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EXPLANATION OF PLATES.	

The form of the ambulatory dactyli distinguishes *Polyonyx* from all other genera of Porcellanidæ; in other respects it appears scarcely to differ from *Megalobrachium*, founded by Stimpson for the reception of a West Indian species, and Miers has lately expressed a doubt as to the distinctness of the two genera. The ambulatory claws are merely special developments of the horny spines met with on the posterior surface of the dactyli in many other Porcellanids.

*Polyonyx obesulus* (White), Miers.

*Porcellana obesula*, White, List Crust. Brit. Mus., p. 130, 1847 (*sine descr.*).

*Polyonyx obesulus*, Miers, Crust. in Zool. H.M.S. "Alert," p. 272, pl. xxix. fig. D, 1884.

*Habitat.*—Station 186, Flinders Passage, North Australia; depth, 8 fathoms; bottom, coral mud. Three specimens, one of which is a female with ova, taken from the interior of a sponge (*Hippospongia anomala*, Poléjaeff); a female with ova also occurred in a free state at the same locality.

The types in the British Museum came from the Madgica-Sima group, and those described by Miers were taken on the Australian coasts.

Section B. GALATHOÏDEA.

*Galatheidæ*, Leach, Dict. d. Sci. Nat., t. xviii. p. 52, 1820.

*Galathéides*, Milne-Edwards, Hist. Nat. des Crust., t. ii. p. 270, 1837.

*Galatheidæ*, De Haan, Crust. Japon., pp. xxii, 198, 1850.

„ Dana, U.S. Explor. Exped., vol. xiii., Crust., part i. p. 401, 1852.

„ Stimpson, Proc. Acad. Nat. Sci. Philad., p. 76, 1858.

„ Miers, Catal. New Zealand Crust., p. 68, 1876.

„ Haswell, Catal. Austral. Crust., p. 161, 1882.

Carapace elongate, the regions well defined and usually rugose, with the front produced into a prominent and acute rostrum. Chelipedes and ambulatory limbs elongated and frequently slender. Abdomen broad and well developed, simply bent, or folded on itself, never closely applied to the under surface of the thorax, terminating in a powerful swimming fan formed by the telson and the appendages of the sixth segment. Females with four pairs of simple and slender ovigerous appendages on the second, third, fourth, and fifth segments (those of the second and fourth segments may be rudimentary); males furnished with two pairs of well-developed accessory genital organs on the first and second segments (those of the first segment may be rudimentary or absent), and three pairs of short, usually flattened appendages on the third, fourth, and fifth segments, all of which may, however, be rudimentary. Antennules exposed; the antennal peduncle

directed forwards. External maxillipedes subpediform, with the ischium and merus narrow and frequently spinose internally. Eyes placed in very incomplete orbits.

The representatives of this section occur in all seas, but only the two genera *Galathea* and *Munida* are found in shallow water. So slight and at the same time so numerous are the modifications met with in those parts of the body from which the generic characters are derived, that it is questionable whether many of the deep-water (so-called) genera should not be united; the examination of a number of species shows at least that in otherwise closely allied forms there is considerable variation in the form and armature of the rostrum, carapace, chelipedes, and external maxillipedes. The number of gills in most if not all the genera<sup>1</sup> agrees with that of the Porcellanodea, viz., fourteen on each side, arranged as follows:—

Segment.	VIII.	IX.	X.	XI.	XII.	XIII.	Totals.
Pleurobranchiæ,	...	...	1	1	1	1	4
Arthrobranchiæ,	2	2	2	2	2	...	10
Podobranchiæ,	...	...	...	...	...	...	0

The genera as at present constituted may be arranged in two divisions, forming a single family:—

I. Abdomen simply bent.

a. Eyes normal. Many of the species inhabiting shallow water.

*Galathea*, Fabricius. | ? *Grimothea*, Leach.  
*Munida*, Leach.

b. Eyes non-pigmented. Species confined to deep water.

*Munidopsis*, Whiteaves. | ? *Anoplnotus*, S. I. Smith.  
*Elasmonotus*, A. Milne-Edwards. | *Galacantha*, A. Milne-Edwards.

II. Abdomen folded on itself. Species confined to deep water.

*Eumunida*, S. I. Smith. | *Ptychogaster*, A. Milne-Edwards.  
*Uroptychus*, Henderson.

Family GALATHEIDÆ.

*Galatheidæ*, Dana, U.S. Explor. Exped., vol. xiv., Crust., part ii. p. 1431, 1852.

<sup>1</sup> I have examined the branchiæ in various species of *Galathea*, *Munida*, *Munidopsis*, *Elasmonotus*, *Galacantha*, and *Uroptychus*.



Genus *Galathea*, Fabricius.

- Galathea*, Fabricius, Suppl. Ent. Syst., p. 414, 1798.  
*Galatea*, Leach, Dict. d. Sci. Nat., t. xviii. p. 50, 1820.  
*Galathée*, Desmarest, Consid. sur les Crust., p. 188, 1825.  
*Galathea*, Latreille, Fam. Nat. du Règne Anim., p. 278, 1826.  
 „ Milne-Edwards, Hist. Nat. des Crust., t. ii. p. 273, 1837.  
 „ De Haan, Crust. Japon., p. 198, 1850.  
 „ Dana, U.S. Explor. Exped., vol. xiii., Crust., part i. p. 478, 1852.  
 „ Bell, Brit. Crust., p. 195, 1853.  
 „ Stimpson, Proc. Acad. Nat. Sci. Philad., p. 76, 1858.  
 „ Heller, Crust. südlichen Europa, p. 188, 1863.  
 „ Haswell, Catal. Austral. Crust., p. 161, 1882.

Rostrum flattened and of moderate breadth, with the margins usually spinose. Carapace with pubescent transverse striæ; the surface usually unarmed, with the exception of the anterior gastric area; the cardiac area not prominent. Abdominal segments unarmed.

The members of this genus occur chiefly in shallow water, but certain species are found at considerable depths; they live commonly on rocky ground, or among Corals and Sponges, and swim backwards in the water by a rapid jerking movement of the tail. The distinctive characters are in many cases so slightly marked that it is extremely difficult to decide whether the specimen in question is entitled to rank as a species or merely as a variety. The fact that in some species the merus of the external maxillipedes is shorter than the ischium, while in others it is longer, serves to show that generic characters based on the form of this joint must, in the Galathodea at least, be regarded with suspicion. The supraorbital spines so prominent in the genus *Munida* are visible at the base of the rostrum in most of the *Galathææ*, but they are of small size, and in most cases are associated with other lateral rostral spines.

*Galathea elegans*, White.

- Galathea elegans*, White, List Crust. Brit. Mus., p. 66, 1847 (*sine descr.*).  
 „ „ Adams and White, Crust. Voyage of H.M.S. "Samarang," pp. i, ii, pl. xii.  
 fig. 7, 1848.  
 „ „ Haswell, Catal. Austral. Crust., p. 163, 1882.  
 „ „ Miers, Crust. in Zool. H.M.S. "Alert," p. 278, 1884.

*Habitat.*—Station 212, in the Celebes Sea; depth, 10 to 20 fathoms; bottom, sand. Two males, and a female with ova.

This species is characterised by the length of its rostrum and the brilliancy of its colour markings, which are arranged in the form of purplish longitudinal bands on the trunk and chelipedes. The rostrum is more than half the length of the remaining

part of the carapace, and its lateral margin is armed with seven or eight minute denticles; the lateral border of the carapace bears from eight to nine spinules. The merus of the external maxillipedes is short, with the inner margin bispinose. In the female the chelipedes are more slender than in males. This species appears to be widely distributed; it has been recorded from the Philippines and the Australian coast, and I have recently examined specimens which were taken by Mr. E. Thurston off the Pearl Banks at Tuticorin, South India.

*Galathea longirostris*, Dana, from the Fiji Islands, is a closely allied species, but the rostrum is apparently narrower, the spinules on the margins of the carapace are less distinct, and the second abdominal segment is acute on either side.

*Galathea australiensis*, Stimpson (Pl. XII. fig. 5).

*Galathea australiensis*, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 89, 1858.  
 " " Haswell, Catal. Austral. Crust., p. 161, 1882.

*Habitat*.—Station 190, Arafura Sea; depth, 49 fathoms; bottom, green mud. A female without chelipedes or legs.

This agrees on the whole with Stimpson's brief diagnosis. The ischium of the external maxillipedes has a median curved ridge on its outer surface; the merus is slightly shorter than the ischium, with two well-marked spines on the inner margin, one of which is situated near the distal end. The types were taken at Port Jackson. Haswell is of opinion that it may have to be united with *Galathea spinosirostris*, Dana.

*Galathea subsquamata*, Stimpson (Pl. XII. fig. 4).

*Galathea subsquamata*, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 90, 1858.

*Habitat*.—Stations 204A or 204B, off Tablas Island, Philippines; depth, 100 to 115 fathoms; bottom, green mud. A female (bearing ova) without chelipedes or legs.

This specimen is apparently closely allied to or identical with Stimpson's species. The striæ on the anterior gastric and hepatic areas are short, wavy, and scale-like, those on the hepatic area and the front row of the gastric area being tipped by spinules. The rostrum bears four well-marked acute spines on each side, and its upper surface is provided with numerous indistinct scales of small size; each lateral spine is separated by a rounded notch from the base of the one immediately in front. The ischium of the external maxillipedes has its outer margin produced into a strong spine; the inner border of the merus is trispinose—the third or distal spine being of small size—and the outer border is provided with two small spines near the distal end; the outer surface of both merus and carpus is obscurely squamose. The basal joint of the antennular peduncle is

armed with somewhat larger spines than is usual in species of *Galathea*. The carapace measures 10.5 mm. in length, and the rostrum 4 mm.; Stimpson's type-specimen came from Ousima Island and was of smaller size.

*Galathea grandirostris*, Stimpson (Pl. XII. fig. 3).

*Galathea grandirostris*, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 90, 1858.  
? *Galathea deflexifrons*, Haswell, Catal. Austral. Crust., p. 163, 1882.

*Habitat*.—Station 209, off Zebu, Philippines, January 19, 1875; depth, 95 to 100 fathoms; bottom, blue mud. A male without chelipedes or limbs.

As in the case of the two preceding species this identification must be held to be somewhat doubtful. The rostrum is broad, triangular, and deflexed, with five or six minute teeth on each lateral border, and the upper surface pubescent. The striæ on the carapace are numerous and strongly ciliated; the gastric region is unarmed. The merus of the external maxillipedes is slightly shorter than the ischium, its inner margin is bispinose, and the outer surface is obscurely squamose; a few minute dentations are present on the outer margin of both merus and carpus. The sculpture of the abdominal segments is more strongly marked than usual. I believe that *Galathea deflexifrons*, Haswell, will prove to be identical with this species and not with *Galathea elegans*, White, as suggested by Miers, for Stimpson expressly states that his types are allied to the latter. The carapace of the Challenger specimen measures 7 mm. in length.

*Galathea dispersa*, Spence Bate.

*Galathea dispersa*, Spence Bate, Proc. Linn. Soc. Lond. (Zool.), vol. iii. p. 3, 1859.  
" " Kinahan, Trans. Irish Acad., vol. xxiv. p. 99, woodcut, 1871.  
? *Galathea labidolepta*, Stimpson, Proc. Acad. Nat. Sci. Philad., p. 89, 1858.

*Habitat*.—Station VIIp, off Tenerife, Canaries, February 10, 1873; depth, 75 fathoms; bottom, volcanic sand. Two specimens, male and female, the latter with ova.

The rostrum is armed with four spines on each side which increase in size from behind forwards, and its upper surface is pubescent. The first striated ridge on the gastric area, situated at the base of the rostrum, bears from two to six spinules, but in some cases they are obsolete; the number of spines on the lateral border of the carapace varies considerably and one or two spinules may be present on the hepatic area. The ischium of the external maxillipedes bears an elevated longitudinal line near the middle of its outer surface, and the lateral margins are prolonged distally into two acute spines, of which the external is more prominent; the merus is shorter than the ischium, and an acute spine always exists near the middle of its inner margin, the two lateral margins are usually prolonged distally into minute spinules, and one or two spinules are frequently

present on the inner margin between the central spine and the distal end. The merus and carpus of the chelipedes are spinose internally, the propodus usually bears a row of short spinules on its outer border, and the upper surface is pubescent and somewhat flattened; the fingers are as a rule straight and in close contact, but in old males those of the right side become bent, the dactylus is provided with a prominent tubercular tooth on the inner margin, and there is a considerable intervening hiatus; a slight hiatus may also exist between the fingers of the left side.

The foregoing characters are furnished by specimens taken in the British seas, where this species occurs commonly in shallow water. After careful examination I am unable to find any points of difference in the Challenger examples.

Two species of *Galathea* were taken in Simon's Bay, South Africa, at a depth of 5 to 18 fathoms, from which locality the type of *Galathea labidolepta*, Stimpson, was procured. The first of these, represented by a single male specimen (figured twice the natural size on Pl. XII.), which I refer with considerable hesitation to Stimpson's species, is either very closely allied to or identical with *Galathea dispersa*. The second species, represented by three imperfect specimens, is of much smaller size, the body of a male measuring 17.5 mm. in length, while a female with ova measures only 11 mm. In these the merus of the external maxillipedes is considerably longer and narrower than the ischium (a character in which it agrees with the common European *Galathea squamifera*, Leach), the inner margin bears two acute spinules near its distal end, and a few minute spinules are present on the outer margin. The chelipedes in the single specimen in which they are still present (a female) are very slender, and the fingers exceed the palm in length. It is impossible to say which of these species, or indeed whether either of them, is referable to *Galathea labidolepta*. The original description of the latter is very incomplete and the size is not recorded; the brief diagnosis would indeed apply to either of the Challenger species in most respects, but as regards the external maxillipedes, in the form of which they differ to a marked extent, Stimpson has furnished no account.

*Galathea aculeata*, Haswell.

*Galathea aculeata*, Haswell, Proc. Linn. Soc. N.S.W., vol. vi. p. 761, 1882; Catal. Austral. Crust., p. 162, 1882.

*Habitat*.—Station 172, off Nukalofa, Tongatabu; depth, 18 fathoms; bottom, coral mud. A male specimen.

Station 208, off Manila; depth, 18 fathoms; bottom, blue mud. Several specimens, including a female with ova.

The brevity of Haswell's description renders the identification of this species very uncertain. It is apparently allied to *Galathea australiensis*, Stimpson, but the gastric

spinules are absent, the lateral rostral denticles are less markedly spinulous and of smaller size, while the median rostral spine is very long, narrow, and acute. The striæ on the carapace are well marked, and fringed with tolerably long hairs. The merus of the external maxillipedes is much shorter than the ischium, and its inner margin bears two or three slender spinules, while, in some specimens at least, one or two obscure dentations are present on the outer margin. In the single specimen which still retains the chelipedes (a male) the fingers are separated by a hiatus, whereas Haswell states that they do not gape; this cannot, however, be considered a difference of much importance. The largest specimen measures about 12 mm. in length. The types came from the coast of Queensland.

*Galathea pusilla*, Henderson (Pl. XII. fig. 1).

*Galathea pusilla*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 407, 1885.

*Characters*.—The carapace is comparatively smooth, only about eight transverse striæ being present, and these are fringed with very short hairs; the regions are ill defined, and each lateral border bears eight or nine spinules. The gastric area is armed anteriorly with two pairs of spinules separated by a rather wide median interval. The rostrum is broadly triangular<sup>1</sup> and slightly depressed, a prominent spine is placed at either side of the base immediately over the ocular peduncle, and a minute spinule is situated on either side near the apex (in one specimen this spinule is absent); the apex is narrow and acute.

The ischium of the external maxillipedes has its outer border prolonged distally into an acute spine; the merus is much shorter than the ischium, the inner border is armed near its middle with a curved acute spinule, and a similar projection is present at the distal end of the outer border. The anterior prolongation of the first antennal peduncular joint present in most (if not all) species of *Galathea* is very long, slender, and acute, indeed, it is visible from above as a spine lying outside the eye-stalk.

The chelipedes (which have become detached) are pubescent, and the lateral margins and upper surface of the merus, carpus, and propodus bear a few curved spinules; the fingers do not equal the palm in length, and their opposed edges are irregularly toothed. The ambulatory limbs have the anterior borders of the meri and carpi armed with short spinules; the dactyli are more than half the length of the propodi and almost straight, with the posterior margin bearing a series of minute horny spines.

The abdominal segments are comparatively smooth, the striæ being almost devoid of hairs.

Length of body of a male 10 mm., of chelipede (detached) 11 mm., of carapace 5 mm., of rostrum 1.8 mm.

<sup>1</sup> In the figure it is represented as rather narrower than it actually is, and the size of the lateral apical spinules is exaggerated.

This species is at once distinguished by the form and armature of the rostrum, and the comparative smoothness of the carapace, in addition to its small size.

*Habitat*.—Station 163A, off Twofold Bay, Australia; depth, 150 fathoms; bottom, green mud. A male and two female specimens; both of the latter have a curious parasite (apparently belonging to the Rhizocephala) adhering to the under surface of the abdomen.

*Galathea inconspicua*, Henderson (Pl. XII. fig. 2).

*Galathea inconspicua*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 408, 1885.

*Characters*.—The transverse striæ on the carapace are well developed and fairly numerous (about fourteen can be made out). They form raised lines and are apparently devoid of setæ; the regions are not circumscribed, and the lateral borders are indistinctly spinulose, about eight dentations being visible. The gastric area is armed anteriorly with six minute spines. The rostrum is narrow, but not twice the length of the ocular peduncles, which are of rather large size, and the upper surface is excavated towards the base, while the lateral border possesses four minute spinules which diminish in size as they pass forwards; the apex is narrow and acute.

The ischium of the external maxillipedes is slightly longer than the merus, the inner border of the latter is armed with three minute spines of which the second is most prominent, while the outer border terminates distally in a single spinule.

The chelipedes and ambulatory limbs are wanting in the single specimen.

The striæ on the abdominal segments are somewhat pronounced but apparently devoid of hairs.

Breadth of carapace 2.5 mm., length of body 8 mm., of carapace 4 mm., of rostrum 1.5 mm.

The specimen which has furnished the above description is unfortunately in a very imperfect state of preservation. The species is, however, distinguished by its small size, the armature of the gastric region, the prominent striæ, and the narrow rostrum.

*Habitat*.—Station 194, off Banda Island; depth, 360 fathoms; bottom, volcanic mud. The single specimen is apparently an adult male.

*Galathea* sp.

The collection contains specimens of a *Galathea* taken at Station 75, off the Azores; depth, 50 to 90 fathoms; bottom, volcanic mud; and at St. Vincent, Cape Verde Islands, which I had hitherto referred to *Galathea intermedia*, Lilljeborg, a Scandinavian and British species. It agrees with this species in the following respects:—The carapace is comparatively smooth, about eight transverse striæ being present, the first of these (on the gastric area) short, curved, and armed with two spinules; the rostrum possesses four

acute teeth on each side, the first of which is slightly smaller than the others; the merus of the external maxillipedes is longer than the ischium, and its inner border is armed with two acute and subequal spines near the distal end. All the specimens are imperfect, but several detached chelipedes preserved in the same bottle, which I believe belong to this species, induce me to regard it as distinct from *Galathea intermedia*. The hand is somewhat swollen, and in all cases the immobile finger is bent, so that a hiatus often of considerable size exists between the fingers, whereas in *Galathea intermedia* the whole chelipede is extremely slender, and the fingers are in contact along the whole of their inner margins. A closer examination also shows, that in the Challenger specimens the rostrum is slightly broader, the lateral teeth are of larger size, and the terminal acute spine is shorter than in *Galathea intermedia*. I do not, however, feel justified in assigning a new name to the species, but regret at the same time that the lateness of this discovery prevents me from figuring any of the specimens.

#### Genus *Munida*, Leach.

- Munida*, Leach, Dict. d. Sci. Nat., t. xviii. p. 52, 1820.  
 „ Desmarest, Consid. sur les Crust., p. 190, 1825.  
 „ Dana, U.S. Explor. Exped., vol. xiii., Crust., part i. p. 478, 1852.  
 „ Bell, Brit. Crust., p. 206, 1853.  
 „ Stimpson, Proc. Acad. Nat. Sci. Philad., p. 76, 1858.  
 „ Heller, Crust. südlichen Europa, p. 192, 1863.  
 „ Miers, Catal. New Zealand Crust., p. 68, 1876.

Rostrum slender and styliform, with a well-developed supraorbital spine on either side of its base. Carapace with the surface usually spinulose and the cardiac area as a rule distinctly circumscribed. Chelipedes and ambulatory limbs elongated and slender. One or more of the abdominal segments usually with a series of spinules on the anterior dorsal margin.

At the date of publication of the *Histoire Naturelle des Crustacés* only a single species, the common European *Munida rugosa* (Fabricius), was known to science, which Milne-Edwards, following the example of many of the older writers, placed in the genus *Galathea*. With the exception of the striking difference in the form of the rostrum and supraorbital spines, it is evident that the two genera share many features in common. Recent deep-sea investigations have increased the number of species from about half a dozen to upwards of thirty, and have shown at the same time that the genus has an extended bathymetrical distribution, some at least of the species reaching a depth of over 1000 fathoms, while the majority are found most abundantly at depths varying from 100 to 300 fathoms. The appendages of the first abdominal segment are occasionally absent in the male.<sup>1</sup>

<sup>1</sup> They are absent in the following species:—*Munida normani*, Henderson, *Munida squamosa*, Henderson, *Munida granulata*, Henderson, and *Munida scabra*, Henderson.

THE VOYAGE OF H.M.S. CHALLENGER.

*Munida subrugosa* (White).

- Galathea subrugosa*, White, List Crust. Brit. Mus., p. 66, 1847 (*sine descr.*).  
 " " Cunningham, Trans. Linn. Soc. Lond. (Zool.), vol. xxvii. p. 495, 1871.  
*Munida subrugosa*, Dana, U.S. Explor. Exped., vol. xiii., Crust., part i. p. 479, pl. xxx. fig. 7, 1852.  
 " " Miers, Zool. "Erebus" and "Terror," Crust., p. 3, pl. iii. fig. 2, 1874; Catal. New Zealand Crust., p. 68, 1876.  
 " " Targioni Tozzetti, Crost. "Magenta," p. 234, pl. xiii. fig. 5, 1877.  
 " *gregaria*, Miers, "Alert," Crust., Proc. Zool. Soc. Lond., p. 73, 1881.  
*juv. (?) Galathea gregaria*, Fabricius, Ent. Syst., t. ii. p. 473, 1793.  
*juv. (?) Grimothea gregaria*, Leach, Dict. d. Sci. Nat., t. xviii. p. 50, 1820.  
 " " Desmarest, Consid. sur les Crust., p. 188, 1825.  
 " " Guerin,<sup>1</sup> Voy. "Coquille," Crust., pl. iii. fig. 1, 1830.  
 " " Milne-Edwards, Hist. Nat. des Crust., t. ii. p. 277, 1837; in Cuvier, Règne Anim., éd. 3, Crust., pl. xlvii. fig. 2, no date.  
 " " Dana, U.S. Explor. Exped., vol. xiii., Crust., part i. p. 483, pl. xxxi. fig. 1, 1852.  
 " " Cunningham, Trans. Linn. Soc. Lond. (Zool.), vol. xxvii. p. 496, 1871.

*Habitat*.—Station 304, Port Otway, Patagonia; depth, 45 fathoms; bottom, green sand. Several young specimens with the total length of body varying from 10 mm. to 14 mm.

Station 305A, Messier Channel, Patagonia; depth, 125 fathoms; bottom, blue mud. An adult male and a young female.

Station 312, Port Famine, Patagonia; depth, 10 to 15 fathoms; bottom, blue mud. A large series of adult specimens.

Gray's Harbour, Patagonia. Several specimens from the stomach of a fish.

Station 315, Port William, Falkland Islands; depth, 5 to 12 fathoms; bottom, sand and gravel. Two adult males and a female, the latter with ova, also a young specimen measuring 13 mm. in total length.

Station 320, off Monte Video; depth, 600 fathoms; bottom, green sand. A male specimen in a very imperfect state of preservation.

*Munida subrugosa* is abundant in the Patagonian region; it occurs also at the Auckland Islands (White), in the New Zealand seas (Miers), and I am enabled to record the species from the South Atlantic and a variety from South Australia. It may be said, indeed, to represent *Munida rugosa* in the southern hemisphere. In the Catalogue of New Zealand Crustacea, and subsequently in a more recent work, Mr. E. J. Miers states his conviction that the so-called *Grimothea gregaria* is merely an immature stage of this species, a belief based on the facts that the two exhibit many points of similarity and occur in the same localities. The *Grimothea* is moreover apparently pelagic in habit, and it may be added that its general appearance favours the theory of immaturity. In spite

<sup>1</sup> Milne-Edwards regarded Guerin's figure as that of a distinct species, and applied the name *Grimothea "Duperreii"* to it.



of the considerable attention paid to surface netting, and the fact that the *Grimothea* is known to be a common form, no specimens appear to have been taken by the Challenger, though two examples, presumably from New Zealand—labelled "Wellington Museum,"—are preserved in the collection. An examination of the material at my disposal in no way enables me to confirm Mr. Miers' theory, for a number of young specimens, undoubtedly belonging to *Munida subrugosa*, and taken on the bottom along with that species, have all the general characters of the adult, and are yet not more than one-third the size of ordinary specimens of *Grimothea*; nor have I been able to discover in these any great variation in the length of the external maxillipedes. It may, however, be possible that some of the newly hatched young pass to the surface and exist for a longer or shorter period in the *Grimothea* state; an examination of fresh specimens of the latter can alone decide the question.

In *Munida subrugosa* a certain amount of variation is noticeable as regards the number and size of the spines on the carapace, chelipedes, and abdominal segments, also as regards the length of the rostrum. In all the specimens which I have examined there is considerable uniformity in regard to the external maxillipedes; the ischium and merus are subequal in length, and their outer surface is as a rule grooved longitudinally, the lateral margins of the former joint terminate distally in spines, and the latter has usually a single spine on the inner margin and one at the distal end of the outer margin; the carpus is without a prominent lobe. In *Grimothea gregaria* the whole body is soft and adapted for a pelagic life, the abdomen is proportionately narrower, the eyes are of larger size, and the spines everywhere less strongly developed. The external maxillipedes are of great length (about two-thirds the length of the body), and the various joints are smooth and flattened; the merus is considerably longer than the ischium, and the carpus and propodus are each provided with a prominent lobe on the inner margin, while the dactylus is subovate in shape; the hairs which clothe the four terminal joints are of considerable length. It cannot, however, be denied that the external maxillipedes furnish the only important difference between the two forms, and there can be little doubt that these organs are specially adapted for the pelagic life of their owners.

*Munida subrugosa* (White), var. *australiensis*, nov. (Pl. XIII. fig. 3).

*Characters*.—The median rostral spine appears to be longer than usual, a character probably common to young specimens of the species. The spinules on the carapace are more numerous than in the typical form, and arranged as follows:—A row of four spinules stretches across the carapace, two being situated on the anterior margin of the cardiac area, and one on the anterior margin of each branchial region; a single spinule is placed on the inner aspect of the area formed by a splitting of the cervical groove, and a single spinule is placed on each hepatic region immediately external to the anterior gastric spine

(which lies behind the supraorbital). In other respects this variety cannot be distinguished from the typical form of *Munida subrugosa*; indeed, on examining a series of the latter nearly all the above-mentioned spinules can be made out in different specimens, though I have failed to see any in which so many were present at the same time.

*Habitat*.—Station 162, off East Moncoeur Island, Bass Strait; depth, 38 to 40 fathoms; bottom, sand. Several specimens, the majority of which are females; the body of the largest measures only 25 mm. in length.

*Munida stimpsoni*, A. Milne-Edwards (Pl. XIV. fig. 1).

*Munida Stimpsoni*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 47, 1880.

*Habitat*.—Station 122, off Pernambuco; depth, 350 fathoms; bottom, red mud. A male specimen measuring as follows:—Length of body 36 mm., of rostrum 5.6 mm., of chelipede 73 mm.

The chelipedes are extremely long and slender, somewhat scaly, and armed with spines; the propodus is more than twice the length of the carpus, and the fingers are long, slender, and straight. The eyes are slightly compressed. The rostrum is not twice the length of the supraorbital spines, and all three are slender. The gastric region of the carapace is armed with two pairs of spinules placed posterior to the supra-orbitals, and a single spinule is present on its lateral aspect; the cardiac area is slightly elevated and bears a median and two lateral spines, these last being situated on the confines of the branchial regions. The lateral margin of the carapace is but slightly spinose, though the first or postorbital spine is well developed; two spinules are placed near the middle of the posterior margin, which is marked by a line of considerable width. The hairs on the carapace are slightly iridescent. The merus of the external maxillipedes possesses a single spine on its inner margin. The ambulatory limbs are slender and slightly flattened. The second, third, and fourth abdominal segments are armed with spinules on the anterior margin.

This species appears to be abundant in moderately deep water throughout the West Indies. It was taken by the "Blake" at no less than twenty stations, in depths varying from 62 to 1105 fathoms.

*Munida miles*, A. Milne-Edwards.

*Munida miles*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 51, 1880.

„ *valida*, S. I. Smith, Proc. U.S. Nat. Mus., vol. vi. No. 1, p. 42, pl. i. 1883.

*Habitat*.—Station 122, off Pernambuco; depth, 350 fathoms; bottom, red mud. Four males and three females, one of the latter with ova. The body of the largest specimen (a male) measures 70 mm. in length, and the chelipede 83 mm.

Two forms of chelipede are met with in the males of this species. In the one the chela is narrow, while the fingers are slender and elongated, with their opposed margins in contact throughout; in the other the chela is slightly dilated, the fingers are broad, and a distinct hiatus exists between their opposed edges towards the proximal end. There is reason to believe that this sexual dimorphism is of not uncommon occurrence among the Galatheids generally. The Challenger specimens differ from those taken by the "Blake" in having the chelipedes longer, the carapace slightly narrower, and the eyes of larger size, but there is no reason to suppose that they belong to a different species.

The types were taken in the West Indies at depths varying from 37 to 320 fathoms, and the species was afterwards carefully described and figured by Professor S. I. Smith, from specimens taken in deep water off the south coast of New England by the U. S. Fish Commission.

*Munida microphthalmia*, A. Milne-Edwards (Pl. III. fig. 4).

*Munida microphthalmia*, A. Milne-Edwards, Bull. Mus. Comp. Zool., vol. viii. No. 1, p. 51, 1880.

*Habitat*.—Station 24, off Culebra Island, West Indies; depth, 390 fathoms; bottom, Pteropod ooze. An adult male (figured), the body of which measures 32 mm. in length, and the chelipede 42 mm.

Station 171, north of the Kermadec Islands; depth, 600 fathoms; bottom, hard ground. A young male.

Station 343, near Ascension Island; depth, 425 fathoms; bottom, volcanic sand. A male of small size.

This species is distinguished at once by the small size of its eyes, the corneæ of which are but slightly dilated and of a light-brown hue. The gastric area of the carapace is armed in front with a transverse row of spinules, two of which situated behind the supraorbitals are of rather large size, while the others vary in number and size in different specimens. The rostrum is about half the length of the carapace and is slightly upturned towards the apex, while the supraorbitals have a more obvious elevation. The lateral margins of the carapace are distinctly spinose, the first two spines being of large size. The chelipedes are of moderate length, and the various joints (especially the merus) are spinose; the upper surface of the hand is somewhat flattened, and no hiatus exists between the fingers. The merus of the external maxillipedes has a well-marked spine on the inner margin, situated nearer the proximal than the distal end. The second abdominal segment bears a transverse row of spinules on its anterior margin (these are obsolete in the specimen taken at Station 171).

This species was taken by the "Blake" at four stations in the West Indies, the

depths varying from 573 to 1030 fathoms; its occurrence in the Pacific is a matter of extreme interest.

*Munida spinulifera*, Miers.

*Munida spinulifera*, Miers, Crust. in Zool. H.M.S. "Alert," p. 279, pl. xxxi. fig. A, 1884.

*Habitat*.—Amboina; depth, 15 fathoms. An imperfect male specimen (without chelipedes) measuring 16 mm. in length.

This species is allied to *Munida japonica*, Stimpson, as well as to *Munida militaris*, Henderson. The rostrum is arcuate and more than twice the length of the supraorbital spines. The gastric area of the carapace is armed in front with a transverse row of spinules, about twelve or thirteen in number; a spinule is also present on each branchial area immediately behind the cervical groove. The external maxillipedes are somewhat pubescent, and the merus is armed with a single spine near the proximal end of its inner margin. The second abdominal segment has several spinules on its anterior margin, and a few of very small size also occur on the third segment.

The types were dredged by the "Alert" in the Arafura Sea at a depth of from 32 to 36 fathoms.

*Munida spinosa*, Henderson (Pl. III. fig. 3).

*Munida spinosa*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 408, 1885.

*Characters*.—The rostrum is about half the length of the carapace and slightly upturned towards the apex; the supraorbital spines are distinctly elevated, with a slight divergence, and extend a little beyond the middle of the rostrum. The striæ on the surface of the carapace are strongly developed, and as a rule without hairs; the gastric area is distinctly circumscribed, and bears in front from six to ten spines arranged in a semilunar-shaped row, of which the two largest are situated behind the supra-orbitals, a single spinule (occasionally absent) is found on each branchial region immediately behind the cervical groove, and a spine occurs in front of this on the area formed by the splitting of the cervical groove. The lateral margin of the carapace is armed with about seven well-marked spines, two of which are placed in front of the anterior division of the cervical groove; the first or postorbital is longer than any of the others.

The chelipedes are long and of moderate width, with all the joints strongly spinose, the largest spines being, however, situated on the merus; the spines on the upper surface of the propodus are more curved than usual and arranged in three rows; the fingers are

scarcely equal in length to the palm, slightly bent and comparatively smooth, with their opposed edges finely dentate, in contact almost throughout, and fringed with hairs. The ambulatory limbs have the meral and carpal joints strongly spinose, the former on both margins, the latter merely in front.

The eyes are of large size and somewhat rounded. The various joints of the antennal peduncle are spinose, the anterior prolongation of the first joint being of moderate length. The ischium of the external maxillipedes has its inner margin terminating distally in one or two short stout spinules, and the merus is armed with three spines on its inner margin, the first of large size, the second of small size, and the third placed at the distal end; the outer surface of the merus is obscurely tubercular.

The abdominal segments are comparatively smooth, the second is, however, provided with six prominent spines on its anterior margin.

Breadth of carapace (of an adult male) 17 mm., length of body<sup>1</sup> 43 mm., of carapace (not including rostrum) 20 mm., of rostrum 9.5 mm., of chelipede 81 mm., of chela 33 mm., of first ambulatory leg 50 mm.

The strongly developed spiny armature of this species distinguishes it from all other members of the genus. Females are of slightly smaller size, with the spines less strongly developed, the chelipedes narrower, and the rostrum apparently slightly longer than in males. In young specimens most of the adult characters can be recognised.

*Habitat.*—Station 145A, off Prince Edward Island; depth, 310 fathoms; bottom, volcanic sand. Many specimens, including adults of both sexes and young; some of the females are with ova.

Station 320, off Rio de la Plata; depth, 600 fathoms; bottom, green sand. Several specimens, the majority of which are young.

*Munida normani*, Henderson (Pl. XIII. fig. 5).

*Munida Normani*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 408, 1885.

*Characters.*—The rostrum is little more than one-third the length of the carapace and horizontal in direction; the supraorbital spines are about two-thirds the length of the rostrum, with a very slight upward inclination. The striæ on the surface of the carapace are well marked, and but slightly pubescent; the gastric area is moderately convex, with two spines in front placed immediately behind the supraorbitals; the cardiac area is distinctly elevated, and its front margin, which is separated by a depression from the gastric area, bears a transverse row of minute spinules (not figured); four or five spines are placed in a longitudinal row on the boundary between each branchial region and the cardiac area. The lateral margin of the carapace is armed with about six spines of moderate size; two of these, including the first or postorbital which exceeds the others

<sup>1</sup> In all the species of *Munida* I take this to exclude the rostrum.

in size, are situated in front of the anterior division of the cervical groove. The posterior margin of the carapace is usually provided with two spines.

The chelipedes are narrow and subcylindrical, with the joints squamose and slightly spiny, the spines being most strongly developed on the merus; the propodus (including the immobile finger) is about three times the length of the carpus, and the spines are confined to its inner surface; the fingers are remarkably slender, and slightly curved, their length being almost equal to that of the palm, the opposed edges are finely dentate and in contact throughout, though three or four slightly more obvious teeth can be made out on the immobile finger. The ambulatory limbs are flattened; the upper surface of the meral, carpal, and propodal joints is squamose, while the two former have their anterior and posterior margins in addition spinose; the dactyli are short and their front margins are finely crenated.

The eyes are of moderate size and slightly compressed. The anterior prolongation of the first antennal peduncular joint is short, not exceeding the second joint. The ischium and to a slight extent also the merus of the external maxillipedes are squamose externally, the inner border of the first of these joints terminates distally in a spine, and a slightly larger one is placed near the middle of the corresponding border of the merus.

The second, third, and fourth abdominal segments bear four spines each on the anterior margin, the two lateral of these are almost obsolete on the fourth segment, but a prominent median spine occurs near the posterior margin; the dorsal surface of the fifth and sixth segments is squamose.

Breadth of carapace (of an adult male) 14 mm., length of body 35 mm., of carapace 15 mm., of rostrum 6 mm., of chelipede 62 mm., of chela 26 mm., of first ambulatory leg 44 mm.

The subcylindrical and scaly chelipedes, along with the armature of the carapace, characterise this species. Females are of slightly smaller size than males, and they along with young individuals have the various spines less strongly developed; in some cases the transverse cardiac spinules may even be absent.

I have pleasure in dedicating this species to the Rev. Canon Norman, well known for his labours among the North Atlantic Crustacea, to whom I am personally much indebted for assistance and advice, rendered when the collection was first placed in my hands.

*Habitat.*—Station 173, off Matuku, Fiji Islands; depth, 315 fathoms; bottom, coral mud. Eleven specimens, eight of which are males.

*Munida incerta*, n. sp. (Pl. XIII. fig. 4).

*Characters.*—The rostrum is about half the length of the carapace and slightly depressed; the supraorbital spines are about two-thirds the length of the rostrum and

somewhat bent. The striæ on the surface of the carapace are numerous and pubescent; the gastric area is moderately convex, with two spines in front placed immediately behind the supraorbitals; the cardiac area is unarmed and almost flat; three spines placed in a longitudinal row are present on the boundary between each branchial region and the cardiac area. The lateral margin of the carapace bears five or six spines, but with the exception of the first none are of large size; the posterior margin is unarmed.

The chelipedes are wanting in the single specimen. The ambulatory limbs are flattened; the upper surface of the merus, carpus, and propodus is covered with hair-clad scales of small size, and the lateral margins of the two former joints are spinose; the dactyli are more than half the length of the propodi.

The eyes are of large size and strongly compressed, with a fringe of long hairs passing over the upper surface of each cornea. The anterior prolongation of the first antennal peduncular joint is long, slightly curved, and freely movable, forming a spine visible from above which lies external to the eyes. The ischium and merus of the external maxillipedes are finely squamose externally, the former has a short conical spine at the distal end of its inner border, while the latter has a single well-marked spine near the middle of the same border, and a spine of smaller size at the distal end of the outer border.

The second, third, and fourth abdominal segments are armed precisely as in the last species; the dorsal surface of the fifth and sixth segments, telson, and last pair of appendages is covered with minute ciliated scales.

Breadth of carapace (of a female) 17 mm., length of body 39 mm., of carapace 16 mm., of rostrum 8 mm., of first ambulatory leg 46 mm.

This species, inadvertently omitted from the diagnoses of the new species of Galathodea taken by the Challenger, is allied to *Munida normani*, from which, however, it is distinguished by its longer rostrum, the different form of the cardiac area of the carapace, the smaller and pubescent scales on the ambulatory limbs and last abdominal segments, but above all by the great development of the antennal spine.

*Habitat*.—Station 200, off Sibago Island, Philippines; depth, 250 fathoms; bottom, green mud. An imperfect female specimen.

*Munida squamosa*, Henderson (Pl. XIII. fig. 1).

*Munida squamosa*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 409, 1885.

*Characters*.—The rostrum is almost horizontal and a little more than one-third the length of the carapace; the supraorbital spines are slightly curved and about three-fourths the length of the rostrum. The striæ on the surface of the carapace are finely granulated and slightly pubescent; the gastric area is convex, with a pair of spines placed immediately behind the supraorbitals; the cardiac area is distinctly circumscribed, and triangular in outline, with a well-developed median spine on the anterior margin which

overhangs a narrow area posterior to the united cervical grooves; a single spinule (occasionally absent) is present on each branchial region, placed behind the cervical groove and near the confines of the cardiac area. The lateral margin of the carapace is armed with about six spines, only the first of which reaches any considerable size, two being situated in front of the anterior division of the cervical groove. The posterior margin of the carapace is raised, and bears two spines.

The chelipedes are moderately long, and the merus, carpus, and propodus are covered with large almost smooth scales, some of which, on the inner surface of the same joints, more especially the merus, are produced into spines; in females and young males the chelipedes are narrow and cylindrical, whereas in adult males the hand is slightly dilated; the propodus is about two and a half times the length of the carpus (in adult males it is somewhat longer) and comparatively few spines are present on the inner surface; the fingers are long and slender, being about two-thirds the length of the palm, and the tip of the dactylus fits in between two small teeth at the apex of the immobile finger; in females the fingers are straight and in contact throughout, with their opposed edges finely crenated, while in adult males both—but especially the immobile finger—show a prominent bulging which gives rise to a basal hiatus, and a single tubercular tooth is present on the inner margin of each along with a dense clothing of stiff hairs. The ambulatory limbs are similar to those of *Munida normani*, but the scales are more strongly developed and the dactyli are slightly longer.

The eyes are of large size, and somewhat compressed, and as in the last two species distinctly reniform in shape. The antennal peduncle is pubescent, and the anterior prolongation of the first joint is short. The ischium and merus of the external maxillipedes are both squamose externally and strongly pubescent; the inner margin of the former is prolonged distally into a slender acute spine, while the latter joint has a slightly larger spine situated near the middle of the same margin.

The second, third, and fourth abdominal segments are armed as in *Munida normani*, the two lateral spinules on the fourth segment being occasionally obsolete; the dorsal surface of the fifth and sixth segments, telson, and last pair of appendages, is covered with scales which are of smaller size and more numerous than in *Munida normani*.

This species is nearly related to *Munida normani*, from which it is distinguished by the different armature of the cardiac and branchial areas of the carapace, the greater development of the striæ, the form of the chelipedes, and other less important distinctions. The cardiac spine is uniformly well developed even in very young individuals. The most important sexual difference has already been referred to in treating of the chela.

Breadth of carapace (of an adult male) 17 mm., length of body 45 mm., of carapace 16.5 mm., of rostrum 6.3 mm., of chelipede 85 mm., of chela 36 mm., of first ambulatory leg 58 mm. Females are apparently of slightly smaller size than males.

*Habitat*.—Station 219, north of Papua; depth, 150 fathoms; bottom, coral mud.



About twenty specimens were taken, two of which are females with ova; one has the carapace swollen laterally from the presence of a Bopyrid in the branchial chamber, and another has a Sacculinid attached to the under surface of its abdomen.

*Munida granulata*, Henderson (Pl. XIV. fig. 3).

*Munida granulata*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 409, 1885.

*Characters.*—The rostrum is slightly more than one-fourth the length of the carapace and twice the length of the supraorbital spines; all three are distinctly upturned. The carapace is covered everywhere with granulations, some of which are compound, and with hairs, but transverse striæ are not defined; the gastric area is moderately convex, with a pair of spines placed behind the supraorbitals, though separated by a slightly wider interval, and a median spine of larger size near the posterior limit of the area, while a few spinules occur on the lateral surfaces; the cardiac area is triangular in outline, and somewhat elevated, with a median row of three spinules, the first of which, situated on the anterior margin, is most prominent; several spinules are found on the branchial regions, the best marked being three or four which occur near the confines of the cardiac area. The lateral border of the carapace bears five or six spines, none of which are of large size, with the exception of the postorbital, which from its position can scarcely be included in this border; the posterior margin is distinctly raised, with a number of equidistant spinules, all of which may be obsolete, though the central one is slightly larger than the others and usually present.

The chelipedes are long and subcylindrical, and the merus, carpus, and propodus are covered with flattened granulations which tend to become squamose on the last of these joints, while the merus and carpus, especially the former, are slightly spinose on the inner surface. The chela is slightly more than twice the length of the carpus; the fingers are slender and almost equal in length to the palm, with a slight incurvation, their outer and inner surfaces are faintly carinated, and the opposed edges finely crenated; the dactylus extends beyond the tip of the immobile finger, and its slender apex fits in between two minute teeth at the end of the latter. In male specimens the fingers are somewhat bent, the dactylus being slightly curved upwards, and a narrow hiatus is left between the two, at either end. The ambulatory limbs are remarkably slender, and the meral, carpal, and propodal joints are granulated, the first of these also has a series of spines on the anterior border; the dactyli are long, slender, and somewhat curved.

The eyes are of moderate size and considerably flattened, a series of hairy "lashes," extending over the corneæ from both the upper and lower margins of the peduncle. The antennal spine is pubescent and remarkably long, exceeding the whole peduncle in length, while the second joint is prolonged into a similar spine of almost equal length; both spines are visible from above lying internal to the antenna. The antennal flagellum

is pubescent and extremely short, not exceeding the carapace in length. The ischium and merus of the external maxillipedes are tuberculate externally, the inner margin of the former is prolonged distally into an acute spine, while the latter is armed with a small spine near the middle of its inner border, and a few minute spinules on the outer border.

The second and third abdominal segments bear six spinules each, four of which are arranged on the anterior and two near the posterior margin, the third segment bears five spinules, a mesial one being present on the posterior margin, which is somewhat prominent. A considerable variation is seen in the number of these abdominal spinules, though in no case are all obsolete. The fifth and sixth segments, and to a certain extent the telson also, are covered externally with small setigerous scales.

This species is characterised by the short rostrum, the absence of striæ from the carapace, the extremely short antennal flagellum, the two prominent antennal spines, and certain less striking features, as the armature of the carapace, chelipede, and other parts.

Breadth of carapace (of an adult male) 11.5 mm., length of body 32 mm., of carapace 12 mm., of rostrum 3 mm., of chelipede 65 mm., of chela 27.5 mm., of first ambulatory leg 42 mm.

*Habitat.*—Station 173, off Matuku, Fiji Islands; depth, 315 fathoms; bottom, coral mud. Six males and three females, one of the latter with ova; two specimens have Sacculinids adhering to the under surface of the abdomen.

*Munida scabra*, Henderson (Pl. XV. fig. 1).

*Munida scabra*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi, p. 409, 1885.

*Characters.*—The rostrum is less than one-fourth the length of the carapace, and not twice the length of the supraorbital spines; all three are distinctly upturned. The carapace is slightly pubescent, and covered everywhere with minute spinules which tend to be arranged in transverse rows; the gastric area is well defined, and bears a pair of spines behind the supraorbitals and a median spine near the posterior margin; the cardiac area is somewhat triangular in outline, with three rather prominent curved spines arranged in the median line; the branchial area bears three or four spines near the branchio-cardiac boundary. The lateral border of the carapace is armed with nine spines, only the first two of which reach any considerable size; the posterior border is distinctly raised, with a median spine and numerous spinules on either side.

The chelipedes are shorter but in other respects similar to those of the last species; the joints are, however, covered with well-marked flattened and glabrous scales, the anterior margins of which are pubescent. The fingers are slender and cross one another at the tips, the dactylus is slightly bent upwards in male specimens, but no hiatus exists

between the two; the opposed edges are finely dentate, and the dactylus bears in addition three or four equidistant tubercular teeth of small size. The ambulatory limbs are slender, and the meral, carpal, and propodal joints are squamose, the two first of these also with their margins spinose; the dactyli are moderately long, and but slightly curved.

The eyes are similar to those of the last species, though separated by a wider interval. The antennal spine is pubescent and extremely long, projecting for a considerable distance in front of the eyes; the anterior prolongation of the second joint is short, not exceeding the joint itself in length; the antennal flagellum is slender and of moderate length. The ischium and merus of the external maxillipedes are squamose externally, and in other respects similar to those of *Munida granulata*, though the spine on the inner margin of the merus is slightly larger than in the last species.

The second, third, and fourth abdominal segments are armed as in *Munida granulata*; the spines are, however, more strongly developed. The fifth and sixth segments are glabrous externally, and crossed by curved concentric lines.

This species is in many respects closely allied to the last; it can, however, be at once distinguished from *Munida granulata*, which is a smaller species, by the substitution of spinules for granules on its carapace, the shorter chelipedes, the absence of a second lengthy antennal prolongation, and the peculiar markings on the fifth and sixth abdominal segments.

Breadth of carapace (of an adult male) 14 mm., length of body 36 mm., of carapace 14 mm., of rostrum 3 mm., of chelipede 59 mm., of chela 24.5 mm., of first ambulatory leg 44 mm. Female specimens appear to be very slightly inferior in size to males.

*Habitat.*—Station 192, off Little Ki Island; depth, 140 fathoms; bottom, blue mud. Nine females, one with ova, and six males; one specimen has a Sacculinid attached to the abdomen.

*Munida proxima*, Henderson (Pl. XIII. fig. 2).

*Munida proxima*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 410, 1885.

*Characters.*—The rostrum is less than one-fourth the length of the carapace, and not twice the length of the supraorbital spines, with its basal portion broad and the terminal part slightly upturned; the supraorbitals are horizontal in direction. The carapace is slightly pubescent and covered everywhere with minute spinules, arising from short transverse ridges on the posterior half, which do not, however, form striæ passing from side to side; the gastric area is well defined, and its surface is clothed with small though distinct scales which are slightly pubescent and give off a median spinule in front, a pair of spines are placed behind the supraorbitals, but there is no trace of a posterior median spine; the cardiac area is distinctly triangular in outline and armed.

as in the last species, but the spines are in some specimens at least more bluntly tuberculate; the branchial area has one or two small spines in front near its junction with the cardiac area, and some of the ordinary spinules of the carapace in this vicinity are slightly enlarged. The lateral border of the carapace bears a row of spinules continued back almost to the posterior margin, and of which the first eight or nine are of moderate size, the first or postorbital greatly exceeds all the others; the posterior border is distinctly raised but with the exception of a very minute median spinule is unarmed.

The chelipedes bear a general resemblance to those of *Munida granulata*, but the joints are covered with distinct overlapping scales, the margins of which are ciliated. The fingers are slender and straight in the female, agreeing closely with those of *Munida scabra*. The ambulatory limbs are slender, with the meral, carpal, and propodal joints subsquamose, and the first of these with both margins spiny, the spines being more strongly developed anteriorly; the dactyli are moderately curved, and more slender than in either of the preceding species.

The eyes are flattened, with the corneæ overhung by long iridescent "lashes." The antennal spine is long and pubescent as in the last species, projecting considerably beyond the eyes; the anterior prolongation of the second joint is bent forwards but does not exceed the joint itself in length. The ischium and merus of the external maxillipedes are distinctly squamose externally, and armed as in *Munida scabra*.

The second, third, and fourth abdominal segments are armed as in the two preceding species. The fifth and sixth segments agree as to the markings on their dorsal surface with *Munida scabra*.

This species is distinguished from *Munida scabra*, to which it is in many respects closely related, by its smaller size, the less upturned rostrum, the presence of scales on the gastric area, and the absence of a posterior median spine from this region, the rudimentary state of the spinules on the posterior margin of the carapace, and the more slender dactyli of the ambulatory limbs.

Breadth of carapace (of an adult female) 9 mm., length of body 24 mm., of carapace 9 mm., of rostrum 2.3 mm., of chelipede 41 mm., of chela 17 mm., of first ambulatory leg 30 mm.

*Habitat*.—Station 219, north of Papua; depth, 150 fathoms; bottom, coral mud. Three adult female specimens, one with ova.

The three preceding species agree with one another in the possession of certain somewhat abnormal features, such, for instance, as the flattened ciliated eyes, the short acuminate rostrum, the replacement of the striæ on the carapace by short rows of granules or spinules, and the great elongation of the antennal spines. Not one of these characters is, however, peculiar to the three species in question.

*Munida militaris*, Henderson (Pl. XIV. figs. 2, 5).

*Munida militaris*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 410, 1885.

" *citiensis*, Henderson, *loc. cit.*, p. 410, 1885.

*Characters.*—The rostrum is usually about half the length of the carapace (but shows considerable variation in this respect), with a slight double curve, the basal half being slightly convex above, while the apical half is distinctly upturned; the supraorbital spines are usually about half the length of the rostrum. The transverse striæ of the carapace vary greatly in different specimens, but are as a rule well developed, and fringed with short hairs; in some cases they are even granulated. The gastric area is armed in front with a prominent curved row of spinules, two of which placed behind the supra-orbitals are somewhat larger than the others, and the posterior spinule at each end of the row is also somewhat conspicuous, and situated nearly halfway back on the area, near the confines of the hepatic region; the rostrum is itself continued backwards for some distance, and a minute spinule is found on either side near its posterior termination, and internal to the largest spinule of the gastric row; occasionally also there is a third spinule of very small size, placed in the median line. The area enclosed by the bifurcation of the cervical groove bears two or three spinules, one of which is somewhat prominent, while the others may be absent, and a single spinule is also often present on the anterior margin of each branchial area immediately behind the posterior branch of the cervical groove, and near the anterior and outer limit of the cardiac region; the cardiac area is but slightly marked and completely unarmed. The antero-lateral or orbital border of the carapace is straight and slightly oblique, as in *Munida miles*, A. Milne-Edwards; the lateral border bears from six to nine spines, the first of which is of considerable length and directed forwards; the posterior border is unarmed.

The eyes are of large size and but slightly flattened, with the upper fringe of cilia frequently well marked; the pigmentation of the corneæ shows considerable variation in intensity. The antennal spine is of moderate length; the second joint of the peduncle bears two lateral distal spines, the inner of which is considerably produced. The ischium and merus of the external maxillipedes are granulated externally, the inner margin of the latter bears two spines, one of large size situated near the proximal end, the other (of small size and not always present) at the distal end, with frequently a few minute irregularities between the two.

The chelipedes are of moderate length, but in some males are even elongated. The merus and carpus are pubescent, and armed with spines—some of considerable size—on their upper and inner surfaces, two spines at the distal end and on the upper surface of the merus being larger than the others; the propodus is slightly pubescent on its upper surface, and three rows of short spines are present, arranged in median and marginal series; the fingers are straight and about equal in length to the palm, with their opposed

edges minutely dentate and in close contact; the dactylus has a short curved apex, which folds over a corresponding process on the immobile finger, and the latter has a spine on its outer margin near the proximal end. The meri and carpi of the ambulatory limbs are pubescent and spiny, the spines placed at the distal ends of these joints being of considerable size; the posterior margin of the propodi bears a row of horny spinules, and the dactyli are but slightly curved, each terminating in a short, yellow, horny claw.

The second abdominal segment bears a transverse row of spinules (usually ten in number) on its anterior margin, the two nearest the middle line being separated by a considerable interval; the remaining abdominal segments are comparatively smooth and glabrous, with but few transverse impressions.

Breadth of carapace (of an adult male) 12 mm., length of body 31 mm., of carapace 14 mm., of rostrum 6 mm., of chelipede 47.5 mm., of chela 21 mm., of first ambulatory leg 32 mm.

The close similarity of this species to *Munida miles*, A. Milne-Edwards, is at once apparent. It is distinguished from the above-named Atlantic species by its smaller size and the stronger development of the gastric row of spinules, though in *Munida miles* the two spines situated behind the supraorbitals are of much larger size; in the latter species also the chelipedes are more elongated, and armed with a greater number of spines, while spinules are present on the second and third abdominal segments, and in some cases even on the fourth. In *Munida spinulifera*, Miers, a small species, which is also characterised by the presence of a gastric row of spinules, the supraorbitals are much shorter, the striæ on the carapace are more densely pubescent, and the second and third abdominal segments are spinulose. A closer examination of the specimens, and a wider knowledge of the individual variations to which certain species of *Munida* are subject, has shown that the form which I designated *Munida vitiensis* must be united with the species in question. I have also deemed it safer to rank *Munida curvirostris* as a variety rather than as a distinct species.

*Habitat*.—Station 173, off Matuku, Fiji; depth, 315 fathoms; bottom, coral mud. Five specimens, two of which are females with ova.

Station 192, off Little Ki Island; depth, 140 fathoms; bottom, blue mud. A female with ova and a young female; in these the following somewhat abnormal characters are noticeable:—The rostrum is longer than usual, the carapace is comparatively smooth and glabrous (though the various spinules are present), the chelipedes are short and slim, and the spinules on the second abdominal segment are almost obsolete. The specimens are, I think, in spite of these differences, undoubtedly referable to this species.

Amboina, 100 fathoms. An adult male.

*Munida militaris*, Henderson, var. *curvirostris*, Henderson (Pl. III. fig. 7).

*Munida curvirostris*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 412, 1885.

*Characters.*—The rostrum is more than half the length of the carapace, above the level of which it is distinctly curved, with the proximal half not convex above; the supraorbitals are about half the length of the rostrum and but slightly upturned. The spines of the gastric row are fewer in number than in the typical form, and the pair behind the supraorbitals are of larger size; the lateral gastric spinule is of small size, and the remainder of the carapace is unarmed.

The eyes are of large size, with the corneæ of a light brown colour. The chelipedes are short, with the spines strongly developed, especially the pair at the distal end of each merus.

The spinules on the second abdominal segment are few in number, and the submedian pair considerably larger than the others.

*Habitat.*—Station 200, off Sibago, Philippines; depth, 250 fathoms; bottom, green mud. An adult male measuring 25 mm. in length (not including the rostrum).

Station 210, off Zebu, Philippines; depth, 375 fathoms; bottom, blue mud. An adult female measuring 20 mm. in length.

*Munida haswelli*, Henderson (Pl. III. figs. 5, 5b).<sup>1</sup>

*Munida Haswelli*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 411, 1885.

*Characters.*—The rostrum is about half the length of the carapace and twice the length of the supraorbital spines; all three are slightly curved, and the rostrum is upturned towards its apex. The striæ on the carapace are well marked, and finely granulated, the hairs with which they are fringed being somewhat numerous; the gastric area possesses a pair of spines immediately behind the supraorbitals, as well as a second pair placed behind the former, several spinules are present towards the lateral margins, and two of very small size are situated between the first pair of spines; the cardiac area is unarmed and but poorly defined; a few spinules, including one of rather large size, are present on the branchial region, behind the cervical groove and near the outer border of the cardiac area, while one or two spinules occur on the space between the two branches of the cervical groove, in which part the striæ have assumed a squamose appearance. The lateral border of the carapace bears six or seven spines, which decrease in size from before backwards; the posterior margin is unarmed, but distinctly granulated.

The chelipedes are absent in the single adult specimen;<sup>2</sup> in young individuals they are

<sup>1</sup> Fig. 5a represents the chela of a specimen from Station 173, which must, I think, be ranked with *Munida militaris*.

<sup>2</sup> They are represented in the figure and were doubtless lost when the drawing was being executed.

slender and moderately spiny, with the fingers narrow, scarcely equal in length to the palm, and in contact throughout. The ambulatory limbs are slightly flattened, and pubescent above, the meral joints being in addition somewhat scaly; the dactyli are moderately curved towards their apices, and a few horny spinules are present on the posterior margin.

The eyes are of moderate size and slightly flattened, while a series of long and prominent hairy "lashes" extend over the corneæ from both the upper and lower margins. The antennal spine is of moderate length, not exceeding the second joint of the peduncle, which last is armed with two prominent spines on its inner border, and one on the outer. The ischium and merus of the external maxillipedes are clothed externally with pubescent scales, the inner margin of the former joint terminates distally in a short obtuse spine, while the latter possesses three spines on its inner margin, one being situated at the distal end, another near the middle, and a third of smaller size between the two, in addition to an acute spine of small size at the distal end of the outer margin.

The second abdominal segment bears from six to eight spinules on the anterior dorsal margin. The transverse striæ are smooth and polished, though fringed with hairs; on the sixth segment they are somewhat broken up.

This species is closely allied to *Munida militaris*, Henderson, from which it may be distinguished by the presence of a second pair of gastric spines, and the pronounced "lashes" overhanging the corneæ. I have named it after Mr. W. A. Haswell, in recognition of the assistance I have derived from his work on the Australian Crustacea.

Breadth of carapace (of an adult male) 9 mm., length of body 25 mm., of carapace 11 mm., of rostrum 6 mm., of first ambulatory leg 28 mm.

*Habitat*.—Station 163A, off Twofold Bay, Australia; depth, 150 fathoms; bottom, green mud. One male and three young specimens.

*Munida inornata*, Henderson (Pl. XIV. fig. 6).

*Munida inornata*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 411, 1885.

*Characters*.—The rostrum is more than half the length of the carapace, and three times the length of the supraorbital spines; all three are slightly upturned, and the rostrum is somewhat flattened from side to side. The carapace is crossed by fairly numerous and prominent granulated pubescent striæ; the gastric area is moderately convex, and is armed in front with a transverse row of spinules—ten or twelve in number—of which only the two placed behind the supraorbitals attain any considerable size; the posterior part of the gastric area is mapped out as an oval patch, circumscribed in front by a line passing between the two cervical grooves, and posteriorly by the grooves themselves at the point where they unite; the cardiac area is not defined, and it, as well as the remaining surface of the carapace, is unarmed. The lateral border of the



carapace is deeply notched near its anterior end by the cervical groove, in front of which there is the well-marked postorbital spine, while behind about five minute spinules can be made out; the posterior margin is unarmed.

The chelipedes are slender and elongated, more especially in the male, in which they are about one and a half times the length of the body, whereas in females they about equal that length; the joints are covered with raised pubescent scales, most prominent on the upper surface, and several spinules are present on the inner margin, and, to a lesser extent, on the upper surface of the merus, carpus, and propodus. The chela is about twice the length of the carpus, and, in addition to three spinules present on the inner margin, there is a fourth on the outer border, near the base of the immobile finger. The fingers are slender, more particularly in the male, and their opposed edges, which are densely clothed with short hairs, are in contact; the apices cross one another, and that of the dactylus is bispinose, while the immobile finger is trispinose. The ambulatory limbs are moderately slender, and the meral, carpal, and propodal joints are subsquamose; the first two of these joints also have a series of spines on their anterior border, and a row of delicate spinules is present on the posterior margin of the propodi. The dactyli are slender, and but slightly curved.

The eyes are of moderate size and considerably flattened, with well-developed "lashes"; and there are also, in addition, two distinct rows of cilia on the upper surface of the peduncle. The antennal spine does not extend beyond the distal end of the second joint of the peduncle, and the latter joint is provided with two spines, on either side of the distal end, and a spinule on the inner margin. The ischium and merus of the external maxillipedes are comparatively smooth externally, and the latter is pubescent; the merus bears a spinule on either side at the distal end, and a prominent acute spine near the middle of its inner border.

The second abdominal segment bears two minute spinules, both of which may in some cases be obsolete. The striae are smooth and glabrous, with the hairs short, but there is a tendency towards a scale-like arrangement on the last two segments.

This species is allied to *Munida militaris*, from which it is separated by the short supraorbitals, the form of the eyes, the armature of the carapace and first abdominal segment, and the more slender chelipedes. The two approach one another in so many respects that it is possible a larger series of specimens from different localities might show *Munida inornata* to be only a variety of the former. It also bears some resemblance to *Munida constricta*, A. Milne-Edwards, a species in which there are, however, only two gastric spines.

Breadth of carapace (of an adult male) 8 mm., length of body 19 mm., of carapace 9 mm., of rostrum 5 mm., of chelipede 40 mm., of chela 15.5 mm., of first ambulatory leg 22.5 mm.

*Habitat.*—Station 219, north of Papua; depth, 150 fathoms; bottom, coral mud.

A male and two females, one of the latter with similar parasites to those occurring on *Galathea pusilla*, Henderson.

*Munida sancti-pauli*, Henderson (Pl. III. fig. 6).

*Munida sancti-pauli*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 411, 1885.

*Characters.*—The rostrum is about half the length of the carapace, and more than twice the length of the supraorbitals, which are slightly upturned and situated close together. The carapace is glabrous, and the striæ comparatively few in number, though fringed with short hairs; the gastric area exhibits but little convexity, and is armed with a transverse row of from six to eight spinules placed parallel to the frontal margin, of which the second on either side (counting from the middle line) slightly exceeds the others in size; the cardiac area is unarmed and scarcely defined; three small spinules occur on the branchial area, two of these being situated on the portion immediately posterior to the anterior division of the cervical groove. The lateral margin of the carapace is armed with seven comparatively large spines, of which the two in front of the cervical groove are specially prominent; the posterior margin is unarmed.

The chelipedes are of moderate size, with the joints strongly spinose, the spines being most strongly developed on the merus; the propodus is somewhat narrower than the carpus, and its upper surface carries a median and two lateral rows of short curved spines; the fingers are about equal in length to the palm and in contact throughout, while two or three short spines are present on the outer border of the immobile finger. The ambulatory limbs are of moderate length; the upper surface of the meral, carpal, and propodal joints is faintly granular, while the two former have a series of well-marked spines on their anterior and posterior margins, those at the distal end of the merus exceeding any of the others in size; the dactyli are curved only towards the apex, and a few horny spinules are present on their posterior margin.

The eyes are of comparatively large size, and but slightly flattened, with the corneæ deeply pigmented. The anterior prolongation of the first antennal peduncular joint is short, not exceeding the second joint. The ischium and merus of the external maxillipedes are almost smooth externally; the inner margin of the latter gives rise to two prominent spines, the larger of which is situated near the middle of the joint, and the other, which is slightly less pronounced, at the distal end, while a minute spine is placed opposite the last on the outer margin.

The second abdominal segment bears from eight to ten minute spinules on the anterior margin; the remaining segments are glabrous, and the striæ almost obsolete.

Breadth of carapace (of a female with ova) 8.8 mm., length of body 22.5 mm., of carapace 10 mm., of rostrum 5.8 mm., of chelipede 28 mm., of chela 12 mm.

This species is nearly related to *Munida miles*, A. Milne-Edwards, and it is not

without considerable hesitation that I have ventured to separate the two; it is distinguished by its smaller size, the broader and flatter carapace, the non-diverging supra-orbital spines, the presence of spinules on only the second abdominal segment, and the shallow-water habitat.

*Habitat.*—St. Paul's Rocks; depth, 10 to 60 fathoms. A female with ova and a young male.

*Munida gracilis*, Henderson (Pl. XIV. fig. 4).

*Munida gracilis*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 412, 1885.

*Characters.*—The rostrum is about two-thirds the total length of the carapace, and more than twice the length of the supraorbital spines; all three are distinctly upturned, but especially the rostrum, which reaches a considerably higher level than the carapace itself. The transverse striæ on the carapace are granulated, and comparatively few in number, the fringing hairs being poorly developed; the gastric area is somewhat swollen, and is armed in front with a transverse row of spinules from eight to ten in number, two of which, placed behind the supraorbitals, greatly exceed the others in size, a second, but very much smaller, pair of gastric spines is placed immediately behind the first pair, and there is a single spinule on each side towards the lateral boundary of the area; the cardiac area is unarmed, and indistinctly circumscribed; a prominent spinule is placed on each branchial region behind the cervical groove, and in close proximity to the outer border of the cardiac area; a minute spinule may also exist on the anterior branchial region. The lateral border of the carapace bears seven spines, only two of which, situated in front of the cervical groove, attain any great size; the posterior margin is almost straight and distinctly elevated, but unarmed.

The chelipedes are subcylindrical and remarkably long and slender; the upper surface of the merus, carpus, and propodus is armed with prominent spinules, which are most strongly developed on the first of these joints. The chela is narrower than, and slightly more than twice the length of, the carpus; the fingers are slender and almost straight, with their length considerably less than that of the palm, and the opposed edges finely toothed; the dactylus is bispinose at the apex, and the immobile finger trispinose. The ambulatory limbs are slender, and provided with a pair of prominent spinules at the distal end of the meri and carpi, both margins of the meri also are armed with spinules, and the anterior is in addition pubescent; the dactyli are about two-thirds the length of the propodi, and moderately curved.

The eyes are of moderate size and slightly flattened, while the corneæ in both the specimens examined are of a light brown colour. The antennal spine scarcely reaches the middle of the second peduncular joint, and the latter is provided with a pair of prominent spines at its distal end. The ischium and merus of the external maxillipedes

are almost smooth externally; the lateral margins of the former joint are prolonged distally into short conical spines, while the latter is armed with a single prominent spine near the middle of its inner border, and in one of the specimens there is a minute spinule at the distal end of the same border.

The second abdominal segment is armed with eight spinules on its anterior margin, of which the submedian pair are most pronounced; the third segment bears four spinules in the same position, the two lateral of which are of very small size. The remaining segments are glabrous, with comparatively few transverse striae present.

This species finds its nearest ally in *Munida tenuimana*, G. O. Sars, a form common in the deeper water of the North Atlantic; the latter attains a larger size, its rostrum is less elevated, the posterior margin of the carapace is armed with a row of spinules, the eyes are rounder and more deeply pigmented, and the fourth abdominal segment carries two spines on its anterior dorsal margin.

Breadth of carapace (of an apparently adult female) 6 mm., length of body 17 mm., of carapace 7.8 mm., of rostrum 6 mm., of chelipede 36 mm., of chela 16.5 mm., of ambulatory leg (detached) 18.5 mm.

*Habitat*.—Station 166, west of New Zealand; depth, 275 fathoms; bottom, Globigerina ooze. A female and a young male specimen.

*Munida spinifrons*, Henderson (Pl. XV. fig. 1).

*Munida spinifrons*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 412, 1885.

*Characters*.—The rostrum is about three and a half times the length of the supra-orbital spines, and almost equal to that of the carapace, with its apical half decidedly upturned and furnished on each side with about six distinct spinules; the supraorbitals are horizontal in direction, and of small size. The striae are fairly numerous on the carapace, and fringed with short iridescent hairs; the gastric area is armed with a pair of small spines situated behind the supraorbitals, and a few minute spinules are present on either side of these; the cardiac area is indistinctly circumscribed, and it, as well as the remainder of the carapace, is unarmed. The lateral border of the carapace is provided with seven small spines, and the portion in front of the cervical groove is placed at a very slight angle to the orbital margin; the posterior border is smooth and unarmed.

The chelipedes are somewhat elongated, with the joints minutely squamose, and spinulose on the inner margin; the fingers are remarkably slender. The right chela has, in addition to the spines on the inner margin of the propodus, two or three also present on its upper surface in the median line; the fingers are finely toothed, and their opposed margins are in contact; the tip of the dactylus is bent over that of the immobile finger.

The left chela has the propodus almost devoid of spines, and the fingers are longer than those of the right chela, exceeding the palm in length; a few minute spinules are present at the apices of both fingers. The ambulatory limbs are slender, with the meral and carpal joints spinose on the anterior margin; the dactyli are of moderate length and comparatively broad, though the apices are acute.

The eyes are of moderate size and but slightly flattened, with the peduncles tolerably elongated. In place of the four segments met with in the antennal peduncle of Galatheids generally, five distinct segments can be distinguished in this species, a result apparently due to a splitting of the first segment, and the anterior portion probably in part represents the antennal spine, which is otherwise almost obsolete. The external maxillipedes are more slender than usual; the ischium and merus are smooth externally, and a few very minute denticles are present on the inner margin of the latter.

Two minute spinules separated by a rather wide interval are present on the anterior dorsal margin of the second abdominal segment; the terminal segments are glabrous, with the striæ but faintly marked.

This interesting species is distinguished from all the other known members of the genus by its upturned serrated rostrum, and the presence of five separate segments in the antennal peduncle.

Breadth of carapace (of a female with ova) 4.7 mm., length of body 16 mm., of carapace 6.5 mm., of rostrum 5.3 mm., of left chelipede 22 mm., of chela 9.5 mm., of ambulatory leg (detached) 14 mm.

*Habitat.*—Station 113A, anchorage off Fernando Noronha; depth, 7 to 25 fathoms; bottom, volcanic sand and gravel. A single specimen.

*Munida tuberculata*, Henderson (Pl. XV. fig. 2).

*Munida tuberculata*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 413, 1885.

*Characters.*—The rostrum is slightly more than half the length of the carapace, and about four times the length of the supraorbital spines; all three are somewhat broad and flattened, almost horizontal in direction, and the rostrum has a median carina on its upper surface. The striæ on the surface of the carapace are granulated and very prominent; the gastric area is armed anteriorly with a transverse band of short irregular tubercles, arranged in two or three rows, and a few similar, though less distinct, elevations are present on the hepatic and anterior branchial regions; the cardiac area is fairly well defined, and one of the striæ crossing it near its middle is specially prominent. The lateral margin of the carapace bears a few minute teeth; the posterior margin is raised and prominent, but unarmed.

The chelipedes are of moderate size, and the various joints are armed with short

conical spines, a few of larger size being situated at the distal end of the merus. The chela is slightly broader than the carpus and about three times its length, and the upper surface of the propodus is somewhat densely covered with short spinules; the fingers are broad and slightly overlap towards their apices, while their opposed edges are almost devoid of teeth, and in contact throughout. The upper surface of the meral joints of the ambulatory limbs is obscurely tubercular, and a crowded series of short denticles is present on the anterior margin of the same joints; the dactyli are comparatively long, and exhibit a faint sigmoid curve.

The eyes are of moderate size, and considerably flattened. The antennal spine is fairly prominent, but does not extend beyond the second joint of the peduncle. The ischium and merus of the external maxillipedes are obscurely tubercular externally, and the inner margin of the latter joint is provided with four or five irregularly conical teeth, the largest of which is situated towards the centre.

The second abdominal segment bears a submedian pair of short curved spines, and in some specimens one or two minute spinules can be detected towards the lateral margin of the same segment. The second, third, and fourth segments have the anterior dorsal margin elevated, and the upper surface carinated transversely towards the posterior margin; the remaining segments are almost smooth.

Breadth of carapace of the largest specimen (a male from Station 173) 5 mm., length of body 13 mm., of carapace 5.8 mm., of rostrum 3.2 mm. In this specimen the chelipedes and ambulatory legs are wanting, but in another example of much smaller size, from Station 172, the body of which measures only 8 mm. in length, the chelipedes attain a length of 11.5 mm., and the chela 5 mm.

This small species is distinguished by the presence of a crowded transverse row of tubercles on the gastric area of the carapace, and by the form of the rostrum, chelipedes, and other parts.

*Habitat*.—Station 172A, off Nukalofa, Tongatabu; depth, 240 fathoms; bottom, coral mud. A young male.

Station 173, off Matuku, Fiji; depth, 315 fathoms; bottom, coral mud. A male specimen apparently adult, and a young female.

*Munida spinicordata*, Henderson (Pl. XV. fig. 3).

*Munida spinicordata*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 413, 1885.

*Characters*.—The rostrum is about half the length of the carapace, and nearly one-third longer than the supraorbital spines; all three are horizontal in direction, though they have a slight downward inclination towards their apices, and the rostrum is more slender than the lateral processes. The striæ on the surface of the carapace are fairly numerous and faintly granulated, with short fringing hairs; the gastric area is moderately convex,

and bears in front two small spines placed immediately behind the supraorbitals on a raised transverse elevation which overhangs the bases of the frontal processes; the cardiac area is distinctly circumscribed, somewhat swollen, and triangular in outline, with a median curved spine of small size placed on the anterior margin, which is considerably elevated; the branchial and hepatic regions are unarmed. The lateral margin of the carapace is provided with five or six spinules, all of which, with the exception of the first or postorbital, are very minute; the posterior margin is fairly prominent, but unarmed.

The chelipedes are long and slender, with a few curved spinules on the merus, and on the inner margin of the carpus and propodus; the same joints are also covered with slightly marked tubercular scales. The chela is more than twice the length of the carpus; the propodus has a row of spinules on its inner margin, and two spinules are present on the outer margin near the base of the immobile finger; the upper surface is faintly tubercular, and bears a single spinule at the base of the dactylus. The fingers are slender and almost straight, with their opposed edges in contact and their apices overlapping; a few minute teeth are present on the inner margin of the immobile finger. The ambulatory limbs are slender and elongated; two prominent spinules are placed at the distal end of the merus, and a few of smaller size along both its margins; the dactyli are long and moderately curved.

The eyes are of large size, and somewhat compressed. The anterior prolongation of the first antennal peduncular joint is of moderate length, scarcely exceeding the second joint. The ischium of the external maxillipedes is finely tubercular externally, and its lateral margins terminate distally in short spines; the merus is of relatively small size, and a single spinule is present near the middle of its inner margin.

The second and third abdominal segments bear four spines each on the anterior dorsal margin, of which the submedian pair are slightly larger than the lateral. The fourth segment bears three spines, two on the anterior margin, and one in the median line near the posterior margin. The outer surface of the terminal segments is glabrous, and the striæ are arranged in short concentric lines.

Breadth of carapace (of a male) 4.5 mm., length of body 11 mm., of carapace 5 mm., of rostrum 2 mm., of chelipede (detached) 19 mm., of chela 7.8 mm., of ambulatory leg (detached) 15 mm.

This small and distinct species is characterised by the length of its supraorbital spines, the form and armature of the cardiac area of the carapace, and the arrangement of the abdominal spinules.

*Habitat.*—Station 174D, off Kandavu, Fiji; depth, 210 fathoms; bottom, coral mud. A male specimen.

*Munida* sp.

A single imperfect specimen of a *Munida* from Station 23, off Sombrero Island, West Indies; depth, 450 fathoms; bottom, Pteropod ooze, is preserved in the collection. It is apparently a young individual, and probably belongs to one of the numerous species described by Professor Alphonse Milne-Edwards from the West Indies. The body is smooth and glabrous, the striæ being faintly granular; the gastric area of the carapace is armed in front with a transverse row of spinules, only two of which (placed behind the supraorbitals) attain any considerable size; the rostrum is almost half the length of the carapace, and twice the length of the supraorbital spines, while the latter are somewhat flattened. The second, third, and fourth abdominal segments are armed with a pair of submedian spines each, and the first of these segments bears in addition three lateral spinules on each side. The eyes are of a light brown hue. The merus of the external maxillipedes is elongated, and provided with two spinules on the inner margin,—one at the distal end, the other near the proximal end.

Genus *Munidopsis*, Whiteaves.

*Munidopsis*, Whiteaves, Amer. Journ. Sci., ser. 3, vol. vii. p. 212, 1874.

*Galathodes*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 53, 1880.

*Orophorhynchus*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 58, 1880.

Rostrum spinulous, and usually more or less triangular, with its margins rarely dentate or spinose. Carapace rugose, or spinose, and in most cases glabrous. Chelipedes and ambulatory limbs of variable length, and frequently spinose, the dactyli of the latter with their posterior margins often dentate. Eyes devoid of pigment, with the peduncle frequently prolonged beyond the cornea in the form of a spine or spines. Antennal peduncle usually stout. Eggs few in number and of large size.

The members of this genus have been taken in almost all seas the deep water of which has been explored by the dredge, and they are found at depths varying from about 100 to upwards of 2000 fathoms. The species differ widely among themselves in the form of those parts which in other Crustacea afford generic characters; and yet it is impossible to effect a natural subdivision, or one which is not founded on a single character to the exclusion of others. It is probable that the loss of sight is compensated by a greater development of the tactile sense, and in some species this is evidenced by the great length of the antennal flagella, which in all probability enable the animal to grope its way about on the bottom.



*Munidopsis erinacea* (A. Milne-Edwards) (Pl. XVI. fig. 4).*Galathodes erinaceus*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 53, 1880.

*Habitat*.—Station 122, off Pernambuco; depth, 350 fathoms; bottom, red mud. A male, and a female with ova; the latter, which is the larger, measuring as follows:— Breadth of carapace 7 mm., length of body 25 mm., of carapace (including rostrum) 14 mm., of chelipede 23.5 mm., of first ambulatory leg 18 mm., diameter of ova 1.1 mm.

The carapace is pubescent, and armed with slender curved spines, of which there are four on the gastric area, four on the cardiac area, and three on the branchial area; the first gastric pair exceed the others in size, and the second cardiac pair are smallest. The rostrum is upturned, and trispinose, a single curved spine being present on either side near its middle. Three well-marked spines are situated on the lateral border of the carapace, two being placed in front of the cervical groove, and a smaller spine is present on the antero-lateral margin behind the eye-stalk; the posterior margin is unarmed. The eyes are well developed, and the corneal surfaces extensive, but the peduncle is not prolonged into a spine. The merus of the external maxillipedes is provided with three spines, two on the inner margin (of which the first or proximal is larger), and one at the distal end of the outer border. The chelipedes are of moderate length, and the merus and carpus are both pubescent and spiny; the propodus is smooth, and the fingers are excavated inferiorly. The ambulatory limbs are pubescent and somewhat spiny, with the dactyli dentate on the posterior margin, and only curved towards their apices. The second, third, and fourth abdominal segments are pubescent, and each bears from four to six spines placed on a transverse ridge, while the second and third segments have the lateral margin produced backwards into a short spine.

This very distinct species was taken by the "Blake" at five stations in the West Indies, in depths varying from 151 to 451 fathoms. The Challenger specimens differ only in being more pubescent.

*Munidopsis serratifrons* (A. Milne-Edwards) (Pl. XVI. fig. 3).*Galathodes serratifrons*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 55, 1880.

*Habitat*.—Station 56, off Bermuda; depth, 1075 fathoms; bottom, coral mud. Two males, and a female with ova; one of the former gives the following measurements:— Breadth of carapace 7 mm., length of body 19 mm., of carapace (including rostrum) 11 mm., of chelipede 25 mm., of first ambulatory leg 15 mm. The eggs measure 0.8 mm. in diameter.

The surface of the carapace is granulated. The gastric area is extremely swollen, and

is armed with a pair of short spines placed behind the base of the rostrum.<sup>1</sup> The cardiac area is somewhat triangular in outline, and considerably elevated, with its highest point surmounted by a broad conical spine, while a second spine of smaller size is occasionally present behind the first; a few spinules are present on the posterior branchial region, near the lateral border. The rostrum is acuminate and carinated superiorly, with its lateral margins minutely serrated towards the apex, and a slight concavity, into which the eye-stalk fits, exists on either side near the base. The lateral border of the carapace is provided with a spine at the antero-lateral angle, and a second of smaller size is placed behind the prominent cervical groove; the posterior margin is armed with two spinules. The eyes are ovate, and almost immobile, while each peduncle terminates in a very minute spinule. The merus of the external maxillipedes is short and broad, with three spines on its inner margin, which decrease in size towards the distal end. The chelipedes are slender and elongated, with the joints slightly granulated, and several spines are present on the inner surface of the merus and carpus, while the inner border of the propodus is provided with a row of short spinules; the fingers are not equal in length to the palm. The ambulatory limbs are granulated, and the margins of the meri and carpi are fringed with short spinules; the dactyli are strongly curved, and their edges are entire. The second, third, and fourth abdominal segments are transversely carinated, and provided with curved spines, of which three are present on the second segment, four on the third (arranged in two rows), and one on the fourth.

This species was taken by the "Blake," off Dominica, at a depth of 333 fathoms.

*Munidopsis sigsbei* (A. Milne-Edwards) (Pl. XVIII. fig. 2).

*Galathodes sigsbei*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 56, 1880.

*Habitat*.—Station 23, off Sombrero, West Indies; depth, 450 fathoms; bottom, Pteropod ooze. A female with ova, measuring as follows:—Breadth of carapace 9.8 mm., length of body 36 mm., of carapace (including rostrum) 20 mm., of chelipede 51 mm., of first ambulatory leg 25 mm., diameter of ova 1.5 mm.

The carapace is unarmed and comparatively smooth, the surface being merely crossed by short indistinct striæ. The gastric area is moderately convex, and the cardiac area is triangular in outline, the two being separated by a rather wide space. The rostrum is narrow, acute, and horizontal, its length being about half that of the carapace, and the upper surface is faintly carinated. The lateral borders of the carapace are parallel and unarmed, with the exception of a small spine at the antero-lateral angle. The posterior margin bears five or six spinules (three according to Milne-Edwards) situated close

<sup>1</sup> According to Professor Milne-Edwards, "La région gastrique porte trois petites épines disposées transversalement, l'une sur la ligne médiane, les autres latéralement." I can find no trace of this median spine in the *Challenger* specimens.

together. The eye-stalks are somewhat elongated, and freely movable, without terminal spines. The merus of the external maxillipedes possesses a prominent angular lobe at the proximal end of its inner margin. The chelipedes are long and slender, with several well-marked spines on the inner surface of the merus, and at the distal end of both merus and carpus. The fingers are remarkably long and slender, exceeding the palm in length, and their opposed margins are finely denticulate; there is a slight basal hiatus, and the apices have a downward curve. The ambulatory limbs are granulated, but comparatively free from spines; the dactyli are of large size, and each terminates in a yellow curved claw, while a series of spinules, gradually increasing in size towards the apex, is present on the posterior margin. The abdominal segments are smooth, though the second is carinated transversely.

This species was taken by the "Blake" at eight West Indian localities, the depths at which varied from 472 to 878 fathoms.

*Munidopsis antonii* (A. Milne-Edwards, MS.) (Pl. XVIII. fig. 1).

*Galathodes Antonii*, Filhol, La Nature, vol. xii. p. 231, fig. 2 (*sine descr.*), 1884.

*Habitat.*—Station 158, south-west of Australia; depth, 1800 fathoms; bottom, Globigerina ooze. A female with ova, and a young female.

Station 300, west of Valparaiso; depth, 1375 fathoms; bottom, Globigerina ooze. A young female.

The single adult specimen measures as follows:—Greatest breadth of carapace 33 mm., length of body 95 mm., of carapace (including rostrum) 50 mm., of chelipede 62 mm., of first ambulatory leg 73 mm., diameter of ova 3.5 mm.

The carapace is covered everywhere with irregular granulations, which tend to become spiny on the anterior half, more especially on the gastric area, while posteriorly they become somewhat oblong, and reach their greatest size on the cardiac area; the last-named region is lozenge-shaped and fairly convex, with a smaller area of similar shape on either side immediately behind the cervical groove. The rostrum is narrow and acute, with a decided upward inclination. The lateral margin of the carapace is armed near the anterolateral angle with two spines of large size (including the postorbital), and a few spinules are also present; the posterior margin is raised and prominent, but unarmed. The eyes are immovably united together in the middle line beneath the rostrum, and each peduncle is prolonged into a pointed spine, continued some distance beyond the cornea, which is somewhat circular in outline, and placed on the antero-external surface. The merus of the external maxillipedes is comparatively narrow, and bears three spiniform teeth on the inner margin, in addition to a more prominent spine at the distal end of the outer border; the outer surface is granulated. The chelipedes are of moderate size, with the joints granular, and the merus and carpus are also somewhat spiny; the fingers are long,

and excavated inferiorly. The ambulatory limbs are granular, and the anterior margin of the meri is spiny; the dactyli are narrow, slightly tortuous, and almost smooth. The abdominal segments are transversely carinated, and granulated towards the lateral margins; the posterior margin of the sixth segment gives rise to two prominent rounded lobes.

This species was taken by the "Talisman" in the Atlantic, off the north-west coast of Africa, at a depth of 4000 metres (2187 fathoms).

*Munidopsis subsquamosa*, Henderson (Pl. XVII. fig. 4).

*Munidopsis subsquamosa*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 414, 1885.

*Characters.*—The carapace is, slightly pubescent, and covered with flattened scale-like tubercles, which on the posterior half are elongated to form short transverse ridges. The gastric area is convex and distinctly circumscribed, with its rounded lateral margins formed by the cervical grooves, which pass unusually far forwards; the scale-like tubercles are well marked, and a few of those near the base of the rostrum terminate in short stout spines; the hepatic areas are flattened and depressed; the cardiac area is indistinctly mapped out, and a somewhat deep groove crosses it transversely near its middle, the short ridge-like elevations are well seen on the posterior part of this area as well as on the branchial regions. The rostrum is almost horizontal, and a little more than one-third the length of the carapace, with the upper surface granular and carinated, and the lower surface smooth; the apex is narrow and acute, but a considerable widening out takes place near the base. The lateral margin of the carapace is armed with two broadly conical yet acute spines, the second of which is almost horizontal in direction, and separated from the first (placed at the antero-lateral angle) by the cervical groove; a few spinules are situated further back on the border, and a short spine occurs on the antero-lateral margin immediately behind the antennal peduncle; the posterior margin is broad and transversely grooved, with a narrow and smooth strip of carapace in front.

The chelipedes are comparatively short, and the joints are covered with small rounded tubercles, many of which are pubescent; a few short spines also occur on the upper surface of the merus and carpus. The propodus is slightly dilated, while the fingers exceed the palm in length, and their inner surfaces are deeply excavated towards the apices. The ambulatory limbs are moderately long, the meral, carpal, and propodal joints are tuberculate, and a series of short spines occurs on their front margin; the dactyli are smooth and fairly well curved, with the lower margin denticulate, the denticulations increasing in size towards the apex.

The eyes are of moderate size and possess but slight mobility, a small free rectangular plate occurs on the ventral surface between the two; each peduncle beyond the inner margin of the cornea has a narrow acute spine. The antennal flagellum is apparently of great length though deficient in the single specimen. The merus of the external maxilli-

pedes is rather narrow, its outer surface is faintly granular, and the inner margin is armed with a series of short irregular teeth.

The abdominal segments are granulated externally, and the second, third, and fourth are each crossed transversely by a deep central groove. The male genital organs are of large size.

This species is allied to *Munidopsis antonii* (A. Milne-Edwards), but the latter is of larger size, the elevations all over the body are granular rather than tubercular, the rostrum rises considerably above the level of the carapace, the eyes are immovably united together and to the carapace, and the ambulatory dactyli are not denticulate.

Breadth of carapace (of an adult male) 21.5 mm., length of body (including rostrum) 71 mm., of carapace (including rostrum) 39 mm., of rostrum 10 mm., of chelipede 47 mm., of first ambulatory leg 58 mm.

*Habitat.*—Station 237, off Yokohama; depth, 1875 fathoms; bottom, blue mud. A male specimen, and the softened remains of a second example.

*Munidopsis subsquamosa*, Henderson, var. *aculeata*, nov. (Pl. XVI. fig. 1).

*Characters.*—This variety differs from the typical form in the following respects:—The markings on the posterior half of the carapace are slightly less crowded, and show a decided tendency to become flattened; scales are absent from the gastric area, being replaced by scattered tubercles, many of which end in short conical spines. The rostrum is decidedly upturned. The eyes are less mobile, and a certain amount of fusion with the carapace has taken place. The spines on the chelipedes and ambulatory limbs are more strongly developed.

The most important feature in this variety is the absence of flattened tubercles from the gastric area of the carapace, and their replacement by short spines, though it must be borne in mind that the latter are present to a certain extent in the typical form. In some of its characters, as the elevation of the rostrum, and the partial fusion of the eyes, it approaches *Munidopsis antonii*, from which, in other respects, it is widely separated. The body (including rostrum) of the larger specimen, from Station 302, measures 89 mm. in length.

*Habitat.*—Station 146, between Marion Island and the Crozets; depth, 1375 fathoms; bottom, Globigerina ooze. A single specimen.

Station 302, west of Patagonia; depth, 1450 fathoms; bottom, Globigerina ooze. An adult male.

*Munidopsis brevimana*, Henderson (Pl. XVII. figs. 1, 2).

*Munidopsis brevimana*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 414, 1885.

*Characters.*—The carapace is glabrous and covered with short transverse ridge-like elevations, which exist in greatest number on the posterior half; in some specimens also short hairs are sparingly met with. The gastric area is swollen, and armed in front with two prominent spines placed behind the base of the rostrum, while the short transverse ridges are comparatively few in number; the cardiac area is circumscribed, and a deep furrow crosses it transversely near the middle; the ridges are strongly marked, and lengthen out somewhat on the branchial regions. The rostrum is narrow and acute, slightly elevated towards the apex, and carinated superiorly, its length being less than half that of the carapace. The lateral margin of the carapace is armed with five spines, three of which are situated between the two divisions of the cervical groove, and the first of this trio reaches the greatest size; a single spine is placed on the antero-lateral margin behind the antennal peduncle; the posterior margin is prominent, but unarmed.

The chelipedes are stout and remarkably short, with the joints pubescent, and the merus and carpus somewhat spiny above. The lower surface of the ischium is produced anteriorly, and a spinule is present near the apex of this process; the propodus is almost smooth, and dilated both from side to side and from above downwards; the fingers are short and stout, with their opposed surfaces deeply excavated, and the apical margins finely toothed; numerous short tufted hairs are present towards the apices, and the outer surface of the immobile finger carries a denticulate carina. The ambulatory limbs are of moderate length, and the posterior surfaces of the meri and carpi are tuberculate, while their anterior margins are strongly spinose; the posterior surface of the propodi is carinated; the dactyli are only curved towards the apex, and their posterior margins are denticulate, the teeth increasing in size towards the terminal claw.

The eyes still retain a certain amount of mobility, and are separated ventrally by from one to three small calcified pieces; the cornea is rounded, and the peduncle is prolonged into two slender lateral spines, the inner of which is about twice the length of the other. The antennal flagellum is more than twice the length of the body. The merus of the external maxillipedes has its inner margin irregularly dentate.

The abdominal segments are comparatively smooth, a few granulations being present merely on the posterior ones; the second, third, and fourth each bear a curved transverse sulcus, the convexity of which is directed forwards.

This species is allied to *Munidopsis reynoldsi* (A. Milne-Edwards), dredged by the "Blake" off Frederickstadt, West Indies, at the great depth of 2376 fathoms. The latter is of small size, its chelipedes are considerably shorter, and more than two spines are situated on the gastric region of the carapace.

The largest specimen (a female with ova) measures as follows:—Breadth of carapace 17.5 mm., length of body (including rostrum) 63 mm., of carapace (including rostrum) 33.5 mm., of chelipede 34 mm., of first ambulatory leg 50.5 mm., diameter of ova 2 mm. The body of the largest male specimen measures 49 mm. in length.

*Habitat.*—Station 191, off the Arrou Islands; depth, 800 fathoms; bottom, green mud. A young specimen (Pl. XVI. fig. 2), which differs from the adult in having the body smoother and the spines less strongly developed.

Station 218, between Papua and the Admiralty Islands; depth, 1070 fathoms; bottom, blue mud. Seven adult females, four of which bear ova; three adult males, and a number of young individuals.

*Munidopsis milleri*, Henderson (Pl. XVII. fig. 3).

*Munidopsis Milleri*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 414, 1885.

*Characters.*—The carapace is glabrous, and covered, more especially the posterior half, by short transverse ridges, which give it a rugose appearance. The gastric area is swollen, and armed with two pairs of spinules; the first pair situated behind the rostrum, the second, of smaller size (occasionally absent), placed behind the first pair and nearer the middle line. The cardiac area is crossed transversely by a moderately deep sulcus, and immediately behind the well-marked gastro-cardiac groove there are three pairs of spinules, of which the two lateral pairs are situated on the boundary of the branchial area; the short transverse ridges are well developed on the posterior cardiac and branchial regions. The rostrum is short and spinulose, not exceeding the antennal peduncle; it is almost horizontal in direction, and its upper surface is carinated. The lateral margin of the carapace is armed with four spines, of which the first is of large size and placed at the antero-lateral angle, the second and third are placed on a somewhat dilated part between the two divisions of the cervical groove, and the fourth occurs about halfway back on the margin; a single spinule is also present on the antero-lateral border behind the antennal peduncle. The posterior margin of the carapace is prominent, and bears six small spinules separated by narrow intervals.

The chelipedes are narrow and elongated, with the merus and carpus spinose. The merus is faintly granulated, while two rows of spines are found on its inner surface, and one on the dorsal median line. The spines on the carpus are arranged in two dorsal rows, and a few scattered granules are also present. The propodus is more than twice the length of the carpus, and its upper surface is smooth and glabrous. The fingers are in close contact, and slightly excavated below, each being provided with a prominent angular tooth, which fits into a corresponding depression in its fellow, and numerous silky hairs are present, especially towards the apices. The ambulatory limbs are remark-

ably long and slender; the meri are obscurely granulated, and a few spinules are present at their distal end, and on their anterior margins, while a single spinule also occurs at the distal anterior end of the carpi. The ambulatory dactyli are almost straight, each terminating in a curved, horny claw, and a series of delicate horny spinules is present on their posterior margin.

The eyes are rounded, and firmly fused together on the ventral aspect; the peduncles are not prolonged into spines. The antennal flagellum is of moderate length. The merus of the external maxillipedes bears two prominent and subequal spines on the proximal half of its inner margin.

The second and third abdominal segments are each provided with a transverse sulcus; the remaining segments are smooth and glabrous. The size of the abdomen as a whole is unusually small, when compared with that of the cephalothorax.

I have dedicated this well-marked species to my friend and colleague, the Rev. Dr. Miller, C.I.E., Principal of the Madras Christian College.

Breadth of carapace (of a female with ova) 11 mm., length of body (including rostrum) 31 mm., of carapace (including rostrum) 16 mm., of chelipede 39.5 mm., of first ambulatory leg 33.5 mm., diameter of ova 1.3 mm. The body of the largest male specimen measures only 27 mm. in length.

*Habitat*.—Station 207, off Tablas Island, Philippines; depth, 700 fathoms; bottom, blue mud. A female with ova, and two males.

*Munidopsis trifida*, Henderson (Pl. XVI. fig. 2).

*Munidopsis trifida*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 415, 1885.

*Characters*.—The carapace is covered with short transverse rugosities of no great size, which are best seen on the postero-lateral surface; a few short hairs are also scattered over the surface. The gastric area is moderately convex, and armed with two prominent spines placed behind the base of the rostrum, while the tubercular rugosities are somewhat rounded, and comparatively few in number; the cardiac area is indistinctly circumscribed, and a broad shallow groove crosses it transversely near the middle. The rostrum is about half the length of the carapace, with a proximal broad and flattened portion which is traversed by a median dorsal carina, and a laterally compressed, and distinctly upturned terminal spine; the margins of the flattened part are prolonged into two short spinules which, in the single specimen, are not placed in the same transverse line. The lateral border of the carapace is armed with four subequal and equidistant spines, and a spinule occurs on the oblique antero-lateral margin immediately behind the antennal peduncle; the posterior margin is prominent though unarmed, and a rather wide, smooth, band-like area occurs on the carapace in front of it.

The chelipedes are long and sub-cylindrical, with the joints spinose and faintly



pubescent. The merus is armed with three conspicuous rows of spines, two on the inner surface and one on the upper surface, while the outer surface is finely tubercular; the spines on the carpus are most pronounced at the distal end; the margins of the propodus, especially the inner, are fringed with short spines, and the upper surface is smooth and glabrous. The fingers are almost straight and not equal in length to the palm, with their opposed margins minutely dentate and in contact throughout; a few teeth of larger size are, however, noticeable at the apices, and their lower surfaces, especially towards the distal end, are somewhat excavated. The ambulatory limbs are moderately long and slightly pubescent, with the merus, carpus, and propodus finely tubercular, and the first two of these joints are spinose on the anterior margin; the dactyli are almost straight, and each ends in a curved, horny claw, while a series of well-marked horny spines are present on the posterior margin, arising separately from distinct teeth.

The eyes are freely movable, and the peduncles are not prolonged into spines. The antennal flagellum is of moderate length. The merus of the external maxillipedes is tuberculate externally, and two well-marked spines are present on the proximal half of the inner margin, the first of which is considerably stouter than the second; a small spine is also present at the distal end of the outer border.

The second and third abdominal segments are crossed transversely by a sulcus, which is somewhat deeper on the former; the remaining segments are comparatively smooth.

This species is allied to *Munidopsis latifrons* (A. Milne-Edwards) and *Munidopsis tridens* (A. Milne-Edwards), in both of which the rostrum has a somewhat similar conformation, but the former is without a pair of gastric spines, and the carapace of the latter is broader, smoother, and entirely glabrous, while fewer spines are met with on its chelipedes and ambulatory legs.

Breadth of carapace 12 mm., length of body (including rostrum) 40 mm., of carapace (including rostrum) 23 mm., of chelipede 47 mm., of first ambulatory leg 32 mm.

*Habitat*.—Station 310, in the Sarmiento Channel, Patagonia; depth, 400 fathoms; bottom, blue mud. A female specimen.

*Munidopsis pilosa*, Henderson (Pl. XVII. fig. 5).

*Munidopsis pilosa*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 415, 1885.

*Characters*.—The whole body, but especially the carapace, is covered with a short, dense pubescence. The gastric area is less convex than usual, and, like the remainder of the carapace, unarmed; a moderately deep groove passes transversely across the cardiac area. The rostrum is of moderate width and about one-third the total length of the carapace, with its apex acute and slightly upturned, and the upper surface carinated. A single spine occurs on the lateral border of the carapace at the antero-

lateral angle, and a second is found on the orbital border behind the antennal peduncle; the posterior margin is prominent, but unarmed.

The chelipedes<sup>1</sup> are wanting in the single specimen. The ambulatory limbs are short and robust, with the various joints pubescent; both margins of the meri are armed with prominent curved spines, and three or four spines also occur on the anterior margin of the carpi; the dactyli are short and almost straight, with a well-marked, curved, horny, apical claw, and a series of minute dentations on the posterior margin.

The eyes are firmly fused with the carapace, and the corneæ are extremely rudimentary; the ocular peduncle is prolonged dorsally into a long, acute, pubescent spine, more than half the length of the rostrum, and a short prolongation occurs underneath the cornea. The antennal flagella are wanting in the single specimen. The external maxillipedes are of small size, and the inner margin of the merus is provided with a few irregular dentations.

The abdominal segments are pubescent, and the second, third, and fourth are each provided with a short transverse groove; the terminal segments are less hairy than those in front.

This very distinct species is characterised by the dense pubescence met with on its trunk and limbs, the short chelipedes, and, above all, by the rudimentary state of the eyes and the length of the ocular spine. I am unacquainted with any other Galatheid in which the eyes have become so reduced.

Breadth of carapace 7 mm., length of body (including rostrum) 23 mm., of carapace (including rostrum) 13 mm., of ambulatory leg (detached) 16 mm.

*Habitat*.—Station 196, near the Philippines; depth, 825 fathoms; bottom, hard ground. A male specimen.

#### Genus *Elasmonotus*, A. Milne-Edwards.

*Elasmonotus*, A. Milne-Edwards, Bull. Mus. Comp. Zool., vol. viii. No. 1, p. 60, 1880.

*Galathopsis*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 417, 1885.

? *Anoplomotus*, S. I. Smith, Proc. U.S. Nat. Mus., vol. vi. No. 1, p. 50, 1883.

Rostrum flattened and triangular, usually of moderate length. Carapace unarmed, with the lateral margins parallel and entire. Orbito-antennal border short and transverse. Chelipedes and ambulatory limbs frequently robust, with or without spines. Eyes devoid of pigment, with the peduncle in some cases prolonged beyond the cornea. Antennal peduncle of moderate width. Anterior abdominal segments, as a rule, transversely carinated. Eggs few in number, and of large size.

The characters which separate *Elasmonotus* from *Munidopsis* are few in number, of slight importance, and liable to variation in different species, so much so that I cannot

<sup>1</sup> Represented in the figure, but lost while the species was being drawn. I find from my notes that they measured only 10 mm. in length.

regard the institution of the former genus as other than questionable. The two occur in similar localities and at corresponding depths. The two species which I previously placed in a separate subgenus intermediate between *Elasmonotus* and *Munidopsis*, although in some respects peculiar (as in the form of the rostrum), I have now, on second thought, referred to *Elasmonotus*; at the same time, I cannot see sufficient reason for the separation of the form which Professor S. I. Smith has designated *Anoplomotus*.

*Elasmonotus armatus*, A. Milne-Edwards (Pl. XIX. fig. 5).

*Elasmonotus armatus*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 61, 1880.

*Habitat.*—Station 23, off Sombrero Island, West Indies; depth, 450 fathoms; bottom, Pteropod ooze. A female with ova, and a young individual.

Station 24, off Culebra Island, West Indies; depth, 390 fathoms; bottom, Pteropod ooze. Two females, one of which bears ova, and a male. The largest specimen (a female) measures as follows:—Length of body 23 mm., of carapace (including rostrum) 13.3 mm., of chelipede 26 mm., of first ambulatory leg 20 mm.

The surface of the carapace is faintly rugose, and two minute tubercles are present on the rather convex gastric area; the cardiac area is circumscribed, and a shallow groove passes transversely across its surface. The lateral margins of the carapace are raised, and form a prominent rounded rim on each side, which terminates anteriorly in a short acute spine. The rostrum is long, narrow, and slightly upturned, with its apex acuminate, and a slight constriction is present towards the base. The ocular peduncles are slightly elongated, but do not terminate in spines. The merus of the external maxillipedes is armed with two long and subequal spines on the proximal half of the inner margin, and the inner margin of the ischium is prolonged distally into a spine. The chelipedes are slender and elongated, with only a few short spinules present at the distal ends of the merus and carpus, and one or two on the inner surface of the merus; the fingers are stout, and excavated inferiorly, with a slight thickening towards the apices. The ambulatory limbs are slender, and provided with a single spinule at the anterior and distal end of the merus; the dactyli are of large size, and a series of horny spinules is articulated to the posterior margin. The second and third abdominal segments are strongly carinated transversely.

The "Blake" specimens were taken off Frederickstadt, West Indies, at a depth of 625 fathoms.

*Elasmonotus latifrons*, Henderson (Pl. XIX. fig. 1).*Elasmonotus latifrons*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 416, 1885.

*Characters.*—The carapace is strongly arched from side to side, and covered everywhere with tubercular granules, many of which are compound. The gastric area is convex, and provided in front with two slightly-rounded elevations which overhang the base of the rostrum; the cardiac area is circumscribed, and a moderately deep transverse groove separates a posterior triangular portion from two lozenge-shaped portions in front. The rostrum is broad, flattened, and horizontal, with the apex acute, and a notch occurs on either side of the base, into which the eye-stalk fits; the upper surface is finely granular and traversed by a faint median carina; the lower surface is smooth, and faintly carinated towards the apex, while the lateral margins are finely serrated, especially towards the apex. The lateral margin of the carapace is notched by the two divisions of the cervical groove, and a slight projection is present on the orbital border behind the antennal peduncle; the posterior margin is raised and granular.

The chelipedes are short and stout, with the joints granulated; a spine is present at the distal end of the merus on both its inner and outer surfaces, and a third exists on the inner margin near the distal end of the carpus. The propodus is rather finely granulated, but devoid of spines; the fingers are scarcely equal in length to the palm, and their surface is pubescent, while each is deeply excavated on its inner aspect towards the apex, and the apical margin is finely dentate externally. The ambulatory limbs are short and robust, with the joints granulated, and a few short blunt spines are present on the anterior margins of the meri, carpi, and propodi; the dactyli are short, and each ends in a curved, horny claw, while a few short teeth occur on their posterior margins.

The eyes are of small size, but slightly movable, and partially concealed by the sides of the rostrum; the peduncle is granulated, and prolonged a short distance beyond the rudimentary cornea in the form of a blunt spine. The basal joint of the antennula peduncle is granulated. The merus of the external maxillipedes has its inner margin armed with minute teeth, which are somewhat closely arranged on the proximal half.

The second, third, and fourth abdominal segments are transversely sulcate, with granulated carina on either side of the groove; the lateral margins are granulated, as also the whole surface of the posterior segments.

This species is characterised by the form of its rostrum, and the presence of tubercular granulations on most parts of the body.

Breadth of carapace (of an adult male) 11 mm., length of body (including rostrum) 34 mm., of carapace (including rostrum) 17.5 mm., of chelipede 22 mm., of first ambulatory leg 20 mm.

*Habitat.*—Station 218, between Papua and the Admiralty Islands; depth, 10 fathoms; bottom, blue mud. A single specimen.

*Elasmonotus marginatus*, Henderson (Pl. XIX. fig. 2).

*Elasmonotus marginatus*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 416, 1885.

*Characters.*—The carapace is moderately convex, and covered everywhere with granulations, which are slightly pubescent and in large specimens show a distinct tendency to become tubercular. The gastric area is circumscribed, and excavated towards the lateral margins, with two somewhat prominent tubercular elevations on the front margin overhanging the base of the rostrum; the cardiac area is traversed by a shallow transverse groove which separates two lozenge-shaped spaces in front from a similar one behind. The rostrum is broad and flattened, with the apex acute (in the larger specimen it is also acuminate) and bent upwards; the upper surface is granular and provided with a median carina which occurs also on the lower surface, the lateral margins are finely serrated towards the apex, and hollowed out for the ocular peduncle on either side towards the base. The lateral margin of the carapace bears in front a prominent triangular lobe, and projects considerably between the two divisions of the cervical groove to form a thin lamina, which is distinctly bent upwards; the posterior margin is raised and granular.

The chelipedes are short and stout, with the joints pubescent and spinose. The merus is trigonal, its outer surface is granulated, and the margins are armed with short stout spines; the carpus is granulated above, and the spines are most numerous on the inner margin; the propodus is more than twice the length of the carpus, its lateral margins are spinose, and a few scattered granules and spines occur on the upper surface; the fingers are deeply excavated towards the apices, and the margins of the latter are finely dentate. The ambulatory limbs are robust, with the surfaces of the joints granular, and their margins both pubescent and spinose, the spines being somewhat strongly developed on the anterior margins of the meri, carpi, and propodi; the dactyli are moderately long, and each terminates in a curved horny claw, while their posterior margins are strongly pubescent, and armed with short horny spines.

The eyes are immovably fused with the sides of the rostrum; the peduncle is granulated and prolonged both in front of and behind the rudimentary cornea. The second joint of the antennal peduncle bears a rather prominent external spine; the flagellum is of moderate length. The merus of the external maxillipedes is granulated externally, and the inner margin is irregularly dentate.

The abdominal segments are granulated externally, and the second, third, and fourth are transversely bicarinate, the anterior of the two carinæ being the more prominent. The penultimate segment has two rather well marked rounded lobes on its posterior margin.

This species bears some resemblance to the preceding, but is easily distinguished by

the prominent lateral margins of the carapace, and by the armature of the chelipedes and ambulatory limbs. Two specimens are present in the collection, both females with ova, yet differing considerably in size; in the larger also the rostrum is acuminate, the granulations on the carapace are more strongly developed, and the limbs are more pubescent.

Breadth of carapace 16.5 mm., length of body (including rostrum) 50 mm., of carapace (including rostrum) 26.5 mm., of chelipede 32 mm., of first ambulatory leg 33 mm., diameter of ova 1.5 mm. The body of the smaller specimen measures 35 mm. in length.

*Habitat*.—Station 168, off New Zealand; depth, 1100 fathoms; bottom, blue mud.

*Elasmonotus miersii*, Henderson (Pl. XIX. fig. 3).

*Elasmonotus Miersii*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 416, 1885.

*Characters*.—The surface of the carapace is finely granulated, and the regions are fairly distinct. The gastric area is convex and distinctly raised anteriorly above the level of the rostrum, where it forms two rounded elevations, each surmounted by a nipple-like projection; the cervical groove is well marked on the carapace, and forms a distinct boundary between the cardiac and gastric areas; the cardiac area is crossed by a shallow groove, and the posterior triangular portion is circumscribed, while a pitted depression is formed by the cervical groove on either side at the antero-external angle of the area. The rostrum is flattened, depressed, and of moderate width, narrowing somewhat abruptly towards the apex which is subacute; the upper surface is granulated and faintly carinated on the proximal half. The lateral margin of the carapace terminates anteriorly in a short blunt spine, and a rather deep notch is present at the point where the cervical groove passes on to the carapace, a second, though much less strongly marked one, is placed about halfway back; the posterior margin is raised and granular.

The chelipedes are elongated and of moderate width, with the joints finely granulated, though appearing smooth to the naked eye; a few short blunt spines are met with on the inner margin of the merus and at its distal end. The propodus is slightly dilated, and more than twice the length of the carpus, with its lateral margins rounded; the fingers are excavated below, and their apices are minutely dentate, some hairs also, are met with on their opposed edges. The ambulatory limbs are of moderate length, a few short blunt spines are present on both margins of the meri, and a single spine is present at the anterior and distal end of each carpus; the dactyli are slender, and the apical horny claw is but slightly curved, while a series of minute horny spinules are present on the posterior margin.

The eyes are slightly movable, and partially concealed by the sides of the rostrum; the peduncle does not appear to be prolonged beyond the cornea. A somewhat prominent spine is present on the second joint of the antennal peduncle at its outer distal

end. The ischium and merus of the external maxillipedes are finely granulated externally, and the latter joint is armed with two large triangular teeth on its inner margin, one of which is placed near the distal end, while a third is present at the distal end of the outer margin.

The abdominal segments are finely granular externally, and the second, third, and fourth are each provided with two faint transverse carinae.

This species is characterised by the comparative smoothness of its carapace and limbs, and by the form of the meral joint of the external maxillipedes. I have associated it with the name of my friend Mr. E. J. Miers, late of the British Museum staff, well known as the author of a large number of carcinological memoirs.

Breadth of carapace 5 mm., length of body (including rostrum) 15 mm., of carapace (including rostrum) 8.2 mm., of chelipede 17 mm., of first ambulatory leg 11 mm. The single specimen is a male, probably not fully grown.

*Habitat.*—Station 173, off Matuku Island, Fiji; depth, 315 fathoms; bottom, coral mud.

*Elasmonotus asper*, Henderson (Pl. XIX. fig. 4).

*Elasmonotus asper*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 416, 1885.

*Characters.*—The carapace is remarkably flattened, and the regions are not clearly defined; the surface is dotted with irregular tubercles, some of which are subacute, and the intervening spaces are finely granular. The gastric area is but slightly raised above the surrounding level, and the tubercles are prominent (some are even compound) towards the median line; the tubercles are most numerous elsewhere towards the lateral and posterior margins of the carapace, and two of large size are situated on the cardiac area, overhanging a shallow transverse groove. The rostrum is moderately narrow, and usually about twice the length of the eye-stalks, though in some male specimens it scarcely exceeds these in length; the apex is slightly upturned, and bidentate, the upper and larger of the two teeth being in most cases again subdivided; the upper surface is finely tubercular, and in some cases a few serrations are present on the lateral margins towards the apex. The lateral margin of the carapace is irregular in outline, but without any spines of importance; a small serrated lobe is present on the orbital border behind the ocular peduncle; the posterior margin is narrow and finely tuberculate.

The chelipedes are narrow and elongated, while the joints, more particularly the meri, are armed with short tubercular spines. The propodus is about three times the length of the carpus, and its upper surface bears a median row of tubercles; the fingers are not equal in length to the palm, and slightly pubescent, their opposed margins are dentate (the dentations being more strongly marked towards the apices) and a slight basal hiatus is usually present between the two. The ambulatory limbs are of

moderate length, with the joints finely tubercular above; the meri are dilated, and their anterior margins are pubescent; the dactyli are short and strongly curved, with their posterior margins entire.

The eyes are freely movable, with the corneæ subglobose and terminal in position; the peduncle is slightly elongated, but not prolonged into a spine. The antennal flagellum is not equal in length to the carapace. The ischium and merus of the external maxillipedes are faintly granular externally; the outer margin of the former is prolonged distally into an acute spine, while the inner margin of the latter is irregularly dentate, and a curved acute spine is placed at the distal end and outer border of the same joint.

The second and third abdominal segments are each provided with a prominent median tubercular elevation, the surface of which is roughened, and scattered tubercles of small size are present towards the lateral margins of the same segments. The posterior segments are perfectly smooth.

Several of the distinctive features of this species are peculiar, as for instance the flattened carapace, the bidentate rostrum, the short curved ambulatory dactyli, and the median abdominal tubercles; but they are not, in my opinion, sufficient to separate it from the genus *Elasmonotus*. Females are apparently slightly larger than males, their rostrum is more strongly developed, and their chelipedes are shorter.

Breadth of carapace (of an adult male) 8 mm., length of body (including rostrum) 24 mm., of carapace (including rostrum) 13 mm., of chelipede 31 mm., of first ambulatory leg 18 mm. The ova measure about 1 mm. in diameter. The body of the largest female measures 29 mm. in length.

*Habitat*.<sup>1</sup>—Station 311, off Port Churrucá, Patagonia; depth, 245 fathoms; bottom, blue mud. Upwards of a dozen specimens, the majority of which are females with ova.

*Elasmonotus lævigatus*, Henderson (Pl. XVIII. fig. 3).

*Galathopsis lævigata*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 417, 1885.

*Characters*.—The carapace is comparatively smooth, only a few very slight rugosities being present on the gastric, cardiac, and posterior branchial regions, while a slight pubescence occurs on the upper surface of the rostrum, and towards the lateral margins in front. The gastric area is strongly convex, and rises considerably above the level of the rostrum, but there is no sharply defined ridge between the two; the cardiac area is crossed by a moderately deep transverse groove. The rostrum is flattened and depressed on the whole, though the acute apex is slightly upturned; its lateral margins are thin and entire. The lateral margin of the carapace is armed with two small acute teeth, one placed at the commencement of the border, the other immediately behind the cervical groove, and a single acute triangular tooth of slightly larger size occurs on the antero-

<sup>1</sup> This species is erroneously recorded from Station No. 107 in my preliminary account, an error due to a mistake in the labelling of one of the specimens.



lateral margin behind the antennal peduncle; the posterior margin is raised and prominent, but unarmed.

The chelipedes are short and robust, with the joints pubescent and finely granulated; a few short conical spines are also present at the distal end of the ischium, merus, and carpus. The propodus is about twice the length of the carpus; the fingers are deeply excavated inferiorly, and their apices are broad and dentate; the immobile finger is broader than the dactylus, while its outer border is sharp and regularly serrated. The ambulatory limbs are short and stout, with the joints granulated, and their anterior margins pubescent; the distal end of the meri and carpi terminates both above and below in an acute spine, and the posterior surface of the latter joints is provided with a short median carina; the dactyli are short and broad, terminating in a strongly curved claw, with a series of acute teeth on the posterior margin, the last of which so nearly equals the terminal claw that the joint has a biunguiculate appearance.

The ocular peduncles are slightly elongated, with the corneæ rounded, and terminal in position. The merus of the external maxillipedes is short and broad, with two narrow and acute subequal spines on the inner margin.

The abdominal segments are comparatively smooth, but the second, third, and fourth are each faintly bicarinate transversely, and a transverse impression is met with on the fifth segment; the posterior segments are slightly pubescent.

This species is distinguished by its flattened acute rostrum, and the form of its carapace, ambulatory limbs, and other parts, characters which on the whole are those of the genus *Elasmonotus*, as at present constituted; at the same time the chelipedes bear a close resemblance to those of certain species of *Munidopsis* (*Munidopsis brevimana*, Henderson, and *Munidopsis pilosa*, Henderson). I do not now feel justified in placing it, as I formerly did, in a subgenus intermediate between these two genera, but refer it (as well as the next species) to the former, though I may be allowed once more to express a doubt as to whether *Elasmonotus* itself may not have to be united with *Munidopsis*.

Breadth of carapace (of a female with ova) 11 mm., length of body (including rostrum) 33 mm., of carapace (including rostrum) 17 mm., of chelipede 19 mm., of first ambulatory leg 18 mm., diameter of ova 0.9 mm.

*Habitat*.—Station 219, north of Papua; depth, 150 fathoms; bottom, coral mud. A single specimen.

*Elasmonotus debilis*, Henderson (Pl. XVIII. fig. 4).

*Galathopsis debilis*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 417, 1885.

*Characters*.—This species is closely allied to the preceding, and as the two specimens are both in too fragmentary a condition to admit of a detailed description, I shall endeavour merely to point out its distinguishing features. The carapace is slightly more

rugose than in the preceding species, and a few granulations are met with on the anterior gastric region. The denticles on the lateral margin of the carapace are obsolete, and a rounded finely serrated lobe occurs on the orbital margin behind the antennal peduncle.

The chelipedes are wanting in both specimens.<sup>1</sup> The ambulatory limbs are very similar to those of the last species, but the dactyli have a less obvious biunguiculate appearance.

The eyes are of small size, and partly hidden by the sides of the rostrum. The merus of the external maxillipedes is finely granulated externally, and the inner margin is bispinose; a minute spine is also present at the distal end of the outer margin.

The transverse carinæ on the second, third, and fourth abdominal segments are somewhat strongly marked (they are not represented in the figure).

Length of body (of a male) 18 mm., of carapace 10.5 mm., of chelipede 11 mm., of ambulatory leg (detached) 8 mm.

*Habitat*.—Station 173, off Matuku Island, Fiji; depth, 315 fathoms; bottom, coral mud. A male specimen.

Station 210, among the Philippine Islands; depth, 375 fathoms; bottom, blue mud. A male specimen.

#### Genus *Galacantha*, A. Milne-Edwards.

*Galacantha*, A. Milne-Edwards, Bull. Mus. Comp. Zool., vol. viii. No. 1, p. 52, 1880.

Rostrum long and spinulose, the proximal part horizontal, the apical portion upturned. Carapace broad, and convex from side to side, armed with a median spine of large size, placed near the posterior limit of the gastric area, and with an anterior gastric pair of spines and a cardiac spine of smaller size. Lateral margin of the carapace provided with two prominent flattened spines in front. Chelipedes rather stout, and exceeded in length by the ambulatory limbs. Eyes devoid of pigment, with the corneæ terminal in position. Antennal peduncle stout, the flagellum of moderate length. Second, third, and fourth abdominal segments strongly bicarinate transversely, and armed each with a prominent median spine. Male reproductive appendages of large size. Eggs few in number and of large size.

The characters of this genus as constituted above are so distinct that I cannot agree with Professor S. I. Smith's remark that it should perhaps be united with *Munidopsis* judging from the description<sup>2</sup> it appears extremely doubtful whether the species which I

<sup>1</sup> These were apparently lost after my departure from Scotland and while the specimens were in the hands of a draughtsman, for I find from the diagnosis of the species that they measured 11 mm. in length in an individual measuring 18 mm. The chelipedes, as represented in the figure, must be regarded with suspicion, as their length (proportion to that of the body) greatly exceeds the above measurement.

<sup>2</sup> "Albatross" Crustacea, Report United States Fishery Commission, 1882, p. 356.

terms *Galacantha bairdii*, upon an examination of which this belief is chiefly based, should really be included in the genus in question. Three species—all from great depths—have been recorded by Professor A. Milne-Edwards, one of which, *Galacantha rostrata*, is apparently not uncommon in deep water off the east coast of the United States.

*Galacantha talismanii*, A. Milne-Edwards, MS. (Pl. XX. fig. 1).

*Habitat*.—Station 195, off Banda; depth, 1425 fathoms; bottom, blue mud. A very young male specimen, measuring 25 mm. in total length, is referred with some uncertainty to this species.

The minute elevations on the surface of the carapace are tubercular, and scarcely tend to become spinulose. The posterior gastric spine is but slightly compressed, and is almost perpendicular; the anterior gastric spinules are more slender than the cardiac spinule, but of nearly equal length. The distal half of the rostrum is very slightly upturned, though long and slender, while the lower and distal margin of the proximal part is finely dentate. The spines on the lateral border of the carapace are of equal width, but the second is a little shorter than the first. The chelipedes and ambulatory limbs are finely granulated and almost destitute of spines. The first two abdominal spines are slender and strongly curved.

The types at Paris were taken during the voyage of the "Talisman."

*Galacantha bellis*, Henderson (Pl. XIX. fig. 6).

*Galacantha bellis*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 418, 1885.

*Characters*.—The carapace is covered everywhere with small spiniform tubercles, which are more densely crowded together on the posterior half. The median gastric spine is broad and flattened, exceeding the apical portion of the rostrum in length, and placed at an angle of about fifty degrees to the carapace. The anterior gastric spinules are more slender than the cardiac spinule, and scarcely equal it in size; the latter overhangs a shallow transverse groove on the surface of which the pointed tubercles are somewhat deficient. The rostrum is comparatively short, and the apical portion is decidedly upturned, so as to be placed parallel to the median gastric spine, than which it is narrower and less flattened, while the proximal part is bidentate inferiorly and distally (occasionally unidentate); a distinct carina is continued backwards on the carapace from the base of the rostrum to the gastric spine. The lateral spines of the carapace are separated by a considerable interval, and diverge slightly; they are of almost equal width, and the second is slightly longer than the first. The orbital margin exhibits a faint raised line which is continued along the lateral margin of the first part of the

rostrum; the posterior margin of the carapace is distinctly elevated, and bounded in front by a narrow transverse strip which is perfectly smooth.

The chelipedes are armed with blunt tubercular granulations, and a few short spines are placed at the distal ends of the meral and carpal joints respectively, as well as on the under surface of the ischia and meri. The fingers are broad, flattened, and considerably longer than the palm, with their apices depressed, and the lower surfaces deeply excavated; their opposed margins are furnished with short interlocking teeth, which increase in size towards the apices. The ambulatory limbs are coarsely granulated, the granules showing a tendency towards linear arrangement, and two short spines are placed, one on either side, at the distal ends of the meri. The dactyli are moderately long and fairly well curved, with a series of five dentations on the posterior margin.

The eyes are freely movable, and the corneæ are rounded, though slightly deficient internally. The joints of the antennal peduncle are devoid of spines. The merus of the external maxillipedes is granulated externally, and two spines are present on the inner proximal margin, the first of which is considerably swollen towards its base; in some cases a third spine is present, placed slightly above the middle of the margin.

The second, third, and fourth abdominal segments are strongly granulated towards their lateral margins, whereas the fifth and sixth are almost devoid of granulations. The first and second abdominal spinules are well developed and rather strongly curved.

This species is very closely allied to *Galacantha rostrata*, A. Milne-Edwards, but a careful comparison with the types of the latter has convinced me that it is distinct. In the Challenger species, the tubercles on the carapace are of larger size, and more strongly marked on the anterior half; the gastric spine is shorter and broader at its base; the rostrum also is shorter and slightly more oblique; the lateral spines are of smaller size, more nearly equal, and separated by a wider interval; the carina at the base of the rostrum is more strongly developed; and the chelipedes are decidedly more spiny.

Breadth of carapace (of an adult male) 22 mm., length of body (including rostrum) 65 mm., of carapace (including rostrum) 35 mm., of gastric spine 6.5 mm., of apical portion of rostrum 5 mm., of second lateral spine 5 mm., of chelipede 48.5 mm., of first ambulatory leg 51 mm. The largest female specimen measures 67 mm. in length, and its chelipedes only 42 mm., while the ova are about 2.8 mm. in diameter.

*Habitat*.—Station 300, west of Valparaiso; depth, 1375 fathoms; bottom, Globigerina ooze. Four males and two females, both of the latter with ova.

Genus *Eumunida*, S. I. Smith.

*Eumunida*, S. I. Smith, Proc. U.S. Nat. Mus., vol. vi. No. 1, p. 44, 1883.

Rostrum slender and styliform, with a pair of well-developed supraorbital spines on either side of its base. Chelipedes and ambulatory limbs elongated and slender.

Antennal peduncle narrow and elongated, placed under the eye-stalk, and composed of five joints, the second of which is provided with a slender movable acicle. Second abdominal segment with its lateral margin prolonged into anteriorly directed spines; all the appendages except the penultimate pair absent in the male. Telson comparatively small in size, transversely segmented, and folded under the preceding abdominal segments. Branchiæ absent from the bases of the external maxillipedes.

This remarkable genus apparently forms a connecting link between *Munida* and the genera *Ptychogaster* and *Uropytchus*; it agrees closely with the first of these in the arrangement of the frontal spines (with the exception that there is an additional pair of supraorbitals), the presence of pubescent striæ on the carapace, and the shape of the chelipedes and ambulatory limbs, while it resembles the two last in having the swimming fan somewhat rudimentary and folded under the remainder of the abdomen. In some respects it occupies a unique position among Galathodea, for, as has been pointed out by Professor Smith, the pair of rudimentary arthrobranchiæ usually present on the eighth body segment are absent, and the first five abdominal segments are without appendages in the male, while an examination of the Challenger species shows some peculiarities in the arrangement of the antennal peduncle, which I take to be of generic value.<sup>1</sup> The only previously described species, *Eumunida picta*, S. I. Smith, was taken by the United States Fish Commission off the south coast of New England, at a depth of from 115 to 158 fathoms.

*Eumunida smithii*, Henderson (Pl. XV. fig. 5).

*Eumunida Smithii*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 413, 1885.

*Characters*.—The carapace is very slightly arched from side to side, with its surface glabrous, and crossed by about a dozen sparingly ciliated transverse striæ. The frontal spines are all slender and deflexed, but especially the rostrum, which is about one-third longer than the first supraorbital, and nearly twice the length of the second. The gastric area is flattened and circumscribed, with a slight hollowing out towards the base of the rostrum, and the transverse striæ have a tendency to become squamose, more particularly in front; the hepatic area is deeply concave, and on its upper boundary three small spinules pass in an oblique line from the base of the second supraorbital spine, the first being very minute, and the third or most posterior being slightly larger than the second; the cardiac area is circumscribed anteriorly, but like the remainder of the carapace is unarmed. The lateral margin of the carapace is armed with six curved spinules, gradually decreasing in size from before backwards, of which one is placed in front of the

<sup>1</sup> The presence of an additional segment may possibly be a specific and not a generic character, for I have already noticed the occurrence of a similar number in a species of *Porcellana* (*Porcellana serratifrons*, Stimpson), in which genus the normal number is four.

cervical groove, and one between its two branches; the posterior margin is unarmed, and not specially prominent.

The chelipedes are wanting in the single specimen. The ambulatory limbs are very similar to those of *Eumunida picta*, S. I. Smith; the meri are subsquamose externally, and their anterior margin as well as that of the carpi is fringed with short curved spinules, one of slightly larger size being present on either side of the distal end of the former joints; the dactyli are flattened and but slightly curved, with a well-marked series of horny spinules present on the posterior margin, a few occurring also on the same margin of the propodi.

The eyes are of moderate size and the corneæ are distinctly rounded. The ischium and merus of the external maxillipedes are subequal, and both are unarmed.

The abdominal segments are glabrous, and each is crossed by two sparingly pubescent striæ. The lateral spines of the second segment are stout and show a tendency to bifurcate.

This small species in most of its characters closely approaches *Eumunida picta*, S. I. Smith, from which it may, however, be distinguished at once by the relative size of the hepatic spinules, for in the North Atlantic form these decrease in size from before backwards, the first being considerably larger than either of the other two. I have dedicated it to the founder of the genus.

Breadth of carapace (of a male) 5 mm., length of body (including rostrum) 15 mm., of carapace (including rostrum) 9 mm., of rostrum 3.5 mm., of ambulatory leg (detached) 11.5 mm.

*Habitat*.—Station 192, off Little Ki Island; depth, 140 fathoms; bottom, blue mud. A single specimen.

#### Genus *Ptychogaster*, A. Milne-Edwards.

*Ptychogaster*, A. Milne-Edwards, Bull. Mus. Comp. Zool., vol. viii. No. 1, p. 63, 1880.

Rostrum slender and spiniform, usually upturned. Carapace narrow and somewhat ovate in shape, with its surface glabrous and usually spinose. Chelipedes and ambulatory limbs slender and greatly elongated, the basal joints of the latter not hidden by the sides of the carapace. Eye-stalks with the corneæ dilated. Antennal peduncle slender, the flagellum short. External maxillipedes narrow, the terminal joints elongated. Abdomen folded on itself, the telson (which is transversely segmented) and the last pair of appendages bent under the preceding segments, and applied to the thoracic sternæ; males with the first two pairs of appendages (genital) well developed, those of the third, fourth, and fifth segments rudimentary. Eggs comparatively few in number, and of large size.

Two species belonging to this interesting deep-water genus have been previously

described, viz., *Ptychogaster spinifer*, A. Milne-Edwards, taken by the "Blake" at seven stations in the West Indies, at depths varying from 123 to 183 fathoms, and *Ptychogaster formosus*, A. Milne-Edwards, dredged by the "Talisman" off the Canaries, at the great depth of 4000 mètres (2187 fathoms). The Challenger dredgings have added two new and interesting forms to the list.

*Ptychogaster milne-edwardsi*, Henderson (Pl. XX. fig. 2).

*Ptychogaster milne-edwardsi*, Henderson, Narr. Chall. Exp., vol. i. p. 900, fig. 330, 1885; Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 418, 1885.

*Characters.*—The carapace is narrow in front though widening out posteriorly, with its surface glabrous and covered by slender acute spines, which attain their largest size towards the middle line. The gastric area is moderately convex, and is armed with a lateral and two submedian pairs of spines, as well as with two unpaired spines which are situated in the middle line; the cardiac area is circumscribed and remarkably convex, with a pair of prominent spines placed in front of three smaller spinules; at each antero-lateral angle of the cardiac area there is a small convex elevation surmounted by a spine of large size. The spines on the branchial regions are of small size, and closely grouped together; there are, however, two submedian pairs placed behind the cardiac area which attain a considerable size. The rostrum is narrow, acute, and strongly upturned, with its length equal to more than one-third that of the carapace. The lateral margin of the carapace bears three almost equidistant spines on its anterior half, the first of which is placed at the antero-lateral angle, while the posterior half is armed with a number of closely set spinules; the epimeral suture is very distinct and situated a little below the lateral margin; the branchiostegite has considerable vertical extent and its surface is spinulose. The posterior margin of the carapace is slightly raised, and bears a number of minute spinules.

The chelipedes are narrow, subcylindrical, and of great length, with the joints uniformly covered by short slightly curved spinules, which are arranged in six or seven distinct rows on each joint; the right chelipede is considerably shorter than the left, a result perhaps due to accident. The carpus and palm are subequal in length, but both are exceeded by the merus; the fingers are nearly two-thirds the length of the palm, and are slightly curved, they are subcylindrical in shape, and gradually taper towards the pointed apices, while their opposed margins are densely setose and armed with conical teeth, which gradually decrease in size from behind forwards, and two of which near the proximal end of the fingers are considerably larger than the others. The ambulatory limbs are slender, subcylindrical, and greatly elongated, with the joints armed in a similar way to the chelipedes; the dactyli are short and flattened, being only about one-fourth the length of the propodi, and a series of long horny spines is present on their posterior margin.

The eye-stalks are slightly elongated, while the corneae are terminal in position, globular in shape, and deeply pigmented. The basal joint of the antennular peduncle is of small size, but the two succeeding joints are elongated and subcylindrical. A small spine is present on the outer margin of the first free joint of the antennal peduncle, and the ultimate joint is nearly twice the length of the penultimate; the flagellum is scarcely equal in length to the carapace. A few spinules are met with on the outer surface of the carpus and propodus of the external maxillipedes, and a single minute spinule occurs at the distal end of the merus; the terminal joints are densely pubescent below.

The abdominal segments are uniformly covered with short stout spines arranged in transverse rows on the dorsal surface, which show a tendency to decrease in size towards the lateral margins; part of the first segment is uncovered by the carapace, forming a transverse carina which bears a single row of spines. The telson and last pair of appendages are smooth, and provided with long fringing hairs.

This fine species is distinguished at once from *Ptychogaster spinifer* by the armature of its abdomen, for in the latter all the segments are smooth; it bears a greater resemblance to *Ptychogaster formosus*, in which, however, the third, fourth, and fifth segments are devoid of spines. I have pleasure in dedicating it to Professor Alphonse Milne-Edwards, in recognition of his courteous assistance in connection with the identification of the deep-sea forms in the present collection.

Greatest breadth of carapace (of an adult male) 15.5 mm., breadth at antero-lateral angles 8 mm., length of body (including rostrum) 55 mm., of carapace (including rostrum) 22.5 mm., of left chelipede 118 mm., of chela 43.5 mm., of right chelipede 90 mm., of first ambulatory leg 90 mm.

*Habitat*.—Station 310, Sarmiento Channel, Patagonia; depth, 400 fathoms; bottom, blue mud. A single specimen.

*Ptychogaster lævis*, Henderson (Pl. XX. fig. 3).

*Ptychogaster lævis*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 418, 1885.

*Characters*.—The carapace narrows very slightly in front, and its surface is uneven and glabrous, with only a few minute spinules present on the anterior half. The gastric area is scarcely elevated, and bears two pairs of spinules behind the base of the rostrum, (of which the external are slightly larger) as well as a spinule of very small size near the posterior limit of the area; a single minute spinule is also present on each midbranchial region behind the cervical groove. The rostrum is narrow, spinulose, and almost horizontal in direction, with a faint upward inclination. The lateral margin of the carapace is armed with five slender spines, situated on the anterior two-thirds of the border, and gradually decreasing in size from before backwards; the posterior margin is unarmed.



The chelipedes are extremely slender and closely beset with minute spinules arranged in distinct rows. The carpus is slightly longer than the palm, but the two joints are of equal width; the fingers are slender and slightly curved, with their apices acute, and their opposed margins setose, while a prominent tubercular tooth is present near the proximal end of each. The ambulatory limbs are very slender, and a few delicate spinules are present on the anterior margin of the meri and carpi, as well as two or three on the posterior margin and distal end of the propodi; the dactyli are broad, flattened, and but slightly curved, with a series of slender spines on the posterior margin, which increase in size towards the apex.

The eye-stalks are narrow and elongated, in length equalling the rostrum, with the corneæ dilated and deeply pigmented. The external maxillipedes are armed with a single spinule at the outer and distal end of the merus, and the three terminal joints are densely pubescent internally.

The abdominal segments are all smooth and glabrous externally, and their pleura are subobtuse.

This species is distinguished by its narrow and elongated eye-stalks, the comparative absence of spines from the carapace, and by its very small size.

Breadth of carapace (of a female with ova) 4 mm., length of body (including rostrum) 15 mm., of carapace (including rostrum) 6.5 mm., of chelipede 32 mm., of chela 10.2 mm., of ambulatory leg (detached) 14.5 mm., diameter of ova about 0.7 mm.

*Habitat*.—Station 192, off Little Ki Island; depth, 140 fathoms; bottom, blue mud. A single specimen in an imperfect state of preservation.

#### Genus *Uroptychus*, n. n.

*Diptychus*,<sup>1</sup> A. Milne-Edwards, Bull. Mus. Comp. Zool., vol. viii. No. 1, p. 61, 1880.

Rostrum flattened and acute, resembling that of *Galathea*. Carapace somewhat ovate in shape, with its surface glabrous and usually devoid of spines. Chelipedes elongated and of varying width; the ambulatory limbs slender. Eye-stalks short and stout, the corneæ scarcely dilated. Antennal peduncle slender, the first free joint provided with a flattened and acute acicle or movable spine; the flagellum never of great length, and in some cases remarkably short. External maxillipedes comparatively smooth, with the terminal joints elongated, more especially the propodus, which is considerably longer than any of the other joints. Abdomen smooth and glabrous externally, folded on itself; the telson (which is transversely segmented and of very small size), as well as the last pair of appendages, bent under the preceding segments and applied to the thoracic sternæ; males with the first two pairs of appendages (copulatory organs)

<sup>1</sup> As this name has been previously used in Zoology to designate a genus of Cyprinoid Fishes, I have altered it to that given above.

fairly well developed, those of the third and fourth segments rudimentary, of the fifth absent; females with two pairs of ovigerous appendages on the third and fourth segments, those of the other segments (with the exception of the penultimate) absent. Eggs comparatively few in number, and of large size.

The species are mostly of small size, and characterised by the shining polished surface of their body and limbs. They are widely distributed, occurring at depths of about 100 to 700 fathoms, and many of the species appear to live among the branches of Corals, their limbs being specially adapted for clinging. The atrophy of the caudal swimming fin is carried to a greater extent than in either *Ptychogaster* or *Eumunida*, and it is probable that the folding in of that part is a result of this condition in all three genera. In one respect *Uroptychus* differs from all other Galatheids, viz., in the presence of a distinct movable acicle on the first free (in reality the second) joint of the antennal peduncle, an important and primitive character, but it must be remembered that a similar process, though of very small size, is present also in *Eumunida*. In those species which I have examined, the fifth arthrobranchia, counting from before backwards, is not of larger size than the others, whereas in most of the Galathodea it is distinctly enlarged. Professor A. Milne-Edwards has made known five species from the West Indies, dredged during the "Blake" expedition, and more recently another species from the "Talisman" dredgings in the North Atlantic.

*Uroptychus nitidus* (A. Milne-Edwards) (Pl. XXI. fig. 6).

*Diptychus nitidus*, A. Milne-Edwards, Bull. Mus. Comp. Zoöl., vol. viii. No. 1, p. 62, 1880.

*Habitat*.—Station 23, off Sombrero Island, West Indies; depth, 450 fathoms; bottom, Pteropod ooze. Two males, and a female with ova; all of small size.

Station 24, off Culebra Island, West Indies; depth, 390 fathoms; bottom, Pteropod ooze. An adult male (figured), the body of which measures 34 mm. in length, and the chelipedes 69 mm.

The carapace is perfectly smooth and glabrous, with a single spinule placed on each lateral margin at the antero-lateral angle. The rostrum is about twice the length of the eye-stalks, with its margins entire, and it is slightly upturned towards the apex (this last character being liable to considerable variation in different specimens). The chelipedes are broad, flattened, and of great length, with their surface smooth and shining; the merus narrows very considerably towards its proximal end, and a few ill-defined granules occur, in some specimens at least, on its inner surface, while a minute spinule is found on the upper surface and at the distal end of the ischium; the fingers are excavated inferiorly, and their surfaces are clad with delicate silky hairs; two unequal teeth are met with on the inner margin of the dactylus, and an ill-defined projection occurs on the corresponding border of the immobile finger. The ambulatory limbs are slender, and

like the chelipedes glabrous, with a series of delicate spines articulated to the posterior margin of the propodi; the dactyli are short and strongly curved, with numerous spinules on the posterior margin, which increase in size and are separated by wider intervals towards the apex of the joint, in some cases also the dactyli are pubescent. The antennal acicle extends slightly beyond the tip of the eye-stalk, and almost to the end of the antennal peduncle; the flagellum is not equal in length to the carapace. The joints of the external maxillipedes are smooth. The abdominal segments are smooth and glabrous externally.

From the dredgings of the "Blake" it would appear that this species is common in the West Indies, it having been taken by that vessel at no less than eighteen stations, in depths varying from 88 to 734 fathoms. It was found in most of these cases adhering to Corals of the genus *Chrysogorgia*.

*Uroptychus insignis*, Henderson (Pl. XXI. fig. 1).

*Diptychus insignis*, Henderson, Ann. and Mag. Nat. Hist., ser 5, vol. xvi. p. 419, 1885.

*Characters*.—The surface of the carapace is smooth and glabrous, with a moderate convexity from side to side. The gastric area is crossed in front by a transverse row of short, stout spinules, chiefly arranged in two groups one on either side of the middle line; the remaining areas are unarmed. The rostrum is about four times the length of the eye-stalks, and its apical half is slightly upturned; two minute spinules are present on each lateral margin towards the apex, and the whole lower surface as well as the distal end of the upper surface bears a median carina. The lateral margin of the carapace is armed with two spines of moderate size on its anterior half, one being situated at the antero-lateral angle, and the other opposite the gastric row of spinules, with a few spines of smaller size intervening, while the posterior half is provided with a regular series, decreasing gradually in size from before backwards, and continued almost to the posterior limit. The posterior margin is regularly convex, with the convexity directed forwards. A few minute spinules occur on the anterior pterygostomial region.

The chelipedes are robust and of moderate length, with the proximal joints tuberculate and spiny. The merus and carpus are both armed with prominent spines at their distal ends, as also is the inner surface of the former joint, while their surfaces, but especially the upper one, are roughened by somewhat pointed tubercles which are mostly arranged in rows. The propodus is glabrous, and its upper surface is provided with indistinct tubercles, chiefly towards the proximal end; the fingers are more than half the length of the palm, their apices cross one another and are acute, while each in addition to having its inner margin finely serrated bears a single ill-defined tooth of moderate size. The ambulatory limbs are rather stout, and comparatively smooth, a few indistinct spinules being merely present on the anterior margin of the meral and carpal joints, and a rounded

projection occurs at the distal inferior end of the propodi, to which from eight to ten horny spines are articulated; the dactyli are short and strongly curved, with nine or ten spinules gradually increasing in size towards the apex, present on the inferior margin.

The eyes are of small size, and partially concealed in orbits, with the corneæ not dilated. The antennal acicle is elongated, being more than twice the length of the eye-stalks, and extending almost to the end of the antennal peduncle. A few ill-defined spinules occur on the inner margin and at the distal end of the merus of the external maxillipedes.

The abdominal segments are smooth and glabrous externally, with their pleura subacute; the pleuron of the second segment is bilobed, a feature common to most members of the genus, and the rounded anterior lobe overlaps the postero-external angle of the carapace.

This fine species is distinguished by the armature of its carapace, chelipedes, and ambulatory limbs, and the small size of its eyes. With the exception of *Uroptychus nitidus* (A. Milne-Edwards), it is the largest known species belonging to the genus.

Breadth of carapace (of an adult male) 12.4 mm., length of body (including rostrum) 34 mm., of carapace (including rostrum) 17.5 mm., of chelipede 45 mm., of chela 19.5 mm., of first ambulatory leg 29 mm. Females appear to equal the males in size, but their chelipedes are more slender; the ova have a diameter of nearly 1 mm.

*Habitat*.—Station 145A, off Prince Edward Island; depth, 310 fathoms; bottom, volcanic sand. Two males, four females (one bearing ova), and several young specimens.

*Uroptychus spinimarginatus*, Henderson (Pl. XXI. fig. 2).

*Diptychus spinimarginatus*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 419, 1885.

*Characters*.—The carapace is glabrous, though its surface is roughened posteriorly and towards the lateral margins by very minute granulations, and in some specimens also the same parts are pubescent; no spines are met with anywhere on the surface. The rostrum is about four times the length of the eye-stalks, and three-fourths that of the remainder of the carapace; it is horizontal in direction, its lower surface bears a median carina, and two or three minute spinules are present on each lateral margin towards the apex. The posterior half of the lateral border of the carapace is armed with five large and prominent spines, the first of which reaches a larger size than any of the others, the second and third being subequal, as are also the fourth and fifth; the anterior half bears three or four spines of small size, including that at the antero-lateral angle. The pterygostomial region terminates anteriorly in a short acute spine.

The chelipedes are elongated and extremely slender, with the proximal joints finely tubercular and armed with a few short spines. A spine is placed at the upper distal end of the basis, a second at the lower distal end of the ischium, and two on the inner distal

end of the merus, while the minute tubercles are best marked on the merus and carpus. The propodus is glabrous, and its surface is minutely punctate; the fingers are scarcely half the length of the palm, with their surface slightly pubescent, and a single ill-defined tooth is present on the inner margin of each. The ambulatory limbs are slender, more particularly the first, and the joints are glabrous, though slightly pubescent; the meral joints are finely tubercular, and numerous distinct spinules are present on their anterior margin; the propodi, as well as the dactyli, are slightly curved, and a series of minute horny spinules is present on the posterior margin of the latter.

The eyes are of small size and partially concealed in orbits, with the corneæ but slightly dilated. The antennal acicle is of very small size, only reaching the end of the eye-stalk, and scarcely the middle of the last joint of the antennal peduncle. The external maxillipedes are smooth, one or two minute spinules being alone present at the distal end of the merus.

The abdominal segments are glabrous externally, though minutely punctate, and the fifth and sixth are in addition pubescent in some specimens; their pleura are subobtuse.

This species agrees with the West Indian *Uroptychus armatus* (A. Milne-Edwards) in having the carapace armed laterally with prominent spines, but in the latter species from seven to eight of these are present, and the ambulatory limbs are in addition smooth.

Breadth of carapace, not including spines (of a female with ova from Station 170) 7 mm., length of body (including rostrum) 22 mm., of carapace (including rostrum) 11 mm., of chelipede 29 mm., of chela 12 mm., of first ambulatory leg 13 mm., diameter of ova about 1 mm.

*Habitat*.—Station 170, off the Kermadec Islands; depth, 520 fathoms; bottom, volcanic mud. A female with ova, and a young male.

Station 214, south of the Philippines; depth, 500 fathoms; bottom, blue mud. Two females, both with ova.

*Uroptychus parvulus*, Henderson (Pl. XXI. fig. 3).

*Diptychus parvulus*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 420, 1885.

*Characters*.—The carapace is slightly more convex than usual, and is everywhere smooth and glabrous, though a few minute punctations are visible on its surface. The rostrum is about half the length of the carapace, or four times the length of the eye-stalks, and slightly depressed, with its upper surface hollowed out from side to side, and the margins entire. The lateral border of the carapace is armed with a series of very minute spinules which are best marked towards the posterior limit. The pterygostomial region is provided with a few scattered granules.

The chelipedes are elongated and of moderate width, with the proximal joints finely spinose. The merus and carpus are each armed with numerous rows of short spinules,

which at the distal end of both joints become distinct spines. The propodus is slightly swollen in both its diameters and its surface is perfectly smooth; the fingers are more than half the length of the palm and their surface is pubescent, the apices are curved, the dactylus folding under the immobile finger, and a single tooth is present on the inner margin of each. The ambulatory limbs are of moderate width, and with the exception of a row of minute spinules on the anterior border of the meri (and in some cases also of the carpi) are smooth, a series of distinct horny spinules also occurs on the posterior margin of the propodi; the dactyli are more than half the length of the propodi and strongly curved, with from six to eight stout horny spinules articulated to the posterior margin of each, the apical one being of small size.

The eyes are of small size, with the corneæ subglobose and deeply pigmented. The antennal acicle is long and acuminate, extending slightly beyond the end of the peduncle, the last joint of which is prolonged inferiorly into an acute spine, and its basal portion is rather broad; the flagellum is remarkably short, not reaching the end of the rostrum, and consisting of scarcely half a dozen joints. The external maxillipedes are almost completely smooth, one or two minute spinules being found only at the distal end of the merus.

The abdominal segments are smooth and glabrous externally, with the pleura subacute, those of the third segment and the posterior part of the second segment being narrow and attenuated. The telson and last pair of appendages are of very small size.

This small species is distinguished by the form of its rostrum, and the armature of the chelipedes, as well as by the remarkable characters of the external antennæ.

Breadth of carapace of the largest specimen (a female with ova) 6 mm., length of body (including rostrum) 16 mm., of carapace (including rostrum) 9 mm., of chelipede 20 mm., of chela 9 mm., of first ambulatory leg 12 mm., diameter of ova about 0·8 mm. Males are of somewhat smaller size than the above (as are also the other females with ova) but their chelipedes are considerably stouter.

*Habitat.*—Station 310, Sarmiento Channel, Patagonia; depth, 400 fathoms; bottom, blue mud. About thirty specimens, including both males and females, several of the latter with ova.

*Uroptychus politus*, Henderson (Pl. VI. fig. 2).

*Diptychus politus*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 420, 1885.

*Characters.*—The carapace is moderately convex from side to side, and everywhere perfectly smooth and glabrous, the margins even being entire, with the exception of a minute denticle at the antero-lateral border. The rostrum is horizontal and placed very slightly below the level of the highest part of the carapace, in length it exceeds the eye-stalks by a small part of its extent, and it narrows somewhat abruptly towards the apex,

the basal portion being of considerable breadth. The pterygostomial region is smooth but bears a slight depression near its centre.

The chelipedes are of moderate length, and the joints are everywhere perfectly smooth and glabrous, with the exception of a small spine at the upper and distal end of the ischium. The palm is slightly dilated, and equal in length to the carpus; the fingers are somewhat curved, and in male specimens a distinct hiatus exists between the two, a pair of conical teeth, the second of which is the larger, occur on the inner and proximal margin of the dactylus, with corresponding depressions on the inner margin of the immobile finger. The ambulatory limbs are slender and smooth, with the exception of the usual horny spinules on the posterior margin of the propodi; the dactyli are strongly curved, and more than half the length of the penultimate joints, with a series of short horny spines on their posterior margin.

The eyes are of moderate size, with the corneæ slightly dilated and of a light brown colour. The antennal acicle is not more than half the length of the peduncle, and narrows rather abruptly towards the apex; the flagellum is about twice the length of the peduncle. The external maxillipedes are perfectly smooth and glabrous, with the exception of the usual hairs.

The abdominal segments are smooth and glabrous externally, and their pleura are subobtuse.

This species is distinguished by its almost complete smoothness, and by the form of the fingers, more especially in male specimens.

Breadth of carapace (of a female with ova) 5.5 mm., length of body (including rostrum) 18 mm., of carapace (including rostrum) 8 mm., of chelipede 24 mm., of chela 9.5 mm., of ambulatory leg (detached) 12 mm., diameter of ova about 1.2 mm. In the male specimen (which is of slightly smaller size), the chelipedes are proportionately longer and stouter, and a hiatus exists between the fingers.

*Habitat.*—Station 171, near the Kermadec Islands; depth, 600 fathoms; bottom, hard ground. A female with ova, and a male.

*Uroptychus australis*, Henderson (Pl. XXI. fig. 4).

*Diptychus australis*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 420, 1885.

*Characters.*—The carapace is everywhere smooth and glabrous, only a single small tooth being present at each antero-lateral angle. The gastric area is slightly swollen and raised above the level of the rostrum, with in some cases two very minute denticles present on its anterior margin. The rostrum is horizontal in direction, and extends for about one-fourth of its length beyond the apices of the eye-stalks; it is of considerable breadth towards the base, but gradually narrows towards the acute apex. The

pterygostomial region terminates anteriorly in a very minute spinule, and a depression is visible towards its middle.

The chelipedes are slender and elongated, with the joints smooth and glabrous. A row of four or five small tubercles occurs on the inner proximal end of the merus, and a few tubercles of smaller size are sometimes found on the inner surface of the ischium, while a small spine is present on the upper and distal end of the same joint; in some specimens all the tubercles are nearly obsolete. The palm is but slightly dilated, and not equal in length to the carpus; the fingers are pubescent and excavated inferiorly, and a single prominent tooth occurs on the inner margin of the dactylus. The ambulatory limbs are smooth, with the exception of a few delicate spines on the posterior margin of the propodi; the dactyli are strongly curved, and about half the length of the penultimate joints, with a series of minute horny spinules on their posterior margin.

The eyes are of moderate size, and the corneæ are light brown in colour. The antennal acicle is slightly curved, and tapers gradually towards the acute apex, which reaches almost to the end of the peduncle; the flagellum is scarcely twice the length of the peduncle (it is represented of too great a length in the figure). The external maxillipedes are unarmed.

The abdominal segments are smooth and glabrous externally, and their pleura are subobtuse.

This species is closely allied to *Uroptychus politus*, from which it differs in the following respects:—The gastric region of the carapace is more swollen in the former, the rostrum is broader towards its apex, the chelipedes are more elongated, and finely tubercular towards their bases, while there is no hiatus between the fingers, and the antennal acicle is longer, more curved, and acuminate.

The largest specimen (a female from Station 164) gives the following measurements:—Breadth of carapace, 7 mm., length of body (including rostrum) 21 mm., of carapace (including rostrum) 10.5 mm., of chelipede 39 mm., of chela 15.5 mm., of first ambulatory leg 18 mm. Diameter of ova, taken from another specimen, about 1 mm.

*Habitat.*—Station 164B, off Port Jackson; depth, 410 fathoms; bottom, green mud. Two adult females, one with ova, and a young male.

Station 170, off the Kermadec Islands; depth, 520 fathoms; bottom, volcanic mud. A female with ova.

Station 171, near the Kermadec Islands; depth, 600 fathoms; bottom, hard ground. A female with ova.

Station 194A, off Banda; depth, 360 fathoms; bottom, volcanic mud. A female with ova, and two young individuals.



*Uroptychus gracilimanus*, Henderson (Pl. XXI. fig. 5).*Diptychus gracilimanus*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 420, 1885.

*Characters.*—The carapace is smooth and glabrous as in the last two species, and armed only with a single small tooth at each antero-lateral angle. The gastric area is slightly raised above the level of the rostrum, but is without any definite anterior margin. The rostrum is horizontal, and extends for about one-third of its length beyond the ends of the eye-stalks; it is rather narrow at the base, and tapers gradually towards the acute apex. The pterygostomial region presents a slight depression towards its centre.

The chelipedes are remarkably long and slender, and there is no trace of armature, the joints being everywhere smooth and glabrous. The palm is only about three-fourths the length of the carpus and but slightly dilated; the fingers are pubescent, slightly curved, and rather deeply excavated below, while a compound tooth of considerable size exists on the proximal and inner margin of the dactylus. The ambulatory limbs are slender and elongated, with a few horny spines on the posterior margin of the propodi; the dactyli are strongly curved and scarcely half the length of the penultimate joint, while a series of short horny spinules occurs on their posterior margin.

The eyes are of rather small size, and the corneæ are deep brown in colour. The antennal acicle is acuminate, and scarcely reaches the end of the peduncle; the flagellum is but slightly longer than the peduncle. The external maxillipedes are unarmed.

The abdominal segments are smooth and glabrous externally, and their pleura are subobtuse.

This species is distinguished from *Uroptychus australis* by the great length and tenuity of its chelipedes, and the absence of minute tubercles from their basal joints. It may possibly be only a variety of the last species, but in none of the female specimens of the latter do the chelipedes assume so slender a form, and the material at my disposal therefore makes me inclined to regard it as distinct.

Breadth of carapace 8 mm., length of body (including rostrum) 22 mm., of carapace (including rostrum) 10.5 mm., of chelipede 50 mm., of chela 19.5 mm., of first ambulatory leg 19 mm., diameter of ova about 1 mm.

*Habitat.*—Station 164B, off Port Jackson; depth, 410 fathoms; bottom, green mud. A female with ova.

*Uroptychus tridentatus*, Henderson (Pl. VI. fig. 1).*Diptychus tridentatus*, Henderson, Ann. and Mag. Nat. Hist., ser. 5, vol. xvi. p. 421, 1885.

*Characters.*—The carapace is smooth and glabrous, and its surface is unarmed. The rostrum is about one and a half times the length of the eye-stalk, and slightly depressed, with its apex tridentate, and the upper surface hollowed out from side to side. The

lateral margin of the carapace has three prominent spines on its middle third, and a few spines of smaller size are situated between the first of these and the antero-lateral angle. A few minute spinules occur on the anterior part of the pterygostomial region.

The chelipedes and ambulatory limbs are wanting in the single specimen.

The eyes are of small size, and somewhat wider at the base than at the free end; the corneæ are minute but deeply pigmented. The antennal acicle is broad and acuminate, slightly exceeding the peduncle in length; the terminal joint of the peduncle is prolonged on one side into a delicate spine; the flagellum is absent on both sides of the body. The carpal joint of the external maxillipedes is of smaller size than usual, and the outer and distal end of the merus is prolonged into a minute denticle.

The abdominal segments are smooth and glabrous externally, while their pleura are subacute.

Although the collection contains but a single specimen, and that in a very imperfect state of preservation, the characters are in some respects so striking that I have felt justified in making it the type of a new species. It may be distinguished at once from all the other known species of *Uroptychus* by the form of its rostrum.

Breadth of carapace 4.3 mm., length of body (including rostrum) 12 mm., of carapace 5.5 mm., diameter of ova about 0.6 mm.

*Habitat.*—Amboina. The label gives the depth as 15 fathoms, but from what is known of the bathymetrical distribution of the genus it is probable that the specimen came from one of the deeper dredgings in that locality.

## GEOGRAPHICAL DISTRIBUTION.

### LIST OF STATIONS,

SHOWING THE PHYSICAL CONDITIONS AND THE SPECIES OF ANOMURA OBTAINED  
AT EACH.

STATION VIIp. Off Tenerife, Canaries, February 10, 1873; lat. 28° 35' N., long. 16° 5' W.;  
depth, 78 fathoms; bottom, volcanic sand; surface temperature, 64°. Dredged.

*Pagurus calidus*, Risso.

*Anapagurus pusillus*, n. sp.

*Spiropagurus elegans*, Miers.

*Galathea dispersa*, Spence Bate.

“Label lost, probably Madeira.” More probably Bay of Biscay, in deep water.

*Eupagurus excavatus* (Herbst), var. *meticulosa*, Roux.

STATION 23. Off Sombrero, West Indies, March 15, 1873; lat. 18° 24' N., long. 63° 28'  
W.; depth, 450 fathoms; bottom, Pteropod ooze; surface temperature, 76°. Dredged.

*Munida* sp.

*Elasmonotus armatus*, A. Milne-Ed-  
wards).

*Munidopsis sigsbei* (A. Milne-Edwards).

*Uroptychus nitidus* (A. Milne-Edwards).

St. Thomas, West Indies, shallow water.

*Hypoconcha sabulosa* (Herbst).

*Porcellana sayana* (Leach).

STATION 24. Off Culebra Island, West Indies, March 25, 1873; lat. 18° 38' 30" N.,  
long. 5° 65' 30" W.; depth, 390 fathoms; bottom, Pteropod ooze; surface tempera-  
ture, 76°. Dredged.

*Porcellana robertsoni*, n. sp.

*Elasmonotus armatus*, A. Milne-Ed-  
wards.

*Munida microphthalma*, A. Milne-  
Edwards.

*Uroptychus nitidus* (A. Milne-Edwards).

Bermuda, on the sandy shore and in shallow water.

*Remipes scutellatus* (Fabricius). | *Petrolisthes armatus* (Gibbes).

STATION 49. South of Halifax, Nova Scotia, May 20, 1873; lat. 43° 3' N., long. 63° 39' W.; depth, 85 fathoms; bottom, gravel, stones; surface temperature, 40°·5; bottom temperature, 35°. Dredged.

*Eupagurus pubescens* (Kröyer), var. *kroyeri*, Stimpson.

STATION 56. Off Bermuda, May 29, 1873; lat. 32° 8' 45" N., long. 64° 54' 35" W.; depth, 1075 fathoms; bottom, coral mud; bottom temperature, 38°·2; surface temperature, 72°·5. Dredged.

*Parapagurus abyssorum*, A. Milne-Edwards. | *Munidopsis serratifrons* (A. Milne-Edwards).

STATION 68. Between Bermuda and the Azores, June 24, 1873; lat. 38° 4' N., long. 39° 19' W.; depth, 2175 fathoms; bottom, Globigerina ooze; bottom temperature, 36°·2; surface temperature, 70°. Trawled.

*Parapagurus abyssorum*, A. Milne-Edwards, var. *scabra*, nov.

STATION 73. West of the Azores, June 30, 1873; lat. 38° 30' N., long. 31° 14' W.; depth, 1000 fathoms; bottom, Pteropod ooze; bottom temperature, 39°·4; surface temperature, 69°. Dredged.

*Pagurodes* (?) sp.

STATION 75. Off Fayal, Azores, July 2, 1873; lat. 38° 38' 0" N., long. 28° 28' 30" W., depth, 50-90 fathoms; bottom, volcanic mud; surface temperature, 70°·2. Dredged.

*Anapagurus pusillus*, n. sp. | *Galathea* sp.

St. Vincent, Cape Verde Islands.

*Remipes scutellatus* (Fabricius). | *Galathea* sp.  
*Pagurus callidus*, Risso. | *Pachycheles barbatus*, A. Milne-Edwards.  
*Eupagurus excavatus* (Herbst), var. *meticulosa*, Roux.

STATION 78. South of San Miguel, Azores, July 10, 1873; lat. 37° 26' N., long. 25° 13' W.; depth, 1000 fathoms; bottom, volcanic mud; surface temperature, 71°. Dredged.

*Lithodes agassizii*, S. I. Smith.

STATION 106. South-west of Sierra Leone, August 25, 1873; lat.  $1^{\circ} 47' N.$ ; long.  $24^{\circ} 26' W.$ ; depth, 1850 fathoms; bottom, Globigerina ooze; bottom temperature,  $36^{\circ} 6'$ ; surface temperature,  $78^{\circ} 8'$ . Trawled.

*Parapagurus abyssorum*, A. Milne-Edwards.

St. Paul's Rocks; depth, 10 to 60 fathoms.

*Munida sancti-pauli*, Henderson.

STATION 113A. Off Fernando Noronha, September 2, 1873; lat.  $3^{\circ} 47' 0'' S.$ , long.  $32^{\circ} 24' 30'' W.$ ; depth, 7 to 25 fathoms; bottom, volcanic sand and gravel; surface temperature,  $78^{\circ}$ . Dredged.

*Munida spinifrons*, Henderson.

STATION 122. Off Pernambuco, September 10, 1873; lat.  $9^{\circ} 5' S.$ , long.  $34^{\circ} 50' W.$ ; depth, 350 fathoms; bottom, red mud; surface temperature,  $77^{\circ} 5'$ . Trawled.

*Eupagurus oclusus*, n. sp.

*Paguristes visor*, n. sp.

*Parapagurus gracilis*, n. sp.

*Munida stimpsoni*, A. Milne-Edwards.

*Munida miles*, A. Milne-Edwards.

*Munidopsis erinacea* (A. Milne-Edwards).

Off Bahia; depth, 7 to 20 fathoms.

*Dromidia antillensis*, Stimpson.

*Hypoconcha panamensis*, S. I. Smith.

*Zanclifer caribensis* (de Fréminville).

*Petrolisthes serratus*, n. sp.

*Petrolisthes* sp.

STATION 133. Near Tristan da Cunha, October 11, 1873; lat.  $35^{\circ} 41' S.$ , long.  $20^{\circ} 55' W.$ ; depth, 1900 fathoms; bottom, Globigerina ooze; bottom temperature,  $35^{\circ} 4'$ ; surface temperature,  $58^{\circ}$ . Trawled.

*Parapagurus abyssorum*, A. Milne-Edwards.

STATION 135C. Off Nightingale Island, Tristan da Cunha, October 17, 1873; lat.  $35^{\circ} 25' 30'' S.$ , long.  $12^{\circ} 28' 30'' W.$ ; depth, 110 fathoms; surface temperature,  $54^{\circ}$ . Dredged.

*Eupagurus tristanensis*, n. sp.

*Parapagurus dimorphus* (Studer).

Simon's Bay, Cape of Good Hope; depth, 5 to 20 fathoms.

*Dromidia spongiosa*, Stimpson.

*Pseudodromia latens*, Stimpson.

*Diogenes brevirostris*, Stimpson.

*Pagurus granulatus*, Olivier.

*Anapagurus pusillus*, n. sp.

*Porcellana streptocheles*, Stimpson.

*Galathea labidolepta*, Stimpson (?).

*Galathea* sp.

STATION 142. Off Cape Agulhas, December 18, 1873; lat.  $35^{\circ} 4' S.$ , long.  $18^{\circ} 37' E.$ ; depth, 150 fathoms; bottom, green sand; bottom temperature,  $47^{\circ}$ ; surface temperature,  $65^{\circ} \cdot 5$ . Dredged.

*Dromidia bicornis*, Studer. | *Eudromia frontalis*, n. gen. et. sp.  
*Parapagurus dimorphus* (Studer).

STATION 145A. Off Marion Island, December 27, 1873; lat.  $46^{\circ} 41' S.$ , long.  $38^{\circ} 10' E.$ ; depth, 85 to 310 fathoms; bottom, volcanic sand; surface temperature,  $41^{\circ} \cdot 5$ . Dredged.

*Lithodes murrayi*, n. sp. | *Parapagurus dimorphus* (Studer).  
*Paralomis aculeatus*, n. sp. | *Munida spinosa*, Henderson.  
*Uroptychus insignis*, Henderson.

STATION 146. Near Marion Island, December 29, 1873; lat.  $46^{\circ} 46' S.$ , long.  $45^{\circ} 31' E.$ ; depth, 1375 fathoms; bottom, Globigerina ooze; bottom temperature,  $35^{\circ} \cdot 6$ ; surface temperature,  $43^{\circ}$ . Trawled.

*Pagurodes inarmatus*, n. sp. | *Munidopsis subsquamosa*, Henderson,  
var. *aculeata*, nov.

STATION 158. South-west of Australia, March 7, 1874; lat.  $50^{\circ} 1' S.$ , long.  $123^{\circ} 4' E.$ ; depth, 1800 fathoms; bottom, Globigerina ooze; bottom temperature,  $33^{\circ} \cdot 5$ ; surface temperature,  $45^{\circ}$ . Trawled.

*Munidopsis antonii* (A. Milne-Edwards).

STATION 161. Off Port Philip, April 1, 1874; lat.  $38^{\circ} 22' 30'' S.$ , long.  $144^{\circ} 36' 30'' E.$ ; depth, 33 fathoms; bottom, sand; surface temperature,  $63^{\circ} \cdot 5$ . Trawled.

*Eupagurus lacertosus*, n. sp., var. *nana*, nov.

STATION 162. Off East Moncœur Island, Bass Strait, April 2, 1874; lat.  $30^{\circ} 10' 30'' S.$ , long.  $146^{\circ} 35' E.$ ; depth, 38 fathoms; bottom, sand and shells; surface temperature,  $63^{\circ} \cdot 2$ . Dredged.

*Dromia ciliata*, n. sp. | *Eupagurus lacertosus*, n. sp., var.  
*Cryptodromia lateralis* (Gray). | *nana*, nov.  
*Clibanarius stringimanus* (White). | *Munida subrugosa* (White), var. *australiensis*, nov.

STATION 163A. Off Twofold Bay, Australia, April 4, 1874; lat.  $36^{\circ} 59' S.$ , long.  $150^{\circ} 20' E.$ ; depth, 150 fathoms; bottom, green mud; surface temperature,  $71^{\circ}$ . Trawled.

<i>Cryptodromia lateralis</i> (Gray).		<i>Glaucothoe carinata</i> , n. sp.
<i>Cryptodromia incisa</i> , n. sp.		<i>Pylocheles spinosus</i> , n. sp.
<i>Latreillia australiensis</i> , n. sp.		<i>Galathea pusilla</i> , Henderson.
<i>Munida haswelli</i> , Henderson.		

Port Jackson, April 1874; depth, 2 to 10 fathoms.

<i>Cryptodromia lateralis</i> (Gray).		<i>Diogenes custos</i> (Fabricius).
<i>Cryptodromia nodulifera</i> , n. sp.		<i>Anapagurus australiensis</i> , n. sp.

STATION 163B. Off Port Jackson, June 3, 1874; lat.  $33^{\circ} 51' 15'' S.$ , long.  $151^{\circ} 22' 15' E.$ ; depth, 35 fathoms; bottom, hard ground; bottom temperature,  $63^{\circ}$ ; surface temperature,  $69^{\circ}$ . Dredged.

<i>Latreillia australiensis</i> , n. sp.		<i>Eupagurus lacertosus</i> , n. sp., var.
<i>Lyreidus tridentatus</i> , De Haan.		<i>nana</i> , nov.
<i>Pagurus</i> sp.		

STATION 164B. Off Port Jackson, June 13, 1874; lat.  $34^{\circ} 13' S.$ , long.  $151^{\circ} 38' E.$ ; depth, 410 fathoms; bottom, green mud; surface temperature,  $69^{\circ} 0$ . Trawled.

<i>Uroptychus australis</i> , Henderson.		<i>Uroptychus gracilimanus</i> , Henderson.
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STATION 166. West of New Zealand, June 23, 1874; lat.  $38^{\circ} 50' S.$ , long.  $169^{\circ} 20' E.$ ; depth, 275 fathoms; bottom, Globigerina ooze; bottom temperature,  $50^{\circ} 8$ ; surface temperature,  $58^{\circ} 5$ . Trawled.

<i>Eupagurus lacertosus</i> , n. sp.		<i>Munida gracilis</i> , Henderson.
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STATION 167. West of New Zealand, June 24, 1874; lat.  $39^{\circ} 32' S.$ , long.  $171^{\circ} 48' E.$ ; depth, 150 fathoms; bottom, blue mud; surface temperature,  $58^{\circ} 5$ . Trawled.

<i>Paguristes subpilosus</i> , n. sp.		<i>Parapagurus latimanus</i> , n. sp.
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STATION 167A. Near Wellington, New Zealand, June 27, 1874; lat.  $41^{\circ} 4' S.$ , long.  $174^{\circ} 19' E.$ ; depth, 10 fathoms; bottom, mud; surface temperature,  $51^{\circ} 5$ . Dredged.

<i>Paguristes pilosus</i> (H. Milne-Edwards).		<i>Parapagurus latimanus</i> , n. sp.
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STATION 168. East of New Zealand, July 8, 1874; lat.  $40^{\circ} 28' S.$ , long.  $177^{\circ} 43' E.$ ; depth, 1100 fathoms; bottom, blue mud; bottom temperature,  $37^{\circ} \cdot 2$ ; surface temperature,  $57^{\circ} \cdot 2$ . Trawled.

*Pagurodes incarmatus*, n. sp. | *Elasmonotus marginatus*, Henderson.

STATION 169. East of New Zealand, July 10, 1874; lat.  $37^{\circ} 34' S.$ , long.  $179^{\circ} 22' E.$ ; depth, 700 fathoms; bottom, blue mud; bottom temperature,  $40^{\circ}$ ; surface temperature,  $58^{\circ} \cdot 2$ . Trawled.

*Eupagurus rubricatus*, n. sp.

STATION 170. Off the Kermadec Islands, July 14, 1874; lat.  $29^{\circ} 55' S.$ , long.  $178^{\circ} 14' W.$ ; depth, 520 fathoms; bottom, volcanic mud; bottom temperature,  $43^{\circ}$ ; surface temperature,  $65^{\circ}$ . Trawled.

*Uroptychus spinimarginatus*, Henderson. | *Uroptychus australis*, Henderson.

STATION 171. North of the Kermadec Islands, July 15, 1874; lat.  $28^{\circ} 33' S.$ , long.  $177^{\circ} 50' W.$ ; depth, 600 fathoms; bottom, hard ground; bottom temperature,  $39^{\circ} \cdot 5$ ; surface temperature,  $66^{\circ} \cdot 5$ . Trawled.

*Munida microphthalmia*, A. Milne-Edwards. | *Uroptychus politus*, Henderson.  
*Uroptychus australis*, Henderson.

STATION 172. Off Nukalofa, Tongatabu, July 22, 1874; lat.  $28^{\circ} 58' S.$ , long.  $175^{\circ} 9' W.$ ; depth, 18 fathoms; bottom, coral mud; surface temperature,  $75^{\circ}$ . Dredged.

*Pagurus euopsis*, Dana. | *Petrolisthes unilobatus*, n. sp.  
*Galathea aculeata*, Haswell.

STATION 172A. Off Nukalofa, Tongatabu, July 22, 1874; lat.  $26^{\circ} 56' S.$ , long.  $175^{\circ} 11' W.$ ; depth, 240 fathoms; bottom, coral mud; surface temperature,  $75^{\circ}$ . Dredged.

*Munida tuberculata*, Henderson.

STATION 173. Off Matuku, Fiji, July 24, 1874; lat.  $19^{\circ} 9' 35'' S.$ , long.  $179^{\circ} 41' 50'' E.$ ; depth, 315 fathoms; bottom, coral mud; surface temperature,  $76^{\circ}$ . Dredged.

*Munida normani*, Henderson. | *Munida tuberculata*, Henderson.  
*Munida granulata*, Henderson. | *Elasmonotus miersii*, Henderson.  
*Munida militaris*, Henderson. | *Elasmonotus debilis*, Henderson.



Reefs at Levuka, Fiji Islands.

*Catapagurus australis*, n. sp.

Kandavu, Fiji Islands, from the shore.

*Cænobita rugosa*, H. Milne-Edwards. | *Cænobita perlata*, H. Milne-Edwards.

STATION 174D. Off Ngaloa, Kandavu, Fiji Islands, August 3, 1874; lat.  $19^{\circ} 5' 50''$  S., long.  $178^{\circ} 16' 20''$  E.; depth, 210 fathoms; bottom, coral mud; surface temperature,  $77^{\circ} \cdot 7$ . Dredged.

*Lyreidus tridentatus*, De Haan. | *Munida spinicordata*, Henderson.

Api, New Hebrides, from the shore.

*Cænobita rugosa*, H. Milne-Edwards. | *Cænobita perlata*, H. Milne-Edwards.

STATION 186. Flinder's Passage, Cape York, North Australia, September 8, 1874; lat.  $10^{\circ} 30' S.$ , long.  $142^{\circ} 18' E.$ ; depth, 8 fathoms; bottom, coral mud; surface temperature,  $77^{\circ} \cdot 2$ . Dredged.

*Mastigochirus quadrilobatus*, Miers. | *Petrolisthes annulipes* (White) Miers.

*Pagurus imbricatus*, H. Milne-Edwards. | *Pachycheles pulchellus* (Haswell).

*Polyonyx obesulus* (White) Miers.

Torres Strait.

*Spiropagurus spiriger* (De Haan).

STATION 187. Cape York, North Australia, September 9, 1874; lat.  $10^{\circ} 36' S.$ , long.  $141^{\circ} 55' E.$ ; depth, 6 fathoms; bottom, coral mud; surface temperature,  $77^{\circ} \cdot 7$ .

*Diogenes guttatus*, n. sp.

STATION 188. Arafura Sea, south of Papua, September 10, 1874; lat.  $9^{\circ} 59' S.$ , long.  $139^{\circ} 42' E.$ ; depth, 28 fathoms; bottom, green mud; surface temperature,  $78^{\circ} \cdot 5$ . Dredged and trawled.

*Spiropagurus spiriger* (De Haan). | *Catapagurus australis*, n. sp.

*Pachycheles pulchellus* (Haswell).

STATION 190. Arafura Sea, south of Papua, September 12, 1874; lat.  $8^{\circ} 56' S.$ , long.  $136^{\circ} 5' E.$ ; depth, 49 fathoms; bottom, green mud; surface temperature,  $79^{\circ} \cdot 2$ . Trawled.

*Spiropagurus spiriger* (De Haan). | *Galathea australiensis*, Stimpson.

Wokan Dobbo, Arrou Islands, from the shore.

*Cænobita rugosa*, H. Milne-Edwards.

STATION 191. Off the Arrou Islands, September 23, 1874; lat. 5° 41' 0" S., long. 134° 4' 30" E.; depth, 800 fathoms; bottom, green mud; bottom temperature, 39°·5; surface temperature, 82°·2. Trawled.

*Munidopsis brevimana*, Henderson.

STATION 192. Off Little Ki Island, September 26, 1874; lat. 5° 49' 15" S., long. 132° 14' 15" E.; depth, 140 fathoms; bottom, blue mud; surface temperature, 82°. Trawled.

*Homola orientalis*, n. sp.

*Notopoides latus*, n. sp.

*Notopus ovalis*, n. sp.

*Clibanarius* (?) sp.

*Munida scabra*, Henderson.

*Munida militaris*, Henderson.

*Eumunida smithii*, Henderson.

*Ptychogaster lævis*, Henderson.

Arafura Sea.

*Pagurodes piliferus*, n. sp. (?)

*Porcellana serratifrons*, Stimpson.

STATION 194A. Off Banda, September 29, 1874; lat. 4° 31' 0" S., long. 129° 57' 20" E.; depth, 360 fathoms; bottom, volcanic mud; surface temperature, 82°·5. Trawled.

*Galathea inconspicua*, Henderson.

*Uroptychus australis*, Henderson.

STATION 195. Off Banda, October 3, 1874; lat. 4° 21' S., long. 129° 7' E.; depth, 1425 fathoms; bottom, blue mud; bottom temperature, 38°; surface temperature, 82°. Trawled.

*Parapagurus abyssorum*, A. Milne-Edwards.

*Galacantha talismanii*, A. Milne-Edwards.

Amboina; depth, 15 fathoms.

*Raninoides personatus* (White)  
Henderson.

*Cosmonotus grayii*, Adams and White.  
*Munida spinulifera*, Miers.

? *Uroptychus tridentatus*, Henderson.

Amboina; depth, 100 fathoms.

*Munida militaris*, Henderson.

STATION 196. Near the Philippines, October 13, 1874; lat.  $0^{\circ} 48' 30''$  S., long.  $126^{\circ} 58' 30''$  E.; depth, 825 fathoms; bottom, hard ground; bottom temperature,  $36^{\circ} 9$ ; surface temperature,  $83^{\circ}$ . Trawled.

*Homologenus* (?) sp. | *Munidopsis pilosa*, Henderson.

Ternate, October 15, 1874.

*Remipes testudinarius*, Latreille. | *Birgus latro* (Linné).

STATION 200. Off Samboangan, Philippines, October 23, 1874; lat.  $6^{\circ} 47'$  N., long.  $122^{\circ} 28'$  E.; depth, 250 fathoms; bottom, green mud; surface temperature,  $85^{\circ} 5$ . Trawled.

*Munida incerta*, n. sp. | *Munida militaris*, Henderson, var. *curvirostris*, nov.

STATION 201. Off Samboangan, Philippines, October 26, 1874; lat.  $7^{\circ} 3'$  N., long.  $121^{\circ} 48'$  E.; depth, 82 fathoms; bottom, stones, gravel; surface temperature,  $83^{\circ}$ . Trawled.

*Eupagurus* sp.

Philippine Islands.

*Birgus latro* (Linné).

Reefs at Zebu, Philippine Islands.

*Pagurus striatus*, Latreille.

STATION 204A or 204B. Off Panay Island, Philippines, November 2, 1874; lat.  $12^{\circ} 43'$  N., long.  $122^{\circ} 9'$  E.; depth, 100 or 115 fathoms; bottom, green mud; surface temperature,  $84^{\circ}$ . Trawled.

*Pagurus striatus*, Latreille. | *Pagurodes piliferus*, n. sp.

*Eupagurus spinulentus*, n. sp. | *Paguroopsis typicus*, n. sp.

*Galathea subsquamata*, Stimpson.

STATION 205. Off Luzon, Philippines, November 13, 1874; lat.  $16^{\circ} 42'$  N., long.  $119^{\circ} 22'$  E.; depth, 1050 fathoms; bottom, blue mud; bottom temperature,  $37^{\circ}$ ; surface temperature,  $82^{\circ}$ . Trawled.

*Parapagurus abyssorum*, A. Milne-Edwards.

Hong Kong; depth, 10 fathoms.

*Spiropagurus spiriger* (De Haan). | *Porcellana serratifrons*, Stimpson.

*Raphidopus ciliatus*, Stimpson.

STATION 207. Off Tablas Island, Philippines, January 16, 1875; lat. 12° 21' N., long. 122° 15' E.; depth, 700 fathoms; bottom, blue mud; bottom temperature, 51°·6; surface temperature, 80°. Trawled.

*Munidopsis milleri*, Henderson.

STATION 208. Among the Philippines, January 17, 1875; lat. 11° 37' N., long. 123° 31' E.; depth, 18 fathoms; bottom, blue mud; surface temperature, 81°. Trawled.

*Spiropagurus spiriger* (De Haan).

*Paguristes* sp.

*Paguristes hians*, n. sp.

*Galathea aculeata*, Haswell.

STATION 209. Off Zebu, Philippines, January 22, 1875; lat. 10° 14' N., long. 123° 54' E.; depth, 95 fathoms; bottom, blue mud; bottom temperature, 71°; surface temperature, 81°. Dredged and trawled.

*Homola orientalis*, n. sp.

*Latreillia valida*, De Haan.

*Latreillopsis bispinosa*, n. sp.

*Galathea grandirostris*, Stimpson.

STATION 210. Off Mindanao, Philippines, January 25, 1875; lat. 9° 26' N., long. 123° 45' E.; depth, 375 fathoms; bottom, blue mud; bottom temperature, 54°·1; surface temperature, 80°·2. Dredged and trawled.

*Munida militaris*, Henderson, var.

*Elasmonotus debilis*, Henderson.

*curvirostris*, nov.

STATION 212. Off Samboangan, Philippines, January 30, 1875; lat. 6° 54' N., long. 122° 18' E.; depth, 10 fathoms; bottom, sand; surface temperature, 83°. Dredged and trawled.

*Albunea microps* (White) Miers.

*Porcellanella triloba*, White.

*Pagurus similimanus*, n. sp.

*Galathea elegans*, White.

STATION 214. Off the Meangis Islands, February 10, 1875; lat. 4° 33' N., long. 127° 6' E.; depth, 500 fathoms; bottom, blue mud; bottom temperature, 41°·8; surface temperature, 80°·5. Trawled.

*Parapagurus affinis*, n. sp.

*Pagurodes limatulus*, n. sp.

*Uroptychus spinimarginatus*, Henderson.

STATION 218. North of Papua, March 1, 1875; lat.  $2^{\circ} 33' S.$ , long.  $144^{\circ} 4' E.$ ; depth, 1070 fathoms; bottom, blue mud; bottom temperature,  $36^{\circ} \cdot 4$ ; surface temperature,  $84^{\circ}$ . Trawled.

<i>Parapagurus abyssorum</i> , A. Milne-Edwards.	<i>Munidopsis brevimana</i> , Henderson.
	<i>Elasmonotus latifrons</i> , Henderson.

STATION 219. Off Nares Harbour, Admiralty Islands, March 10, 1875; lat.  $1^{\circ} 54' 0'' S.$ , long.  $146^{\circ} 39' 40'' E.$ ; depth, 150 fathoms; bottom, coral mud; surface temperature,  $84^{\circ}$ . Trawled.

<i>Munida squamosa</i> , Henderson.	<i>Munida inornata</i> , Henderson.
<i>Munida proxima</i> , Henderson.	<i>Elasmonotus lævigatus</i> , Henderson.

Wild Island, Admiralty Islands.

<i>Cænobita clypeata</i> (Herbst).	<i>Cænobita rugosa</i> , H. Milne-Edwards.
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Tracy Island, Nares Harbour, Admiralty Islands.

*Cænobita rugosa*, H. Milne-Edwards.

Admiralty Islands; depth, 16 to 25 fathoms.

<i>Pagurus dearmatus</i> , n. sp.	<i>Spiropagurus spiriger</i> (De Haan).
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Off Yokoska, Japan; depth, 5 to 20 fathoms.

*Cryptodromia japonica*, n. sp.

Off Yokohama, Japan.

*Eupagurus constans*, Stimpson.

STATION 237. South of Japan, June 17, 1875; lat.  $34^{\circ} 37' N.$ , long.  $140^{\circ} 32' E.$ ; depth, 1875 fathoms; bottom, blue mud; bottom temperature,  $35^{\circ} \cdot 3$ ; surface temperature,  $73^{\circ}$ . Trawled.

<i>Parapagurus abyssorum</i> , A. Milne-Edwards.	<i>Munidopsis subsquamosa</i> , Henderson.
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Tahiti, Society Islands, near the reefs, September 28, 1875.

<i>Cænobita rugosa</i> , H. Milne-Edwards.	<i>Calcinus tibicen</i> (Herbst).
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Reefs at Papiete, Society Islands.

*Pagurus deformis*, H. Milne-Edwards.

STATION 285. Mid South Pacific, October 14, 1875; lat.  $32^{\circ} 36' S.$ , long.  $137^{\circ} 43' E.$ ; depth, 2375 fathoms; bottom, red clay; bottom temperature,  $35^{\circ}$ ; surface temperature,  $65^{\circ}$ . Trawled.

*Tylaspis anomala*, Henderson.

Valparaiso Beach, November 1875.

*Petrolisthes violaceus* (Guérin).

*Petrolisthes validus* (Dana).

STATION 300. Off Juan Fernandez, December 17, 1875; lat.  $33^{\circ} 42' S.$ , long.  $78^{\circ} 18' W.$ ; depth, 1375 fathoms; bottom, Globigerina ooze; bottom temperature,  $31^{\circ} \cdot 5$ ; surface temperature,  $92^{\circ} \cdot 5$ . Trawled.

*Parapagurus abyssorum*, A. Milne-Edwards.

*Munidopsis antonii* (A. Milne-Edwards).

*Galacantha bellis*, Henderson.

STATION 302. Off Patagonia, December 28, 1875; lat.  $42^{\circ} 43' S.$ , long.  $82^{\circ} 11' W.$ ; depth, 1450 fathoms; bottom, Globigerina ooze; bottom temperature,  $35^{\circ} \cdot 6$ ; surface temperature,  $55^{\circ}$ . Trawled.

*Munidopsis subsquamosa*, Henderson, var. *aculeata*, nov.

STATION 304. Port Otway, Patagonia, December 31, 1875; lat.  $46^{\circ} 53' 15'' S.$ , long.  $75^{\circ} 12' 0'' W.$ ; depth, 45 fathoms; bottom, green sand; surface temperature,  $51^{\circ} \cdot 2$ . Dredged.

*Munida subrugosa* (White).

*Parapagurus abyssorum*, A. Milne-Edwards.

STATION 305A. In the Messier Channel, Patagonia, January 1, 1876; lat.  $47^{\circ} 48' 30'' S.$ , long.  $74^{\circ} 47' 0'' W.$ ; depth, 125 fathoms; bottom, blue mud; surface temperature,  $55^{\circ}$ . Trawled.

*Munida subrugosa* (White).

Messier Channel, January 1876.

*Petrolisthes validus* (Dana).

Gray's Harbour, Patagonia; from the stomach of a fish.

*Munida subrugosa* (White).

STATION 308. Tom Bay, Patagonia, January 5, 1876; lat.  $50^{\circ} 8' 30''$  S., long.  $74^{\circ} 41' 0''$  W.; depth, 175 fathoms; bottom, blue mud; surface temperature,  $51^{\circ} 7'$ . Trawled.

*Eupagurus comptus* (White), var. *jugosa*, nov.

STATION 310. In the Sarmiento Channel, Patagonia, January 10, 1876; lat.  $51^{\circ} 27' 30''$  S., long.  $74^{\circ} 3' 0''$  W.; depth, 400 fathoms; bottom, blue mud; bottom temperature,  $46^{\circ} 5'$ ; surface temperature,  $50^{\circ} 5'$ . Trawled.

*Munidopsis trifida*, Henderson.

*Uroptychus parvulus*, Henderson.

*Ptychogaster milne-edwardsi*, Henderson.

STATION 311. Off Port Churrucá, Patagonia, January 11, 1876; lat.  $52^{\circ} 45' 30''$  S., long.  $73^{\circ} 46' 0''$  W.; depth, 245 fathoms; bottom, blue mud; bottom temperature,  $46^{\circ}$ ; surface temperature,  $50^{\circ}$ . Trawled.

*Parapagurus dimorphus* (Studer).

*Elasmonotus asper*, Henderson.

STATION 312. Port Famine, Patagonia, January 13, 1876; lat.  $53^{\circ} 37' 30''$  S., long.  $70^{\circ} 56' 0''$  W.; depth, 9 fathoms; bottom, blue mud; surface temperature,  $49^{\circ} 8'$ . Dredged.

*Munida subrugosa* (White).

Port Stanley, Falkland Islands.

*Paralomis verrucosus* (Dana).

STATION 315. Port William, Falkland Island, January 26, 1876; lat.  $51^{\circ} 40'$  S., long.  $57^{\circ} 50'$  W.; depth, 12 fathoms; bottom, sand, gravel; surface temperature,  $50^{\circ}$ . Dredged.

*Eupagurus comptus* (White), var. *jugosa*, nov.

*Porcellanella triloba*, White.

*Munida subrugosa* (White).

STATION 316. Port Louis, Falkland Islands, February 3, 1876; lat.  $51^{\circ} 32'$  S., long.  $58^{\circ} 6'$  W.; depth, 4 fathoms; bottom, mud; surface temperature,  $51^{\circ} 2'$ . Dredged.

*Paralomis verrucosus* (Dana).

STATION 320. Off Monte Video, February 14, 1876; lat.  $37^{\circ} 17' S.$ , long.  $53^{\circ} 52' W.$ ; depth, 600 fathoms; bottom, green sand; bottom temperature,  $37^{\circ} \cdot 2$ ; surface temperature,  $67^{\circ} \cdot 5$ . Trawled.

*Paralomis formosus*, n. sp. | *Munida subrugosa* (White).  
*Munida spinosa*, Henderson.

STATION 335. Near Tristan da Cunha, March 16, 1876; lat.  $32^{\circ} 24' S.$ , long.  $13^{\circ} 5' W.$ ; depth, 1425 fathoms; bottom, Pteropod ooze; bottom temperature,  $37^{\circ}$ ; surface temperature,  $73^{\circ} \cdot 5$ . Dredged.

*Parapagurus abyssorum*, A. Milne-Edwards.

STATION 343. Off Ascension Island, March 27, 1876; lat.  $8^{\circ} 3' S.$ , long.  $14^{\circ} 27' W.$ ; depth, 425 fathoms; bottom, volcanic sand; bottom temperature,  $40^{\circ} \cdot 3$ ; surface temperature,  $80^{\circ} \cdot 8$ . Dredged.

*Munida microphthalma*, A. Milne-Edwards.



PLATE III.

	Diam.	Page
Fig. 1. <i>Notopoides latus</i> , n. gen. et sp., . . . . .	× 1	29
<i>a.</i> Under surface, . . . . .	× 1	
<i>b.</i> Left chelipede of male, . . . . .	× 1	
Fig. 2. <i>Zanclifer caribensis</i> (de Freminville), . . . . .	× 1	34
<i>a.</i> Under surface, . . . . .	× 2	
<i>b.</i> Right chelipede of male, . . . . .	× 2	
Fig. 3. <i>Munida spinosa</i> , Henderson, . . . . .	slightly enlarged	128
<i>a.</i> Right chela of male, . . . . .	× 1	
<i>b.</i> Left external maxillipede, . . . . .	× 2	
Fig. 4. <i>Munida microphthalma</i> , A. Milne-Edwards, . . . . .	× 1	127
<i>a.</i> Right chela of male, . . . . .	× 2	
<i>b.</i> Left external maxillipede, . . . . .	× 2	
Fig. 5. <i>Munida haswelli</i> , Henderson, . . . . .	× 1	139
<i>a.</i> Right chela of female from Station 173, doubtfully referred to this species, . . . . .	× 2	
<i>b.</i> Left external maxillipede, . . . . .	× 2	
Fig. 6. <i>Munida sancti-pauli</i> , Henderson, . . . . .	× 1	142
<i>a.</i> Right chela of female, . . . . .	× 2	
<i>b.</i> Left external maxillipede, . . . . .	× 2	
Fig. 7. <i>Munida militaris</i> , Henderson, var. <i>curvirostris</i> , Henderson, . . . . .	× 1	139
<i>a.</i> Right chela of female, . . . . .	× 2	
<i>b.</i> Left external maxillipede, . . . . .	× 2	

8e of H.M.S. "Challenger"

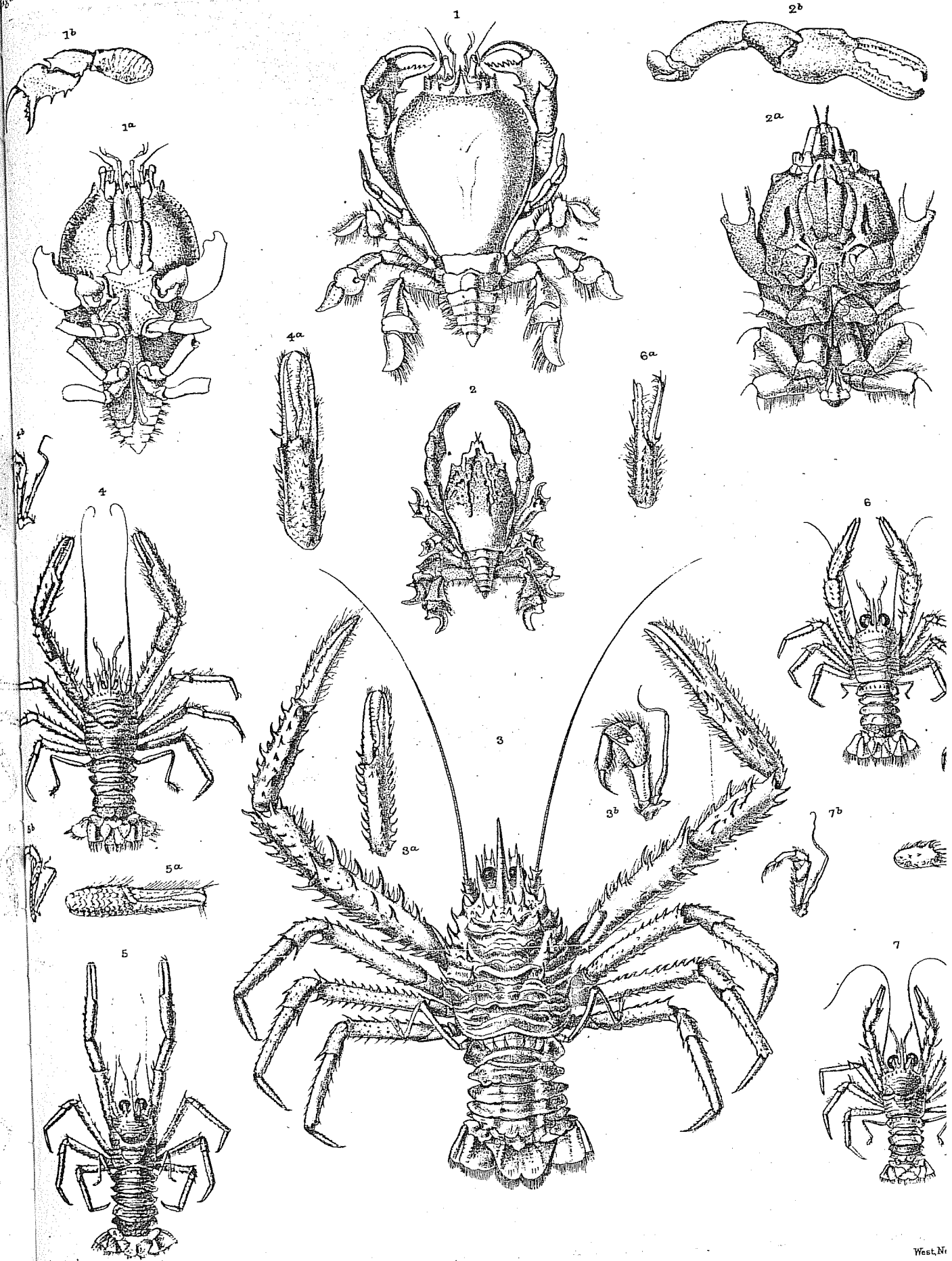
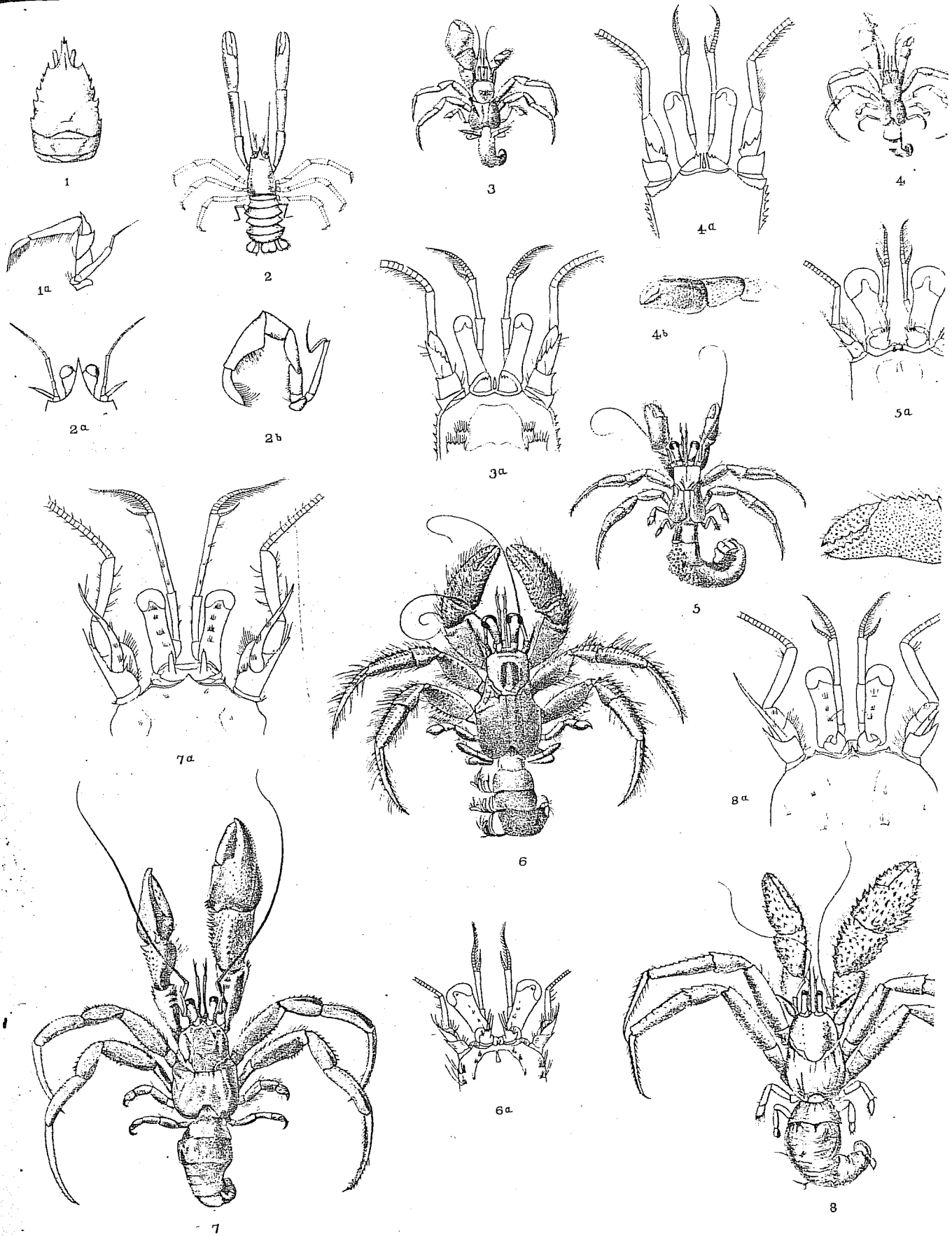


PLATE VI.

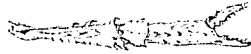
	Diam.
Fig. 1. <i>Uroptychus tridentatus</i> , n. sp., . . . . .	
Dorsal surface of trunk, . . . . .	× 3
a. Left external maxillipede, . . . . .	× 5
Fig. 2. <i>Uroptychus politus</i> , n. sp., . . . . .	× 1
a. Frontal region, . . . . .	× 3
b. Left external maxillipede, . . . . .	× 5
Fig. 3. <i>Diogenes brevirostris</i> , Stimpson, . . . . .	× 1
a. Frontal region, . . . . .	× 5
Fig. 4. <i>Diogenes guttatus</i> , n. sp., . . . . .	× 1
a. Frontal region, . . . . .	× 6
b. Left chela of male, . . . . .	× 2
Fig. 5. <i>Pagurus dearmatus</i> , n. sp., . . . . .	× 1
a. Frontal region, . . . . .	× 3
b. Left chela of female, . . . . .	× 3
Fig. 6. <i>Pagurus similimanus</i> , n. sp., . . . . .	× 1
a. Frontal region, . . . . .	× 2
Fig. 7. <i>Eupagurus lacertosus</i> , n. sp., . . . . .	× 1
a. Frontal region, . . . . .	× 3
Fig. 8. <i>Eupagurus constans</i> , Stimpson, . . . . .	× 1
a. Frontal region, . . . . .	× 3



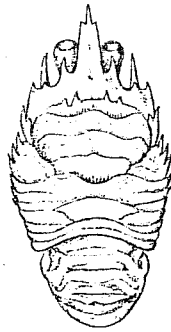
UROPTYCHUS, DIOGENES, PAGURUS, EUPAGURUS.

PLATE XII.

	Diam.	Page
Fig. 1. <i>Galathea pusilla</i> , Henderson, . . . . .	× 5	121
<i>a.</i> Right chelipede of male, . . . . .	× 3	
<i>b.</i> Left external maxillipede, . . . . .	× 5½	
Fig. 2. <i>Galathea inconspicua</i> , Henderson, . . . . .	× 5	122
Fig. 3. <i>Galathea grandirostris</i> , Stimpson (?), . . . . .	× 5	119
Fig. 4. <i>Galathea subsquamata</i> , Stimpson (?), . . . . .	× 3	118
Fig. 5. <i>Galathea australiensis</i> , Stimpson (?), . . . . .	× 3	118
Fig. 6. <i>Galathea dispersa</i> , Spence Bate (?), . . . . .	× 2	119
<i>a.</i> Left external maxillipede, . . . . .	× 5	



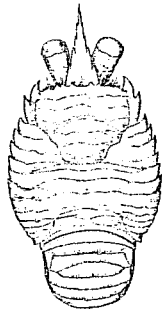
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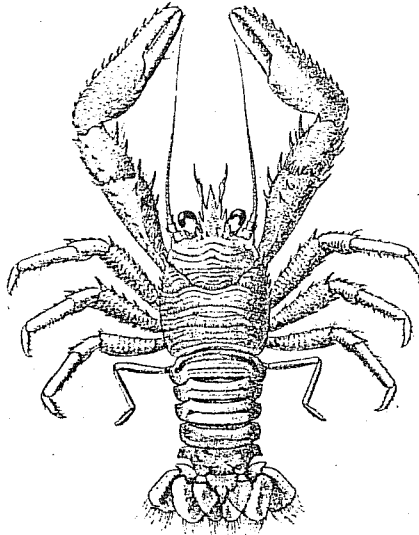
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1<sup>b</sup>



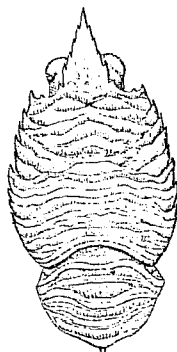
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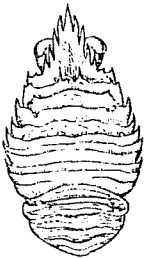
6<sup>a</sup>



3



4



5

GALATHEA.

PLATE XIII.

	Diam.	Page
Fig. 1. <i>Munida squamosa</i> , Henderson,	× 1	131
<i>a.</i> Right chela of male,	× 1	
<i>b.</i> Left external maxillipede,	× 2	
Fig. 2. <i>Munida proxima</i> , Henderson,	× 1	135
<i>a.</i> Right chela of female,	× 2	
<i>b.</i> Left external maxillipede,	× 2	
Fig. 3. <i>Munida subrugosa</i> , White, var. <i>australiensis</i> , nov.,	× 1	125
<i>a.</i> Right chela of male,	× 3	
<i>b.</i> Left external maxillipede,	× 3	
Fig. 4. <i>Munida incerta</i> , n. sp.,	× 1	130
<i>a.</i> Left external maxillipede,	× 2	
Fig. 5. <i>Munida normani</i> , Henderson,	× 1	129
<i>a.</i> Right chela of male,	× 2	
<i>b.</i> Left external maxillipede,	× 2	

Voyage of H.M.S. "Challenger."

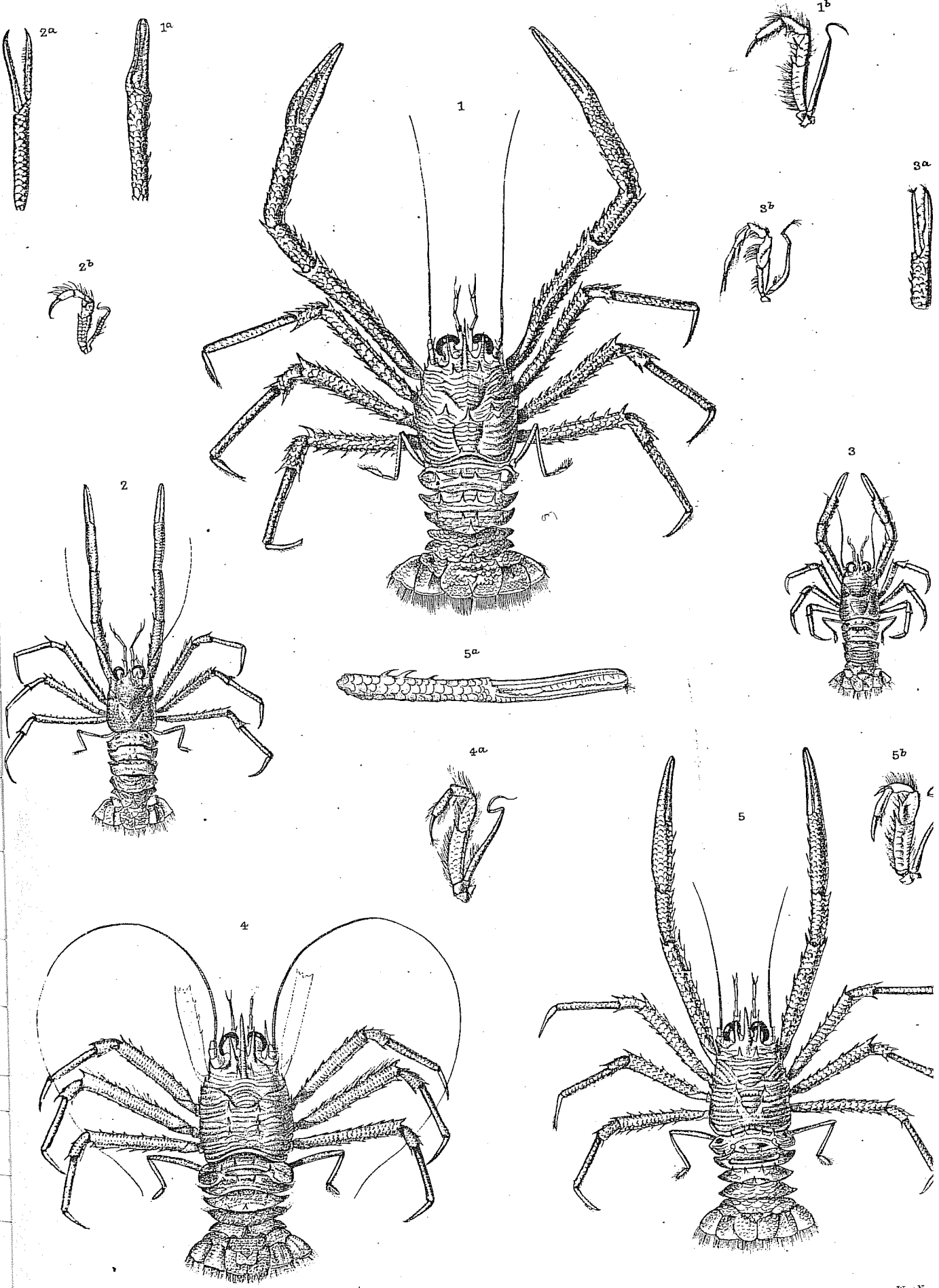
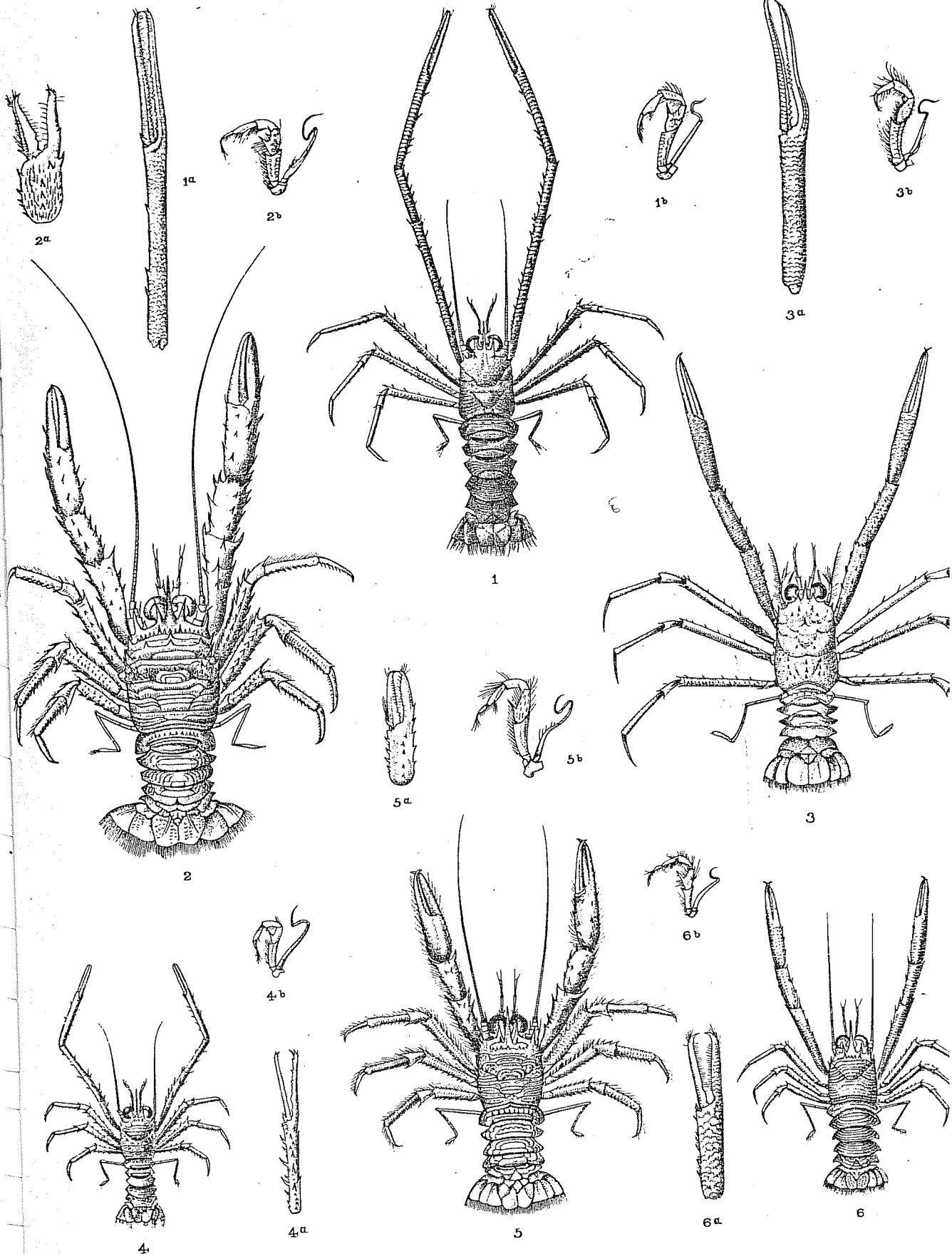




PLATE XIV.

	Diam.	Page
Fig. 1. <i>Munida stimpsoni</i> , A. Milne-Edwards,		
a. Right chela of male,	× 1	126
b. Left external maxillipede,	× 2	
	× 2	
Fig. 2. <i>Munida militaris</i> , Henderson,	× nearly 2	137
a. Right chela of female,	× 2	
b. Left external maxillipede,	× 2	
Fig. 3. <i>Munida granulata</i> , Henderson,		
a. Right chela of male,	× 1	133
b. Left external maxillipede,	× 2	
	× 2	
Fig. 4. <i>Munida gracilis</i> , Henderson,		
a. Right chela of female,	× 1	143
b. Left external maxillipede,	× 2	
	× 2	
Fig. 5. <i>Munida militaris</i> , Henderson,		
a. Right chela of male,	× 1	137
b. Left external maxillipede,	× 2	
	× 2	
Fig. 6. <i>Munida inornata</i> , Henderson,		
a. Right chela of male,	× 1	140
b. Left external maxillipede,	× 2	
	× 2	

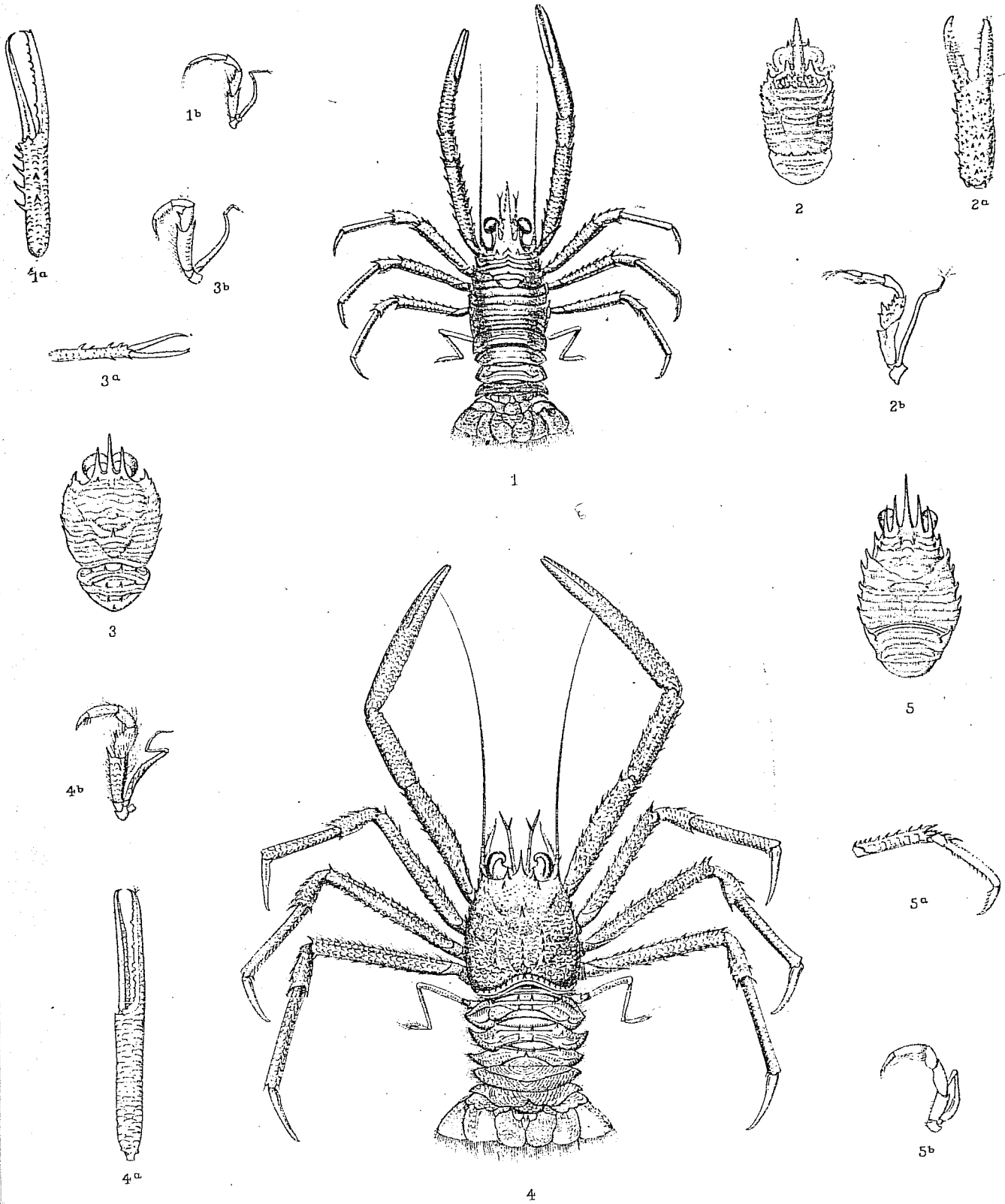
of H.M.S. 'Challenger.'



MUNIDA.

PLATE XV,

	Diam.	Page
Fig. 1. <i>Munida spinifrons</i> , Henderson,	× 2	144
<i>a.</i> Right chela of female,	× 3	
<i>b.</i> Left external maxillipede,	× 3	
Fig. 2. <i>Munida tuberculata</i> , Henderson,	× 3	145
<i>a.</i> Right chela of male,	× 5	
<i>b.</i> Left external maxillipede,	× 5	
Fig. 3. <i>Munida spinicordata</i> , Henderson,	× 3	146
<i>a.</i> Right chela of male,	× 3	
<i>b.</i> Left external maxillipede,	× 5	
Fig. 4. <i>Munida scabra</i> , Henderson,	× 1	134
<i>a.</i> Right chela of male,	× 2	
<i>b.</i> Left external maxillipede,	× 2	
Fig. 5. <i>Eumunida smithii</i> , Henderson,	× 3	169
<i>a.</i> Third right ambulatory limb,	× 3	
<i>b.</i> Left external maxillipede,	× 5	

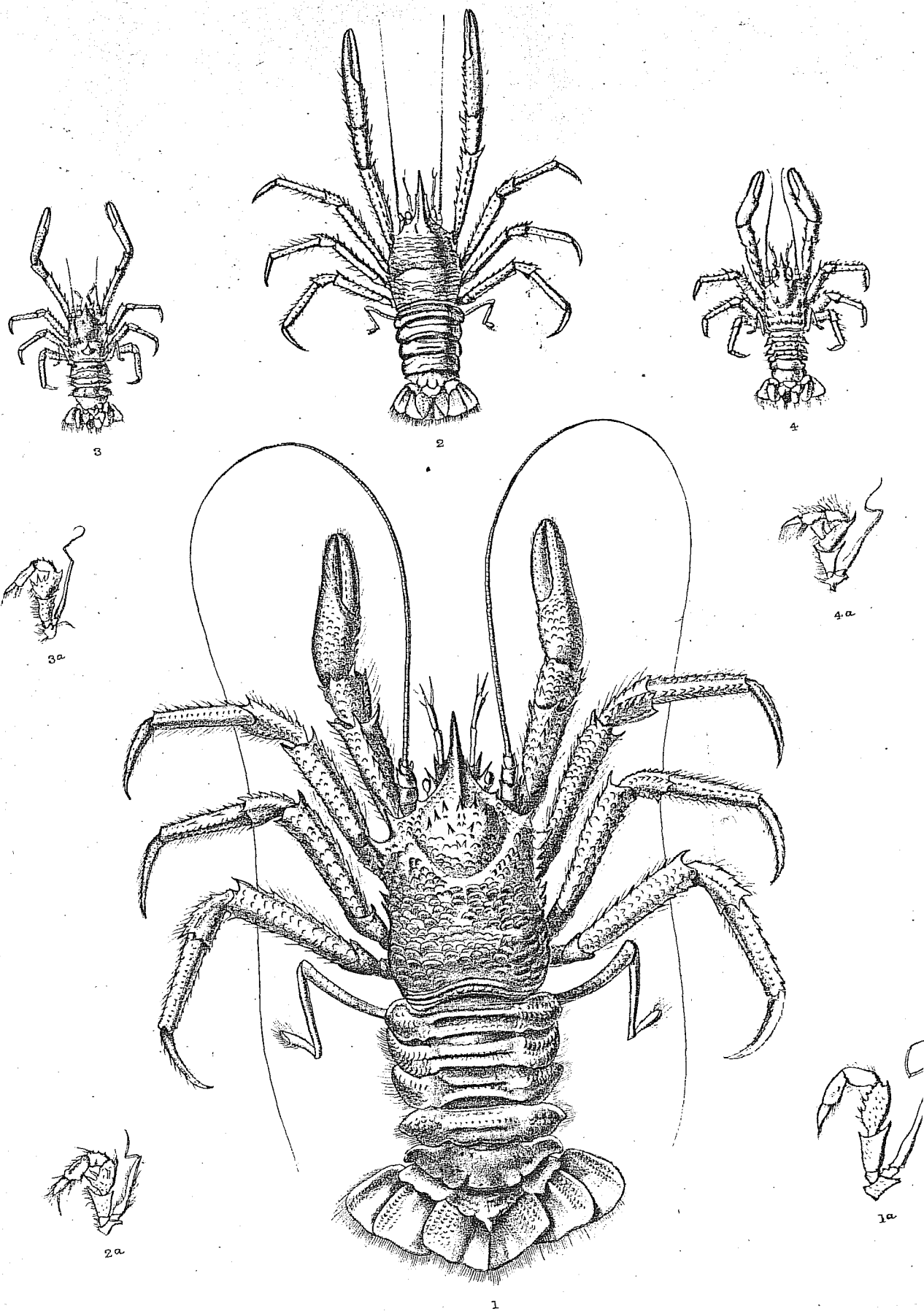


MUNIDA, EUMUNIDA.

PLATE XVI.

	Diam.	Page
Fig. 1. <i>Munidopsis subsquamosa</i> , Henderson, var. <i>aculeata</i> , nov.,	× 1	153
<i>a.</i> Left external maxillipede,	× 1½	
Fig. 2. <i>Munidopsis trifida</i> , Henderson,	× 1	156
<i>a.</i> Left external maxillipede,	× 2	
Fig. 3. <i>Munidopsis serratifrons</i> (A. Milne-Edwards),	× 1	149
<i>a.</i> Left external maxillipede,	× 3	
Fig. 4. <i>Munidopsis erinacea</i> (A. Milne-Edwards),	× 1	149
<i>a.</i> Left external maxillipede,	× 3	

Voyage of H.M.S. "Challenger."



MUNIDOPSIS.

Hob. Morgan lith.

Wes

PLATE XVII.

	Diam.	Page
Fig. 1. <i>Munidopsis brevimana</i> , Henderson, . . . . .	× 1	154
<i>a.</i> Left external maxillipede, . . . . .	× 3	
Fig. 2. <i>Munidopsis brevimana</i> , Henderson ( <i>juv.</i> ), . . . . .	× 2	155
<i>a.</i> Left external maxillipede, . . . . .	× 5	
Fig. 3. <i>Munidopsis milleri</i> , Henderson, . . . . .	× 1	155
<i>a.</i> Left external maxillipede, . . . . .	× 3	
Fig. 4. <i>Munidopsis subsquamosa</i> , Henderson, . . . . .	slightly enlarged	152
<i>a.</i> Left external maxillipede, . . . . .	× 2	
Fig. 5. <i>Munidopsis pilosa</i> , Henderson, . . . . .	× 1	157
<i>a.</i> Right chelipede from above, . . . . .	× 2	
<i>b.</i> Left external maxillipede, . . . . .	× 4	

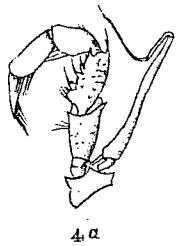
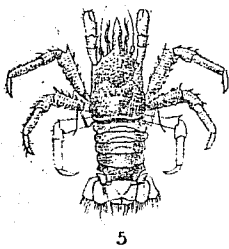
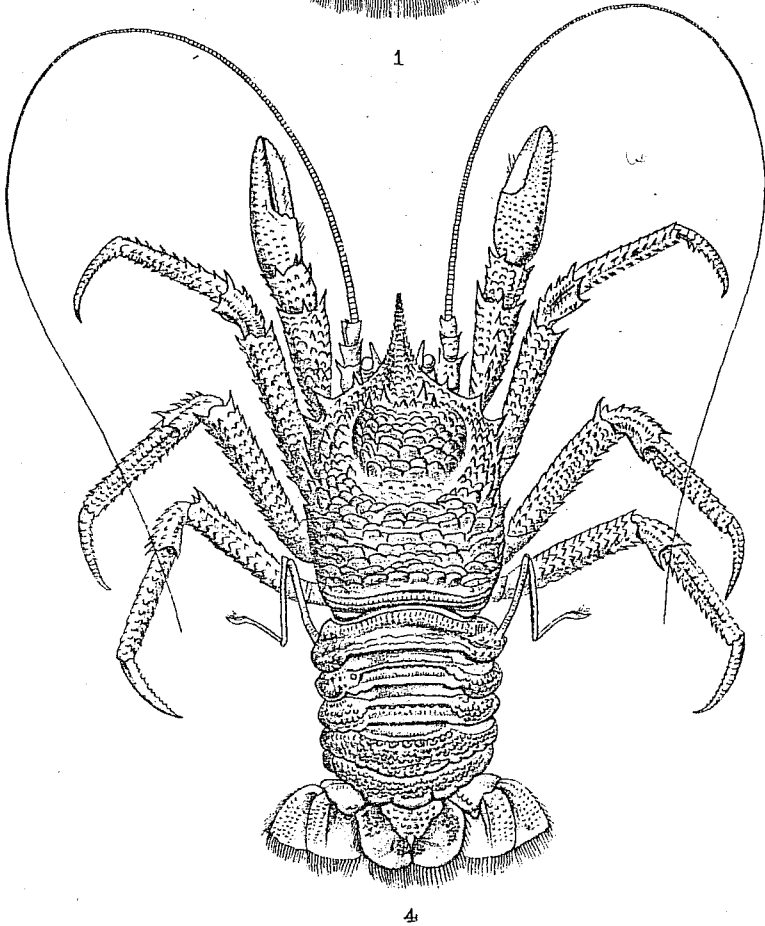
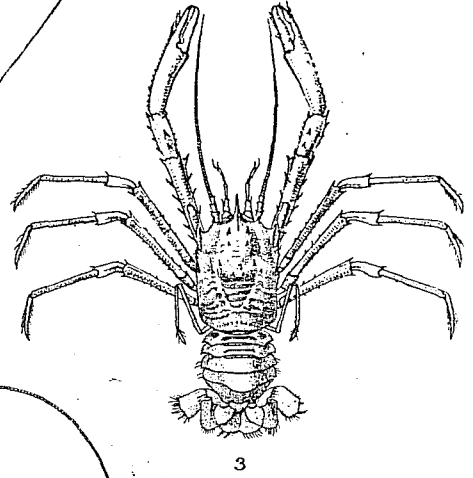
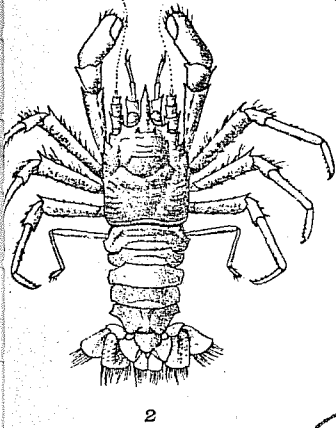
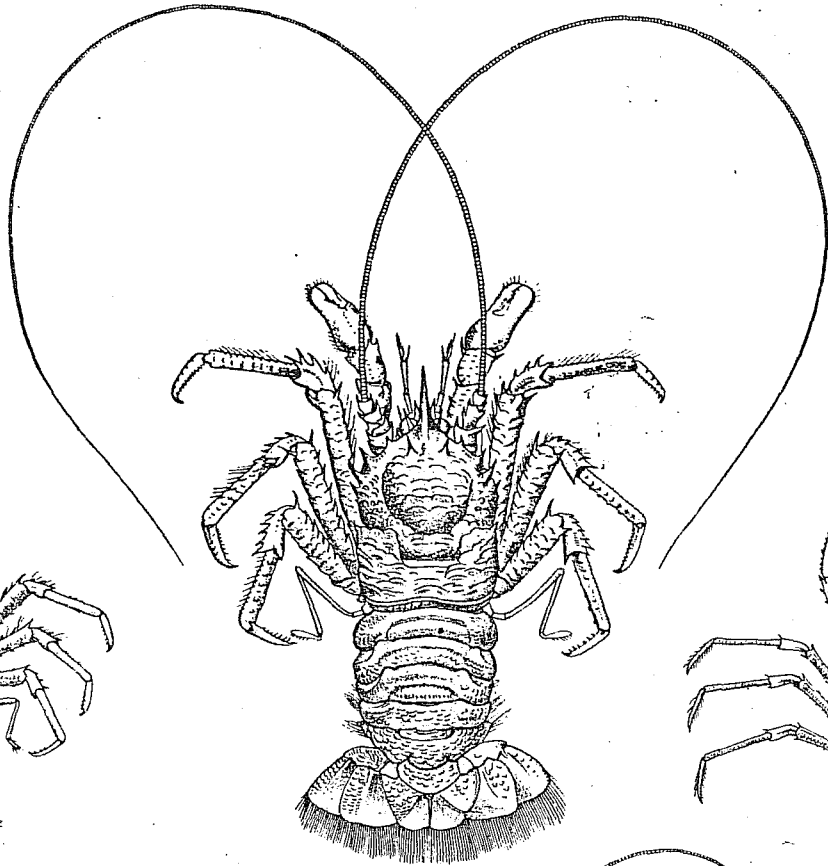
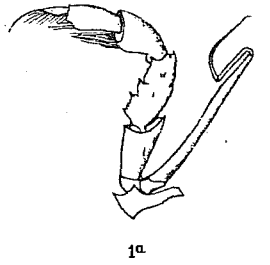
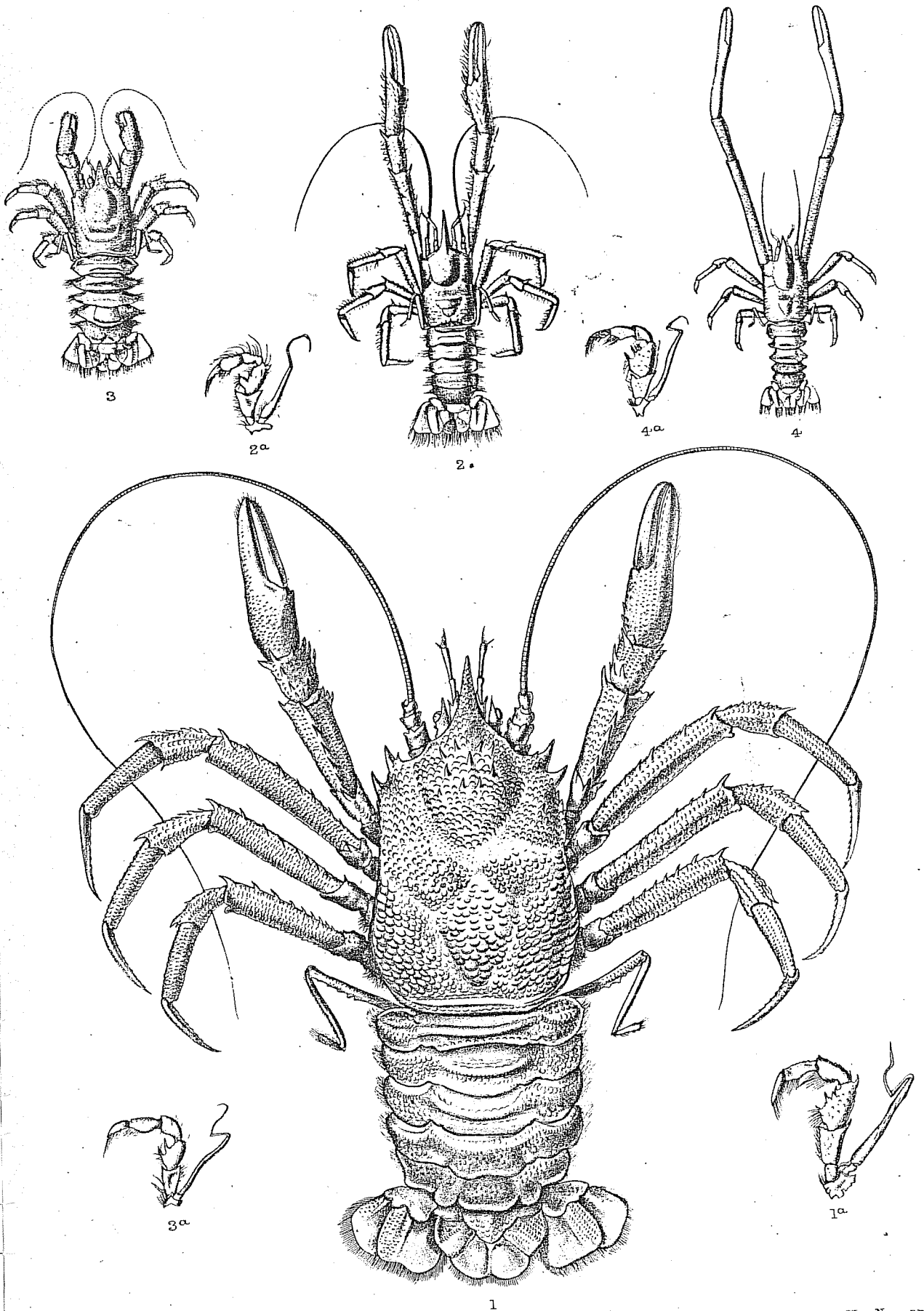




PLATE XVIII.

	Diam.	Page
Fig. 1. <i>Munidopsis antonii</i> (A. Milne-Edwards), . . . . .	slightly enlarged	151
a. Left external maxillipede, . . . . .	× 1½	
Fig. 2. <i>Munidopsis sigsbei</i> (A. Milne-Edwards), . . . . .	× 1	150
a. Left external maxillipede, . . . . .	× 2	
Fig. 3. <i>Elasmonotus lævigatus</i> , Henderson, . . . . .	× 1	164
a. Left external maxillipede, . . . . .	× 3	
Fig. 4. <i>Elasmonotus debilis</i> , Henderson, . . . . .	× 2	165
a. Left external maxillipede, . . . . .	× 5	

Page of HMS. "Challenger."



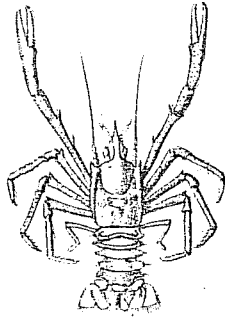
West, Newman & Co. lit.

Robt. Morgan lith.

MUNIDOPSIS. ELASMONOTUS.

PLATE XIX.

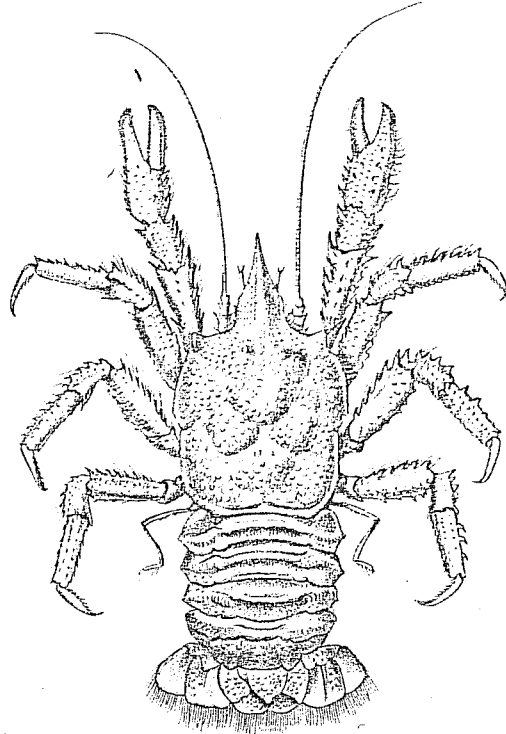
	Diam.
Fig. 1. <i>Elasmonotus latifrons</i> , Henderson, . . . . .	slightly enlarged
<i>a.</i> Left external maxillipede, . . . . .	× 3
Fig. 2. <i>Elasmonotus marginatus</i> , Henderson, . . . . .	slightly enlarged
<i>a.</i> Left external maxillipede, . . . . .	× 2
Fig. 3. <i>Elasmonotus miersii</i> , Henderson, . . . . .	× 2
<i>a.</i> Left external maxillipede, . . . . .	× 5
Fig. 4. <i>Elasmonotus asper</i> , Henderson, . . . . .	× 1
<i>a.</i> Left external maxillipede, . . . . .	× 3
Fig. 5. <i>Elasmonotus armatus</i> , A. Milne-Edwards, . . . . .	× 1
<i>a.</i> Left external maxillipede, . . . . .	× 3
Fig. 6. <i>Galacantha bellis</i> , Henderson, . . . . .	× 1
<i>a.</i> Side view of trunk, . . . . .	× 1
<i>b.</i> Left external maxillipede, . . . . .	× 1



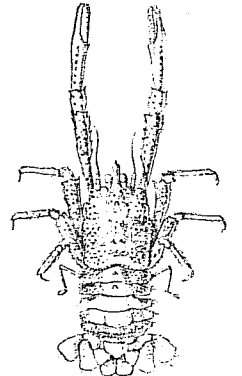
5



5a



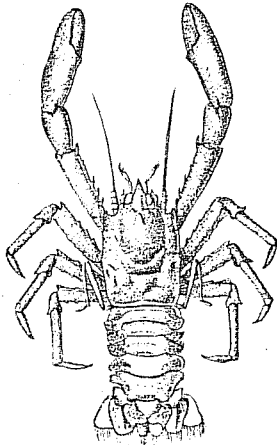
2



4



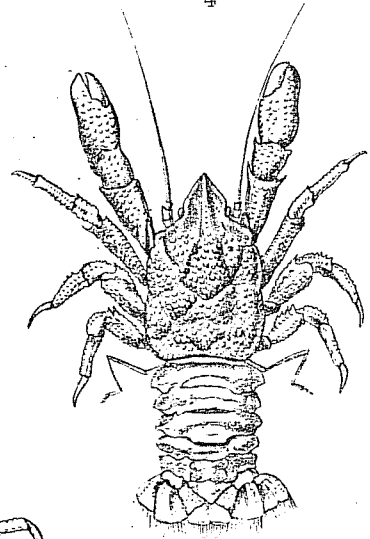
4a



3



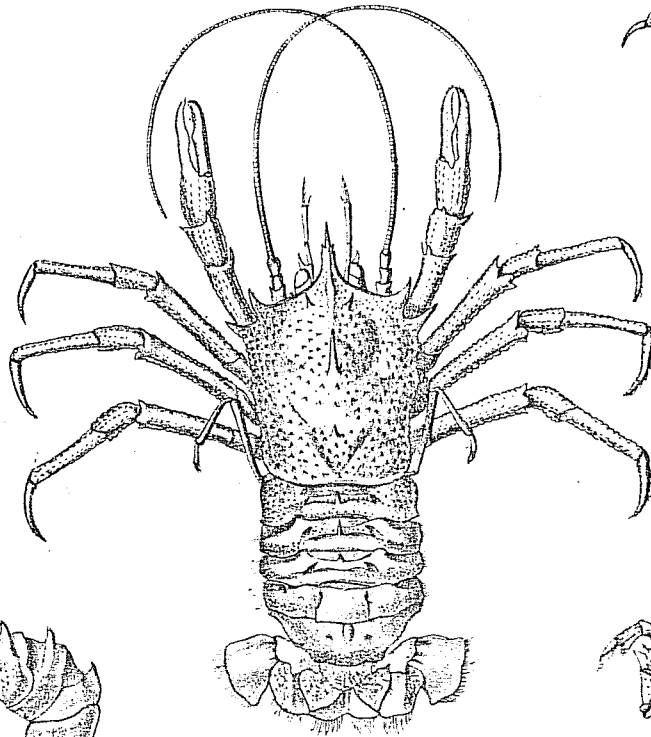
3a



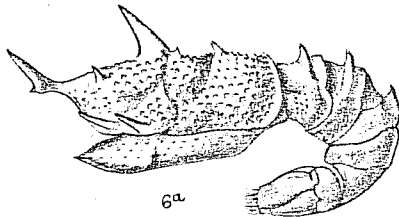
1



1a



6



6a



6b



2a

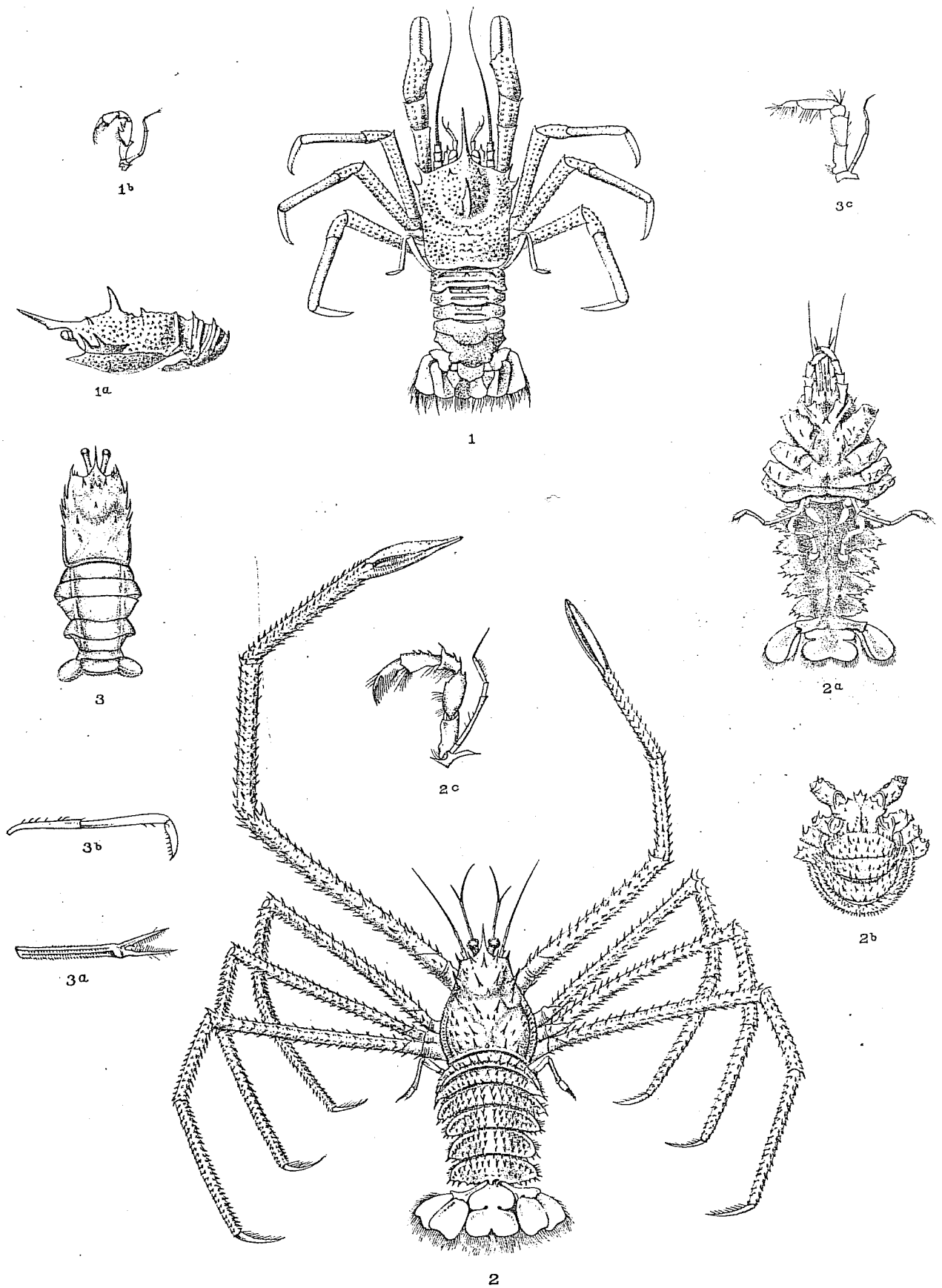
Robt Morgan, Lith.

West, New York

ELASMONOTUS, GALACANTHA.

PLATE XX.

	Diam.	Pag
Fig. 1. <i>Galacantha talismanii</i> , A. Milne-Edwards (?), . . . . .	× 2	16
<i>a.</i> Lateral view of trunk, . . . . .	× 2	
<i>b.</i> Left external maxillipede, . . . . .	× 2	
Fig. 2. <i>Ptychogaster milne-edwardsi</i> , Henderson, . . . . .	× 1	17
<i>a.</i> Under surface of trunk, . . . . .	× 1	
<i>b.</i> Under surface, showing the abdomen folded naturally, . . . . .	× 1	
<i>c.</i> Left external maxillipede, . . . . .	× 2	
Fig. 3. <i>Ptychogaster lævis</i> , Henderson, . . . . .		1
Upper surface of trunk, . . . . .	× 3	
<i>a.</i> Right chela of female, . . . . .	× 3	
<i>b.</i> Portion of the third left ambulatory leg, . . . . .	× 4 $\frac{1}{2}$	
<i>c.</i> Left external maxillipede, . . . . .	× 4	

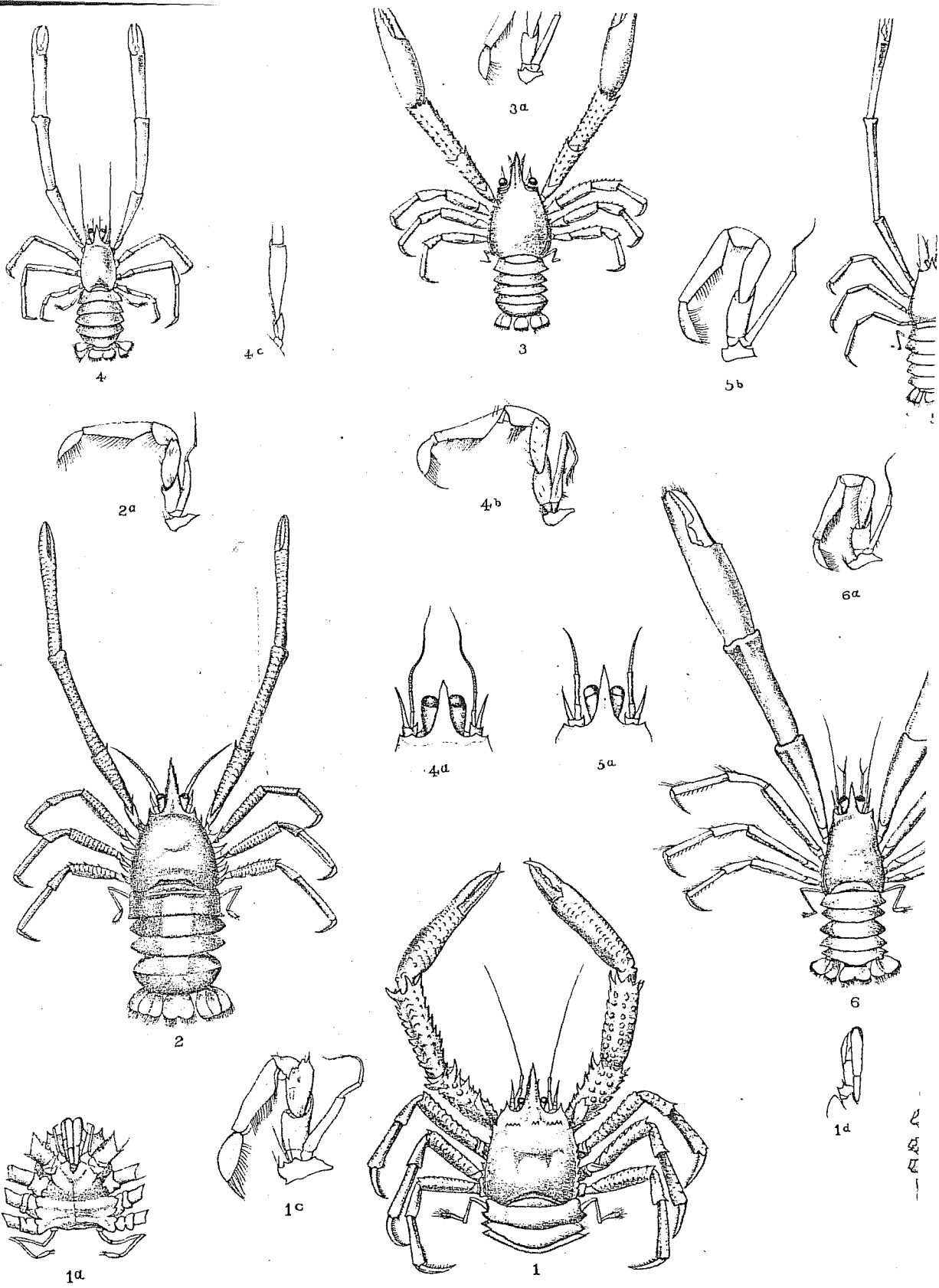


Geo. Wet.

GALACANTHA, PTYCHOGASTER.

PLATE XXI.

	Diam.
Fig. 1. <i>Uroptychus insignis</i> , Henderson,	slightly enlarged
<i>a.</i> Under surface of cephalothorax,	slightly enlarged
<i>b.</i> Under surface, showing the abdomen folded naturally,	× 2
<i>c.</i> Left external maxillipede,	× 3
<i>d.</i> Left external maxillipede, front view,	× 1½
Fig. 2. <i>Uroptychus spinimarginatus</i> , Henderson,	× 2
<i>a.</i> Left external maxillipede,	× 4
Fig. 3. <i>Uroptychus parvulus</i> , Henderson,	× 2
<i>a.</i> Left external maxillipede,	× 5
Fig. 4. <i>Uroptychus australis</i> , Henderson,	slightly enlarged
<i>a.</i> Frontal region,	× 4
<i>b.</i> Left external maxillipede,	× 4
<i>c.</i> Basal joints of right chelipede from above,	× 2
Fig. 5. <i>Uroptychus gracilimanus</i> , Henderson,	slightly enlarged
<i>a.</i> Frontal region,	× 3
<i>b.</i> Left external maxillipede,	× 4
Fig. 6. <i>Uroptychus nitidus</i> (A. Milne-Edwards),	× 1
<i>a.</i> Left external maxillipede,	× 2



UROPTYCHUS.