs with the thighs serrated posteriorly. Carpus of the last pair of legs not largely developed. Length  $\frac{7}{10}$  in. (S. B.).

New Zealand (Coll. Brit. Mus.).

132. *Orchestia sylvicola*.

*Orchestia sylvicola*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 874, pl. lix, fig. 2-3, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 21, pl. iii, fig. 7, (1862).

*Female*:—Coxæ of moderate size, fifth hardly shorter than fourth. Inferior antennæ slender, about half as long as body, flagellum longer than base, superior antennæ half shorter than base of inferior. Four anterior legs quite small, those of the second pair a little the longest, the hand oblong and subelliptic, reversed or bent forward, broadly rounded at apex, the minute finger articulated with the margin towards its middle, and lying longitudinally along the joint. Four following legs subequal, claw small. Last six legs not very unequal, setæ or spinules short. Outer branch of first pair of caudal appendages bearing a few spinules.

*Male*:—Differs in having the inferior antennæ longer. Feet of first pair with a very small oblong hand, truncate at apex, and with a minute finger; of second pair with a large hand, sub-ovate, palm oblique, a little longer than half the hand, spinulous, entire, carpus very short and transverse. Caudal appendages with a few spinules, outer branch of first pair naked. Length  $\frac{1}{2}$  to  $\frac{4}{3}$  in. (D.).

New Zealand (Dana; Coll. Brit. Mus.).

### 133. *Orchestia tenuis*.

*Orchestia tenuis*, Dana, U.S. Explor. Exped. xiv, Crust. part ii. p. 872. pl. lix, fig. 1, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 29, pl. iv, fig. 10, (1862), copied from Dana.

*Female*:—Coxæ rather narrow. Inferior antennæ slender, about half as long as body, flagellum very slender, much longer than base. Superior antennæ about as long as base of inferior. Two anterior pairs of feet quite small and weak, first pair much the smallest, hand of second pair very small, oblong, bent backward, truncated half across towards apex, finger minute, rather remote from extremity, and nearly transverse, third and fourth pairs small, the fourth pair smaller than third, three posterior pairs very unequal, increasing regularly in length, seventh pair nearly twice longer than fifth, setæ short, scarcely longer than diameter of joints. Length  $\frac{1}{2}$  in. (D.).

New Zealand; Bay of Islands (Dana).

### 134. *Orchestia chilensis*.

*Orchestia chilensis*, M. Edw. Hist. Nat. Crust. iii, p. 18, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii. p. 868, pl. lviii, fig. 4, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 30, pl. i a, fig. 8, and pl. v, fig. 2, copied from Dana, (1862).

*Male*:—Superior antennæ reaching to the extremity of the penultimate joint of the peduncle of the inferior. Inferior antennæ scarcely half as long as the animal, flagellum as long as the peduncle. First pair of legs with the inferior angle of the palm rounded, scarcely defined, finger as long as palm. Second pair of legs with the hand ovate, palm oblique, spinous, a small tooth or tubercle near the base of the finger, finger long, bent near the middle. Length about 9 lines, (S. B.).

*Female*:—Referred to this species, and described at some length by Dana, has the feet of the first pair shorter and more slender than those of the second, hand truncate at apex, and here a little broader. Finger as long as apical margin. Hand of second pair sub-spatulate, finger marginal, longitudinal, hardly reaching to apex. Length 8 lines.

New Zealand, Akaroa (M. Jacquinot).

This species was also found by Dana at Valparaiso, and specimens from the coast of Chili are in the Museum of Paris.

### 135. *Orchestia serrulata*.

*Orchestia serrulata*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 870, pl. lviii, fig. 7, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 31, pl. v, fig. 4, (1862), copied from Dana.

Coxæ moderately broad, fifth anteriorly not narrower than fourth. Inferior antennæ about half as long as body. Superior antennæ hardly longer than half the base of the inferior. Hand of first pair of feet quite small, broader at apex, straight, truncate, and a little excavate. Hand of second pair large, suboval, palm infero-subapical, this part of inferior margin excavate and minutely spinulose. Third and fourth pairs of legs subequal, fifth, sixth, and seventh gradually increasing in length. (D.).

*Female?*—Legs of first pair with a very small hand, short, linear in form, not broader at apex, which is truncate, fourth joint longer and sparingly broader below, nearly straight, finger terminal, slightly oblique, though transverse, very short. Flagellum of inferior antennæ fourteen-jointed. Length  $9\frac{1}{2}$  lines. (D.).

New Zealand; Bay of Islands (Dana). Among seaweed thrown up by the tide on the shores of the islands called the Black Rocks.

I have seen no specimens.

### ALLORCHESTES.

*Allorchestes*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 883, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 34, (1862.)

Superior antennæ as long as or longer than the peduncle of the inferior. Maxillipeds unguiculate at apex. Legs of the first and second pairs both furnished with a subchelate hand, in both sexes.

This is a littoral genus, and in habit, as in structure, is intermediate between the *Orchestidae* and *Gammaridae*.

136. *Allorchestes novæ-zealandiæ*.

*Allorchestes novi-zealandiæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 894, pl. lxi, fig. 1. ♂, ♀, (1853).

*Allorchestes intrepida*, Dana, Proc. Amer. Acad. Sci. ii, p. 207, ♂.

*Allorchestes novæ-zealandiæ*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 37, pl. vi, fig. 3, (1862).

*Male*:—Coxæ very large. Antennæ of superior pair about one-fourth shorter than inferior, flagellum more than twice as long as base; second pair hardly half as long as the body, last two joints of the base subequal, flagellum longer than the base, very slender. Feet of first pair quite small, hand oblong, sparingly broader at base, truncate, and deep excavate at extremity, lower apex acute, finger more than twice as long as breadth of hand, carpus broader, with a narrow subacute prolongation below. Feet of second pair very stout; hand large, ovate; palm along under-side nearly straight, hardly depressed, minute spinulose; finger long; carpus with a narrow prolongation below, between hand and third joint. Feet of fifth, sixth, and seventh pairs regularly increase in depth.

*Female*:—Hand of first pair oblong, two margins nearly parallel, truncate at apex; finger not longer than breadth of hand; carpus with a short triangular or rounded prolongation below. Hand of second pair a little larger, but of similar form; carpus long, produced below hand, and obtuse or rounded at the extremity, third joint also much produced. Length 5 lines. (D.).

New Zealand (Coll. Brit. Mus.); Parua Harbour, Bay of Islands, (Dana). Found by Dana in holes of wood bored by Teredos.

137. *Allorchestes brevicornis*.

*Allorchestes brevicornis*, Dana, U.S. Explor. Exped. Crust. xiv, part ii, p. 893, pl. lx, fig. 8, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 44, pl. vii, fig. 4, (1862), copied from Dana.

Antennæ quite short, the superior not one-fourth as long as the body, and the inferior not one-third, inferior pair having the base quite short, flagellum longer than base. Hand of first pair of feet

quite small, a little oblong, sub-rectangular, pubescent below, apex transversely truncate, slightly excavate, lower apex acute, and a little prolonged. Hand of second pair narrow-ovate, rather small, apex narrow, with a few tufts of short setæ below; finger short, not half as long as hand, nearly longitudinal, whole palm depressed, straight; carpus very short, transverse, produced below. Four posterior feet equal, setæ minute. Length 5 lines. (D.).

New Zealand; Bay of Islands, along shores. (Dana).

#### Family II. GAMMARIDÆ.

*Crevettines sauteurs*, M. Edw. (part) Hist. Nat. Crust. iii, p. 10, (1840).

*Gammarida*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 902, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 53, (1862).

Upper antennæ well developed, and often furnished with a secondary appendage. Coxæ largely developed. Last pair of caudal appendages reaching to the extremity of the preceding, and usually double-branched. Hairs upon the entire animal slight and flexible.

The habits of the animals are aquatic, they construct no home to rest in, and are incapable of leaping when accidentally removed from the water.

#### ÆDICERUS.

*Ædiceros*, Kroyer, Nat. Tidskr. iv, p. 146, (1842-3).

*Ædicerus*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 993, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 103, (1862).

Head produced anteriorly into a rostrum more or less acute than obtuse, but always transparent, turgid, yellowish red, oval. Eyes none? Peduncles of the antennæ long, equalling or surpassing in length the flagellum of the superior. Superior antennæ not appendiculated. First two pairs of legs with the hands subchelate, very large. Third and fourth pairs of legs strong, seventh pair very long, slight, almost filiform, (except the thigh). Coxæ moderately large, broad, and deep, armed upon the inferior margins with simple hairs. Posterior margin of the fourth pair not excavated.

#### 138. *Ædicerus novæ-zealandiæ*.

*Ædiceros novi-zealandiæ*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 934, pl. lxiii, fig. 7, (1853).

*Ædicerus novæ-zealandiæ*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 104, pl. xvii. fig. 1, (1862), copied from Dana.

Superior antennæ not half as long as the body, terete; inferior pair nearly twice as long; base twice as long as base of superior, flagellum twice as long as base. Seventh pair of legs as long as body, styliform at extremity, four anterior legs unequal, hands similar, hand of first pair smallest, of second pair of moderate size, broad, sub-ovate, nearly naked, obliquely truncate, palm oblique, very slightly excavate, or nearly straight. Remaining pairs having the first joint rather narrow. Length 2 lines. (D.).

New Zealand, Bay of Islands (Dana). In small pools on the rocky shores, near Cororatika.

I have not seen this species.

#### PARAMOERA.

*Melita*, Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 911, (1853), nec Leach.

*Moera*, Spence Bate (part) Cat. Amphip. Crust. Brit. Mus. p. 181, (1862).

*Paramoera*, Miers, Ann. Mag. Nat. Hist. (ser. 4) xv, p. 75, (1875).

Superior antennæ exappendiculate, but little longer than the inferior. First four legs with the hands well developed, finger closing along the inferior margin of the palm. Last pair of natatory legs with the rami very unequal, the inner short or rudimentary. Last segment cleft nearly to the base.

This genus was founded upon a species from Kerguelen's Island, but the subsequent examination of a larger series of specimens showed that the last pair of natatory legs or stylets were in reality biramous, one of the rami being broken off in the specimen originally described; and the species belonged in reality to the genus *Atylus*.

139. *Paramoera tenuicornis*. Pl. III, fig. 8, ♀, (copied from Dana).

*Melita tenuicornis*, Dana, U.S. Explor. Exped. xiv. Crust. part ii, p. 963, pl. lxvi, fig. 5, (1853).

*Moera tenuicornis*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 195, pl. xxxv, fig. 6, ♂, (1862), copied from Dana.

*Male*.—Coxæ rather broad. Antennæ slender, superior pair longer than half the body, base a little shorter than the flagellum, second joint much the longest; inferior pair a little the shorter, base much longer than flagellum, and also exceeding in length the base of the superior pair, third and fourth joints subequal. Hand of first pair very small, obovate, margin hirsute, finger minute, and articulated to the hand below the apex. Hand of second pair oblong, subelliptical, back much flattened, densely hirsute below; palm not excavate; finger rather large. Legs of third and fourth pairs short; posterior six subequal, the fifth pair a little the smallest, setæ short. (D.).

*Female*.—Differs chiefly, according to Dana, in having the hand of the second pair of moderate size, long obovate, apex sparingly oblique; finger short, shutting against lateral surface of hand. Stylets of second pair short, posterior pair long, simple, the branch sub-cylindrical, and furnished with short setæ. Length  $4\frac{1}{2}$  lines.

New Zealand, Bay of Islands (Dana). Between low and high water level.

This species, which is probably erroneously described and figured, either as regards the exappendiculate superior antennæ, or the uniramous posterior pair of caudal stylets, must provisionally remain designated by the name *Paramoera*.

### Sub-Tribe I. HYPERIDEA.

*Hypérines*, M. Edw. Hist. Nat. Crust, iii, p. 70, (1840).

*Hyperidea*, Dana, (part) U.S. Explor. Exped. xiv, Crust. part ii, p. 978, (1853).

*Hyperina*, Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 287, (1862).

Body of more or less abnormal shape, seldom compressed. Head large. Eyes large, covering the greater part of the sides of the head. Antennæ abnormally developed. Abdomen usually broad and depressed, and the last pair of abdominal appendages lamellate. Coxæ small. Legs of very variable shape. Maxillipeds small and imperfectly operculiform.

The large eyes, covering the greater part of the sides of the head, give the animal a wild, staring appearance, which is very characteristic of the group.

## Family I. PHRONIMIDÆ.

*Hypérines ordinaires*, M. Edw. (part) Hist. Nat. Crust. iii, p. 74, (1840).

*Phronimide*, Dana, (part) U.S. Explor. Exped. xiv, Crust. part ii, p. 999, (1853); Spence Bate, Cat. Amphip. Crust, Brit. Mus. p. 316, (1862).

Inferior antennæ obsolete, at least in one sex. Fifth pair of legs developed into a more or less perfectly chelate organ.

## PHRONIMA.

*Phronima*, Latr. Hist. Nat. Crust. vi, p. 289, (1803); M. Edw. Hist. Nat. Crust. iii, p. 91, (1840); Dana, U.S. Explor. Exped. xiv, Crust. part ii, p. 1000, (1853); Spence Bate, Cat. Amphip. Crust. Brit. Mus. p. 316, (1862).

Head very large. Body broad and flat, tapering posteriorly. Abdomen narrow. Eyes on the dorsal surface of the head. Superior antennæ very short; inferior antennæ obsolete. Legs all long and slender, the first and second pairs with the ante-penultimate joint somewhat dilated, third and fourth pairs very long and slender, fifth pair terminating in a perfectly formed hand, sixth and seventh pairs slender. Three last pairs of abdominal appendages slender, biramous. Terminal segment minute, simple.

140. *Phronima novæ-zealandiæ*.

*Phronima novæ-zealandiæ*, Powell, Trans. N.Z. Inst. vii, p. 294, pl. xxi, fig. 1, (1874).

Head very large, tumid above, tapering to the oral apparatus, finely striated, the striæ being resolvable by a low magnifying power into rows of pellucid dots. Antennæ as long as the breadth of the head at their insertion, the first joint being very short. First pair of legs having the meros slightly produced posterodistally, the wrist produced to nearly half the length of the hand posterodistally, the anterior edge serrated, terminating in a sharp point. Second pair of legs with the meros produced posterodistally into a long narrow process nearly half the length of the wrist, the wrist has a similarly situated

long narrow process, nearly half the length of the hand. Fifth pair of legs with the base produced posterodistally into a sharp point not quite at the termination of the bases, and springing off at a rather obtuse angle, the ischia produced anterodistally into a small sharp tooth, the wrist anterodistally produced to two thirds the length of the hand, provided with a prominent tooth at the centre of its inner margin, hand long and slender, falcate, and furnished with an obtuse tubercle corresponding to the proximal aspect of the carpal tooth. Pellucid, with the eyes red. (P.).

New Zealand (Coll. Brit. Mus.); Sumner beach, (Powell). In the case of a tunicate mollusk.

*Diagnostic points.*—The long sharp process on the mera of the second pair of legs; the processes on the ischia and mera of the fifth pair of legs.



## ERRATA.

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- p. xii col. 1, line 11 for Sub-tribe I read Sub-tribe III.  
 „ 1 line 2 for **PODOPHTHALMATA** „ **PODOPHTHALMATA**.  
 „ „ „ 3 „ *Podophthalma* „ *Podophthalma*.  
 „ „ „ 4 „ *Podophthalmiens* „ *Podophthalmiens*.  
 „ „ „ 5 „ *Podophthalmia* „ *Podophthalmia*.  
 „ 33 „ 11 „ **MACROPTHALMIDÆ** „ **MACROPTHALMIDÆ**.  
 „ „ „ 22 „ **MACROPTHALMINÆ** „ **MACROPTHALMINÆ**.  
 „ 42 „ 17 „ pl. xiii „ pl. xxiii.  
 „ 103 „ 33 „ Sub-Tribe I „ Sub-Tribe III.



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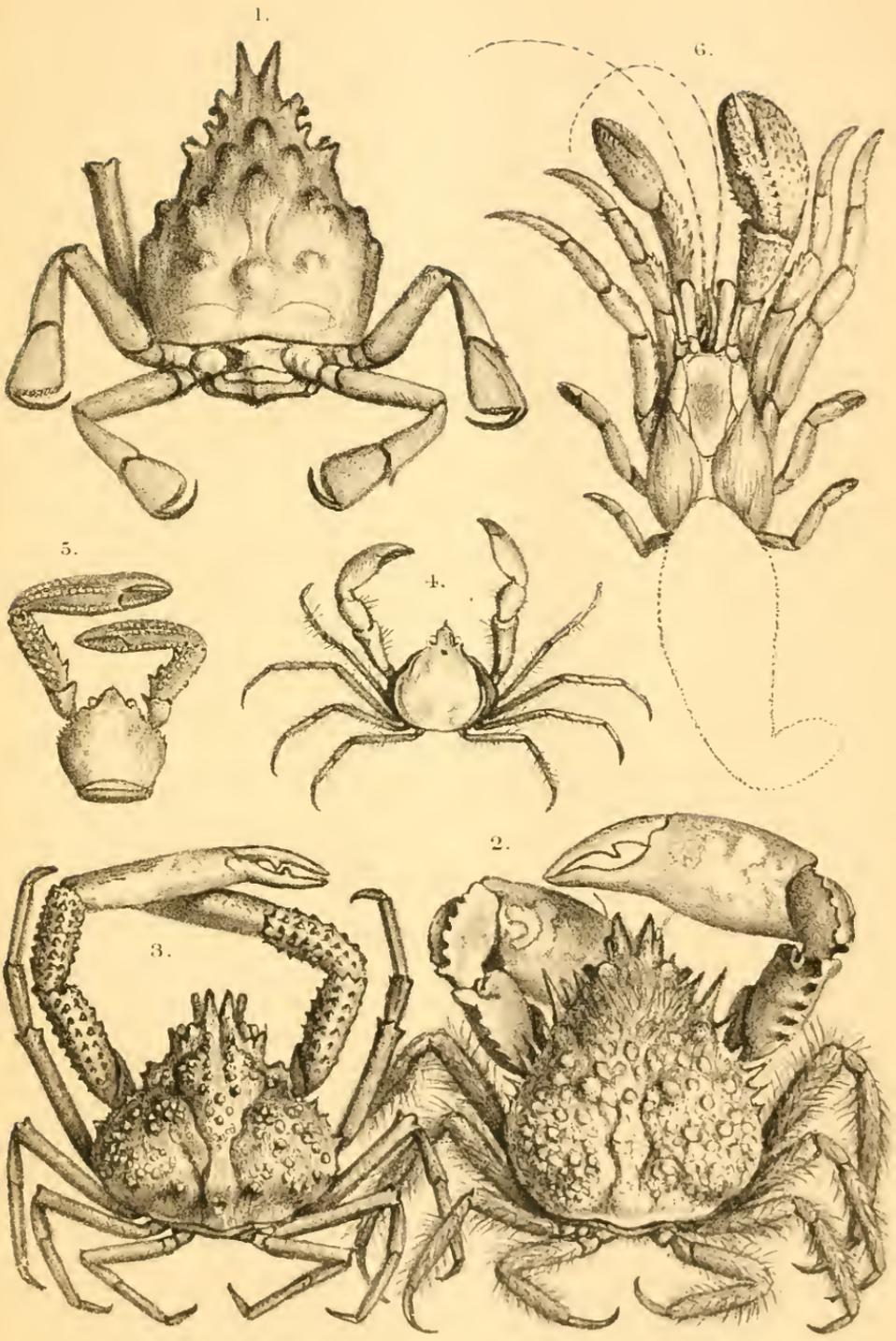
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## EXPLANATION OF PLATE I.

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- Fig. 1.** Halimus hectori, ♀, about  $\frac{3}{4}$  nat. size.
- „ **2.** Paramithrax barbicornis, Latr. ♂ ? about  $\frac{3}{4}$  nat. size.
- „ **3.** Leptomithrax longimanus, ♂, about  $\frac{3}{4}$  nat. size.
- „ **4.** Elamena whitei, ♂, nat. size.
- „ **5.** Petrocheles spinosus, ♀, (*Carapace and anterior legs*), nat. size.
- „ **6.** Eupagurus spinulimanus, nat. size.



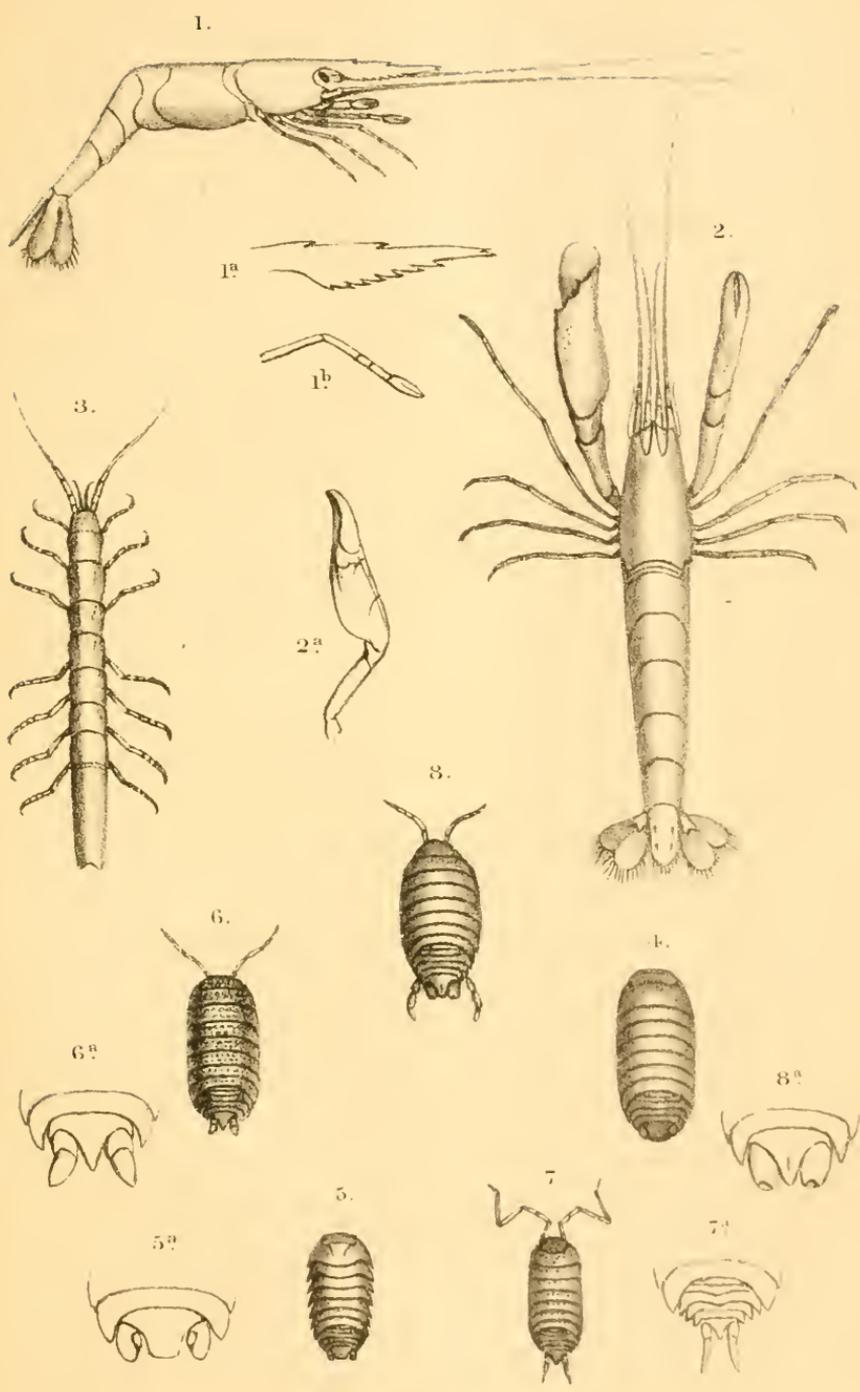




## EXPLANATION OF PLATE II.

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- Fig. 1.** Virbius bifidirostris, (slightly enlarged) ;  
,, 1 a. *Rostrum, (enlarged).*  
,, 1 b. *Leg of second pair, showing the joints of the  
carpus, (enlarged).*  
,, 2. Alpheus novæ-zealandiæ, nat. size.  
,, 2 a. *Larger hand, in a lateral view.*  
,, 3. Idotea elongata, nat. size.  
,, 4. Armadillo inconspicuus, about twice nat. size.  
,, 5. Cubaris rugulosus, about twice nat. size.  
,, 5 a. *Terminal segment of abdomen and caudal  
appendages, (further enlarged).*  
,, 6. Porcellio graniger, about twice nat. size.  
,, 6 a. *Terminal segment of abdomen and caudal  
appendages, (further enlarged).*  
,, 7. Porcellio zealandicus, about twice nat. size.  
,, 7 a. *Terminal segment of abdomen and caudal  
appendages, (further enlarged).*  
,, 8. Scyphax intermedius, nat. size.  
,, 8 a. *Terminal segment of abdomen and caudal  
appendages, (enlarged).*



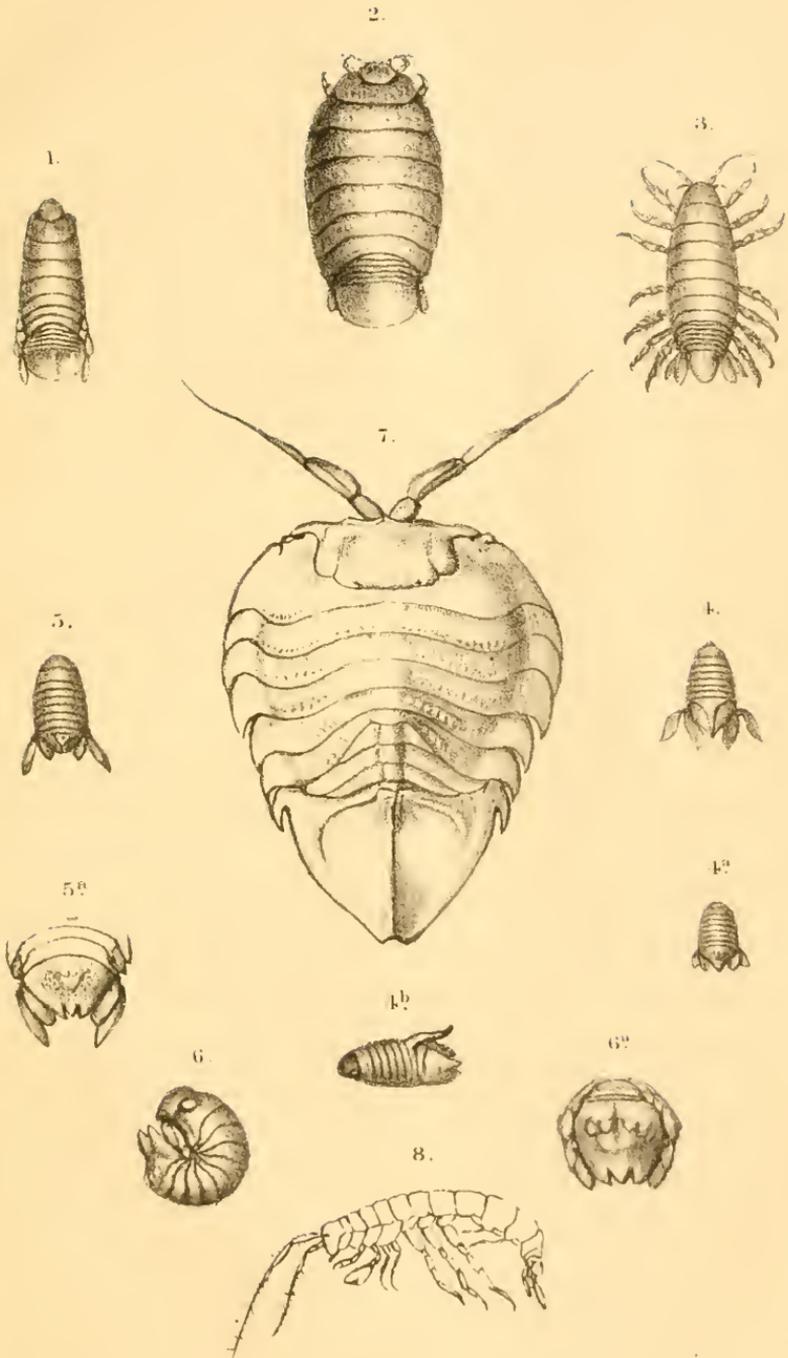




### EXPLANATION OF PLATE III.

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- Fig. 1.      *Ceratothoa lineata*, nat. size.
- „ 2.        *Lironeca novæ-zealandiæ*, nat. size.
- „ 3.        *Cirolana rossii*, nat. size.
- „ 4.        *Isocladus spiniger*, Dana, ♂, nat. size.
- „ 4 a.      *Female*.
- „ 4 b.      var. *recurvatus*, (*lateral view*).
- „ 5.        *Cymodocea granulata*, nat. size.
- „ 5 a.      *Terminal segment of abdomen and caudal appendages, (enlarged)*.
- „ 6.        *Cymodocea convexa*, (*lateral view, enlarged*).
- „ 6 a.      *Terminal segment of abdomen and caudal appendages, (further enlarged)*.
- „ 7.        *Serolis latifrons*, much enlarged. (From an unpublished plate of the *Voy. Erebus and Terror*).
- „ 8.        *Paramoera tenuicornis*, Dana, ♀, (copied from Dana).















Ms. A. 1. 1. 1.

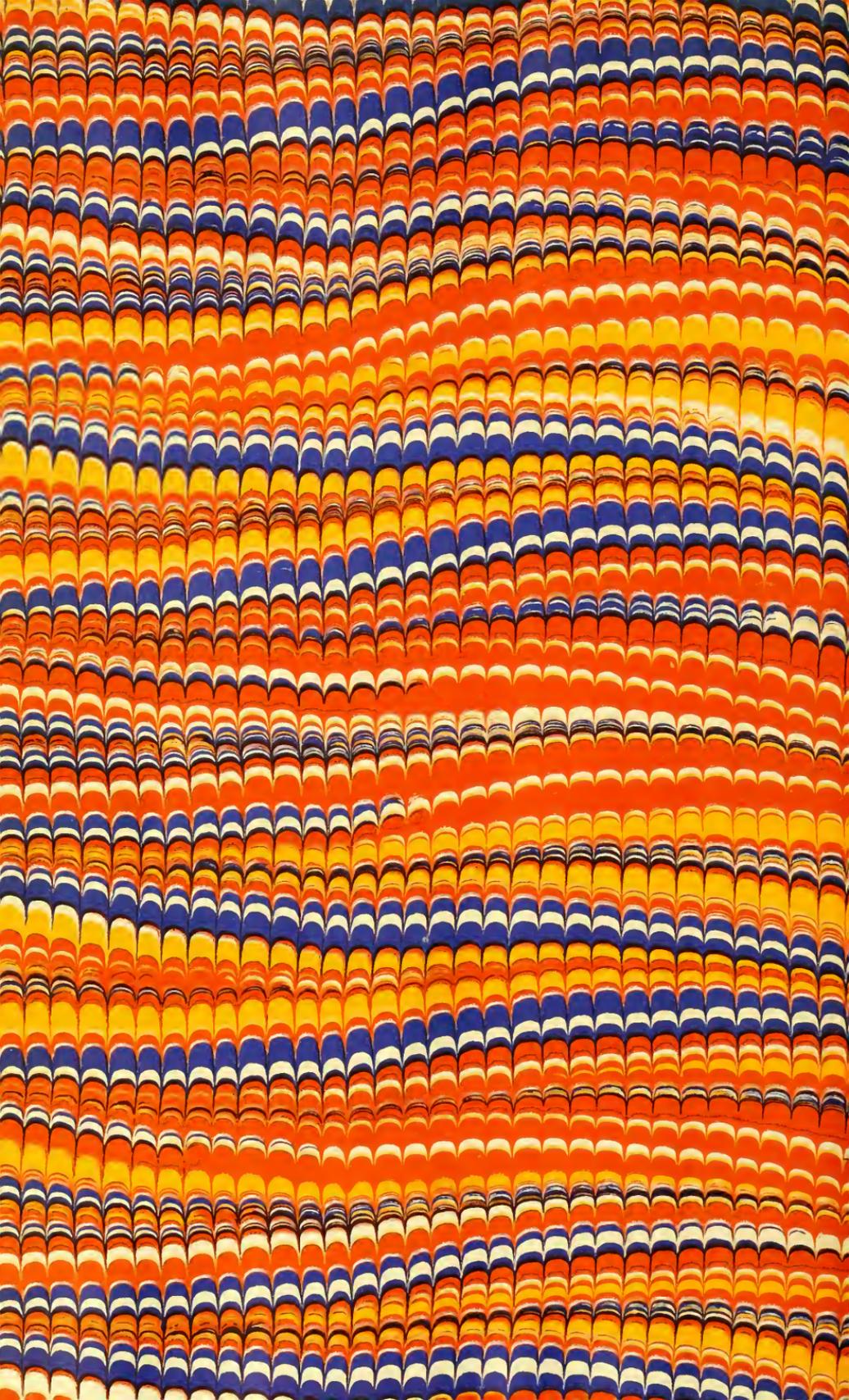


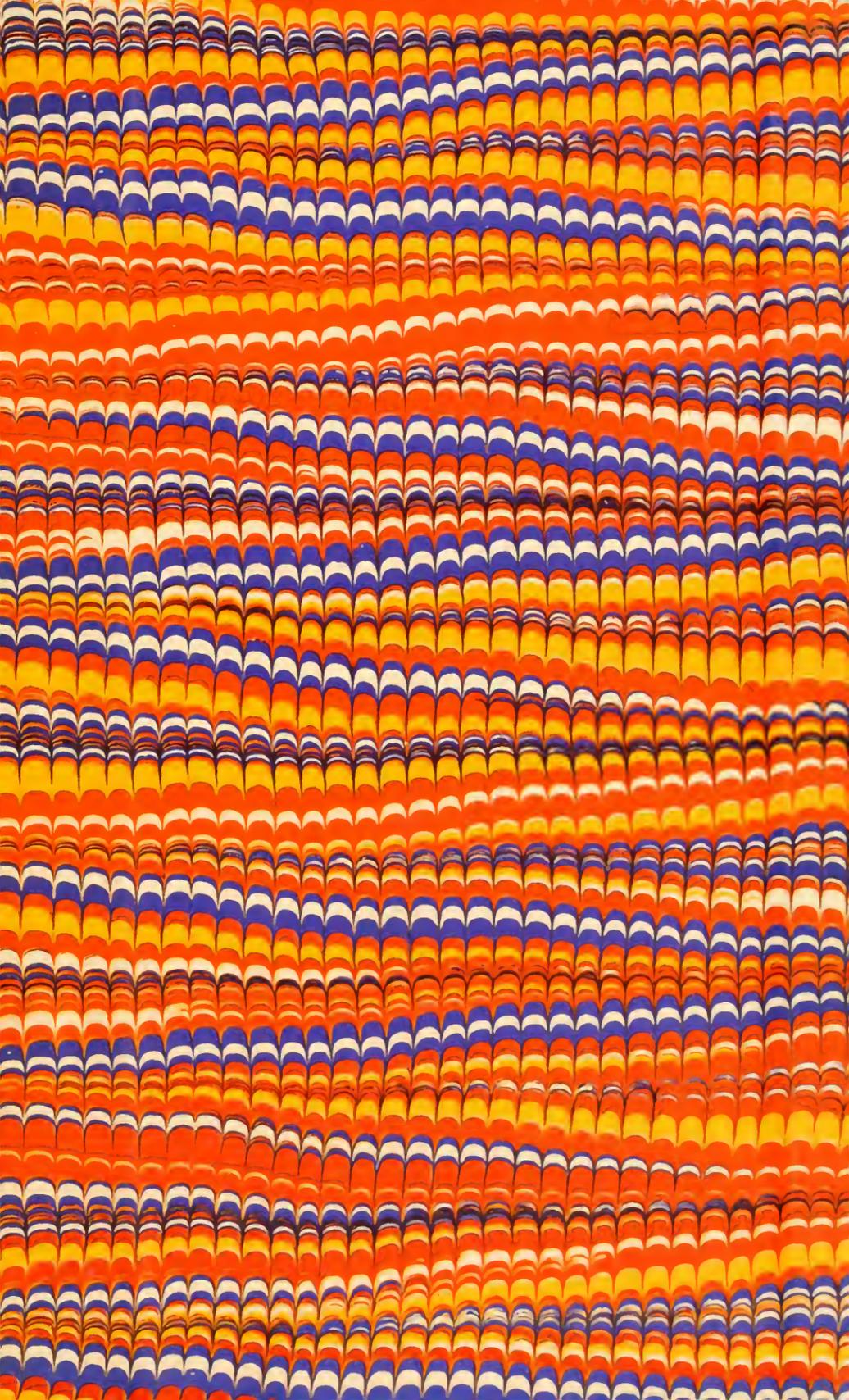












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