# STUDIES IN AUSTRALIAN CRUSTACEA.

No. 3.*

By ALLAN R. MCCULLOCH, Zoologist, Australian Museum.

(Plates x.-xi., and Figs. 42-53).

## Family OCYPODIDÆ.

### EUPLAX TRIDENTATA, *A. Milne Edwards.*

*Cleistostoma tridentatum*, A. Milne Edwards, Journ. Mus. Godeff., i., iv., 1873, p. 82.

*Chœnostoma tridentatum*, de Man, Jahrb. Hamburgischen Wiss. Anstalten, xiii., 1896, pp. 93-95, pl. iii., fig. 5, 5*a*, 5*b* (not fig. 4).

*Metaplax hirsutimana*, Grant and McCulloch, Proc. Linn. Soc. N. S. Wales, xxxi., 1906, p. 21, pl. i., fig. 3, 3*a*, 3*b*.

Miss M. J. Rathbun has kindly examined specimens of our *M. hirsutimana* and writes as follows:—"It is quite a puzzling case and belongs to the Family Ocypodidæ, Subfamily Macrophthalminæ.

"In 1873 A. Milne Edwards described *Cleistostoma tridentatum* from Upolu and gave as its collection number 3666*a*. In 1896, de Man described and figured, as he supposed, the remnants of the type specimen (♂) of *C. tridentatum*, A. M. Edw.; he figured the front, maxillipeds and claw, and described the abdomen also. He says that on the bottle there is a label No. 2429, Australia, and inside is the number 3666*a*, and therefore it is doubtful whether it came from Australia or Upolu. The specimen described and figured by de Man is, I think, the same species as your *hirsutimana*, and probably came from Australia. If de Man really handled the type specimen, then A. Milne Edwards' description is quite inadequate.

"De Man further says that the species manifestly does not belong to the genus *Cleistostoma*, in which the maxillipeds fit close together, but perhaps to the genus *Chœnostoma*, Stimpson. I agree with him that it is not a *Cleistostoma*, but would call it

* For No. 2 see Vol. vii., p. 305.

*Euplax*, H. M. Edw. (= *Chœnostoma*, Stimpson). I have compared it with *E. boscii*, Audouin. If, then, we accept de Man's identification, your species would be known as *Euplax tridentata*, A. Milne Edwards, with the type locality probably Australia."

The types of *M. hirsutimana* were taken on the mud-flats at the mouth of Auckland Creek, Port Curtis, Queensland, where it was common. I have since collected it at Ryde and Parramatta, Parramatta River, New South Wales, where it burrows in the mud among the mangroves just below the high water mark. Its colour when alive is brownish grey, with darker marblings on the carapace and legs; the external maxillipeds and pterygostomian regions are white with a broad brown longitudinal bar on either side of the buccal cavern. The abdomen and hands of the males are violet; and the fingers orange. Length of carapace, 10·5 mm.

## Family GRAPSIDÆ.

### SESARMA SMITHII, *Milne Edwards.*

*Sesarma smithii*, Milne Edwards, Arch. Mus. Paris, vii., 1855, p. 149, pl. ix., fig. 2. *Id.*, Ortmann, Zool. Jahrb., vii., 1894, p. 722—references.

The Australian Museum collection includes two Queensland examples of this species; one from Yeppoon, near Rockhampton, and another from the Annan River, Cooktown (Coll. Hedley and McCulloch, Aug., 1906). It has not been previously recognised from Australia.

### SESARMA MEINERTI, *de Man.*

*Sesarma meinerti* (de Man), Alcock, Journ. Asiat. Soc. Bengal, lxix., 1900, p. 417.

Three fine specimens are in the collection from Cooktown, which were received from Mr. E. A. C. Olive. They are apparently the first of this species recorded from Australia.

Of the nine species of *Sesarma* recorded from Australia, only five are in the Australian Museum; they may be distinguished as follows:—

*a.* Upper surface of the hand of the male with oblique comb-like ridges.

*b.* Sides of the carapace without teeth...*erythrodactyla.*

*bb.* Sides of the carapace with one tooth behind the orbital angle .....*bidens.*

*aa*, No oblique comb-like ridges on the hand.

*c*. Breadth between the outer orbital angles greater than the length ..... *meinerti*.

*cc*. Breadth less than the length.

*d*. Two teeth behind the orbital angle; greatest breadth between the posterior teeth. ... *smithii*.

*dd*. One tooth behind the orbital angle; carapace expanded behind ..... *atrorubens*.

The type specimen of *S. atrorubens*, Hess,[1] was said to come from Sydney, together with many other tropical species which do not occur here. The species probably extends to Northern Australia, however, since it has been recorded from several localities in the East Indian Archipelago, New Guinea, and Fiji. Specimens are in the Australian Museum from the two latter localities and the Solomon Islands.

Hess also gave Sydney as the locality for his *S. rotundata*, *S. similis* (=*S. impressa*, M. Edw.),[2] and *S. schutteii* (=*S. gracilipes*, M. Edw.),[2] but they have not since been taken here, though they are recorded from various tropical localities.

## Family GONOPLACIDÆ.

### LITOCHEIRA BISPINOSA, *Kinahan*.

(Fig. 42).

*Litocheira bispinosa*, Kinahan, Journ. Roy. Dublin Soc., i., 1858, p. 121, pl. iii., fig. 1. *Id*, Miers, Zool. "Alert," 1884, p. 243; *Id.*, Miers, "Challenger" Rept., Zool., xvii., 1886, p. 232. *Id.*, Grant in Sayce, Vict. Nat., xviii., 1902, p. 154. *Id.*, Fulton and Grant, Proc. Roy. Soc. Vict., xix. (n.s.), 1906, pp. 9, 18.

*Melia ? brevipes*, Haswell, Proc. Linn. Soc. N.S. Wales, vi., 1881, p. 545, and Cat. Austr. Crust., 1882, p. 72, pl. i., fig. 7.

*? Brachygrapsus lævis*, Kingsley, Proc. Acad. Nat. Sci. Philad., 1880, p. 203.

A fine series of specimens has been presented to the Australian Museum by Mr. C. T. Harrison, who collected them at Hobart,

[1] Hess—Arch. Nat., xxxi., 1865, p. 23, pl. vi., fig. 12.
[2] *Fide* de Man—Zool. Jahrb., 1887, ii., pp. 645 and 653.

Tasmania. Others are in the collection from Griffith Point (type of *M. brevipes*) and Port Phillip, Victoria; St. Vincent Gulf, South Australia; and near Albany, West Australia. Miers ("Alert") has noted that there are specimens in the British Museum from Port Curtis, Queensland, while in the "Challenger" Report he has added Bass Strait and King George Sound

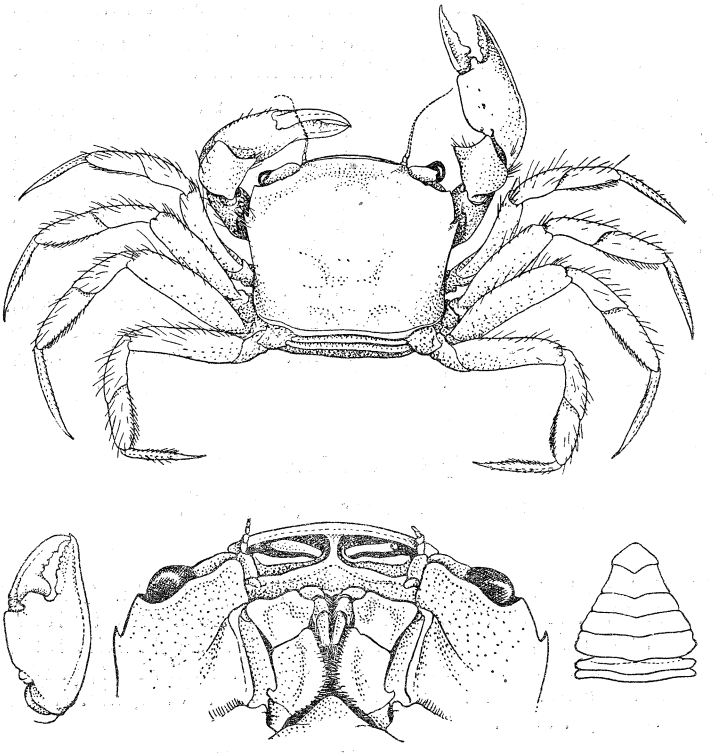

Fig. 42.

to the list of localities. Kinahan's type was dredged in 15 fathoms, Port Phillip, while he also referred to others in the British Museum which were said to be collected by Macgillivray in Torres Strait. These last are not noticed by Miers unless they be the Bass Strait specimens he mentions. At any rate, I think the Port Curtis and Torres Strait localities need verification.

If *Brachygrapsus lævis*, Kingsley, is identical with this species, as seems probable, then its range must be extended to New Zealand.

## Family XANTHIDÆ.

### PILUMNUS SEMILANATUS, *Miers.*

(Fig. 43).

*Pilumnus semilanatus*, Miers, Zool. "Alert," 1884, p. 222, pl. xxii., fig. 13, and "Challenger" Rept., Zool., xvii., 1886, p. 149. *Id.*, Grant and McCulloch, Proc. Linn. Soc. N. S. Wales, xxxi., 1906, p. 17.

Miers' figure apparently represents the young of this species. In large specimens the hairs on the carapace and legs are much

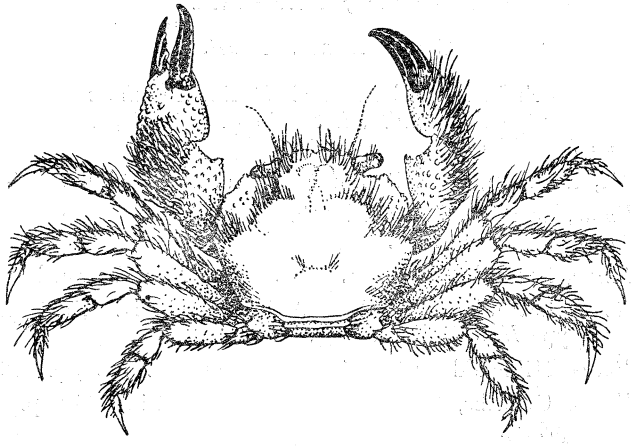

Fig. 43.

longer and more shaggy than he shows them, though their distribution appears to be the same. I therefore give a figure of a full-grown specimen measuring 18 mm. across the carapace.

Examples are in the Australian Museum from Port Curtis and Port Denison, Queensland, while I have also examined one from Port Hedland, North-Western Australia.

### Genus MEGAMETOPE, *Filhol.*

*Megametope*, Filhol, Miss. l'ile Campbell, Crust., 1886, p. 373 (*Xantho rotundifrons*, Milne Edwards).

*Gabrielia*, McCulloch, Rec. Austr. Mus., vii., 1908, p. 54 (*Cycloxanthus haswelli*, Fulton and Grant).

*Megametope* was published by Filhol only as a MS. name which was attached to the type of *Xantho rotundifrons*[3] in the Paris Museum, but the fact that it was definitely associated with a species entitles it to stand as a generic name. *Gabrielia*, mihi, is synonymous with it, while judging from Filhol's figure (pl. xliv., fig. 3), *G. haswelli*,[4] Fulton and Grant, is very probably identical with *M. rotundifrons*.

## Family MAIIDÆ.

### Subfamily INACHINÆ.

### Genus NAXIA, *Latreille.*

*Naxia*, Leach in Latreille, Encycl. Meth., Entom., x., 1825, p. 140—type *Pisa aurita*, Latreille (not *Naxia*, M. Edwards =*Naxioides*).

*Naxia*, Rathbun, Proc. Biol. Soc. Wash., xi., 1897, pp. 157-8.

*Halimus*, Latreille, Encycl. Meth., Entom., x., 1825, p. 700 (no type mentioned).

*Halimus*, Latreille, Fam. nat., p. 272 (*fide* Milne Edwards).

*Halimus*, Latreille, Cuv. Règne Anim., 2 ed., iv., 1829, p. 60 (type *H. aries*, Latreille).

*Halimus*, Milne Edwards, Hist. Nat. Crust., i., 1834, p. 340.

*Kalimus*, Griffiths, Cuv. Anim. Kingdom, xiii., 1833, p. 168, (misprint).

From the fact that Latreille definitely fixed *Pisa aurita* as the type of *Naxia*, and as that species is congeneric with *Halimus aries*, there seems to be no doubt that *Naxia* must be used instead of the generally accepted *Halimus*.

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[3] Milne Edwards—Hist. Nat. Crust., i., 1834, p. 397.

[4] Fulton and Grant—Proc. Roy. Soc. Vict., xix. (n.s.), 1906, p. 6, pl. iii.; McCulloch—Rec. Austr. Mus., vii., 1908, p. 54, pl. xii., fig. 5, 5*a*.

### Naxia aurita, *Latreille.*

*Pisa aurita*, Latreille, Encycl. Meth., Entom., x., 1825, p. 140.

*Halimus auritus*, Milne Edwards, Hist. Nat. Crust., i., 1834, p. 341, and Atlas, Cuv. Règne Anim., 1849, pl. xxviii., fig. 3, 3 *a-b*. *Id.*, Kinahan, Journ. Roy. Dublin Soc., i., 1858, p. ?. *Id.*, Ortmann, Zool. Jahrb., vii., 1893, p. 39.

*Halimus lævis*, Haswell, Proc. Linn. Soc. N. S. Wales, iv., 1880, p. 435, and Cat. Austr. Crust., 1882, p. 6. *Id.*, Baker, Trans. Roy. Soc. S. Austr., xxix., 1905, p. 119, pl. xxi., fig. 1-1*a*. *Id.*, McCulloch, Rec. Austr. Mus., vii., 1908, p. 54.

The third edition of Cuvier's "Règne Animal" not being available to me, I am indebted to Dr. W. T. Calman for a photograph of the plate on which this species is figured. I have compared specimens of *Halimus lævis* with it and am convinced that that species is synonymous with *H. auritus*. As in other species of the genus there is some variation in the breadth of the carapace and the length of the legs, though I have not seen any examples in which the rostral horns are formed exactly as in the figure, they being generally slightly longer and more divergent. Haswell considered that his species differed from *H. auritus* in the size of the chelipeds, but I have specimens of *H. lævis* with these limbs similar to those figured by Milne Edwards.

*N. aurita* was originally described from D'Entrecasteaux Channel, Tasmania, but Milne Edwards gave its habitat as the Indian Ocean. It has been recognised by both Kinahan and Ortmann from Victoria, and as *H. lævis* it has also been recorded from South and South Western Australia.

### Naxia aries, *Guerin.*

*Halimus aries*, Latreille in Guerin, Icon. Règne Anim., iii., 1829-1844, Crust., pl. ix., figs. 2, 2*a-c* (*sine descr.*).

*Halimus aries*, Milne Edwards, Hist. Nat. Crust., i., 1834, p. 341, and Atlas, Cuv. Règne Anim., Crust., 1849, pl. xxviii., figs. 2, 2*a-c*.

*Halimus gracilis*, Baker, Trans. Roy. Soc. S. Austr., xxix., 1905, p. 124, pl. xxiii., fig. 4, 4*a*.

*Halimus gracilis* is apparently identical with *H. aries*; the only difference shown in Baker's and Guerin's figures is in the

length of the legs, but as this character is known to be variable in *N. tumida*, Dana, and other species, it cannot be used as a specific character.

### Hyastenus aries, *Latreille.*

(Fig. 44).

*Pisa aries*, Latreille, Encycl. Meth., Entom., x., 1825, p. 140.

*Chorinus aries*, Milne Edwards, Hist. Nat. Crust., i., 1834, p. 315.

*Hyastenus aries*, Alcock, Journ. Asiatic Soc. Bengal, lxiv. (n. ser.), 1895, p. 211.

Some confusion having arisen between this and the preceding species, I wrote to the authorities of the Indian Museum asking for their assistance to make the matter clear. The

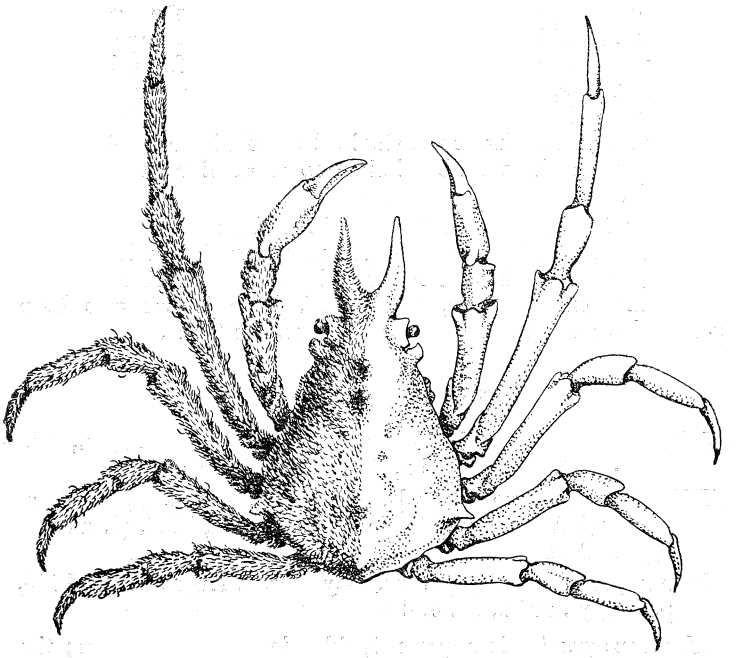

Fig. 44.

Director, Dr. N. Annandale, very generously forwarded me for examination one of the specimens determined by Alcock as *Hyastenus aries*, which I have here figured for comparison with Guerin's illustration of the other species. It was taken in the Gulf of Martaban, 20 fathoms.

## Genus NAXIA, *Latreille.*

### Subgenus MICROHALIMUS, *Haswell.*

*Microhalimus*, Haswell, Proc. Linn. Soc. N. S. Wales, iv., 1880, p. 435 (*M. deflexifrons*, Haswell); *Id.*, Cat. Austr. Crust., 1882, p. 7.

The relationship of *Microhalimus* and *Pseudomicippe*, Heller,[5] has been the subject of considerable discussion. Miers[6] placed the latter in the Majidæ, but Ortmann[7] has shown that it really belongs to the *Inachidæ* and is allied to *Halimus* (=*Naxia*). Haswell considered *Microhalimus* to be a subgenus of *Halimus*, and, having examined his six specimens, I agree with his opinion. Miers[8] also suggested that *Microhalimus* was identical with *Pseudomicippe*, but it differs in lacking the broad antero-superior orbital lobe, in having a long spiniform process projecting forwards from the basal antennal joint, in having the hepatic region armed with strong spines, and in the penultimate joints of the ambulatory legs being slightly expanded instead of cylindrical. Its general form is much more like that of *Naxia* than of *Pseudomicippe*.

I regard *Microhalimus* as only a subgenus of *Naxia* because there are some species of the latter genus possessing characters which are almost intermediate between the two. Haswell considered that it differed in having the rostrum deflexed and in lacking prominent spines on the carapace, but *N. tumida* Dana[9] and *N. spinosa*, Hess[10] often have the rostrum as much deflexed as *M. deflexifrons* while the armature of the carapace is very similar to that of *N. tumida*. In the structure of the

[5] Heller—Sitzb. Akad. Wiss. Wien., xliii., i. 1861, p. 301, pl. i., fig. 3.
[6] Miers—Journ. Linn. Soc., Zool., xiv., 1879, p. 661.
[7] Ortmann—Zool. Forsch. Austr., v., 1894, p. 39.
[8] Miers—Zool. "Alert," 1884, p. 198, and "Chall." Rept., Zool., xvii. 1886, p. 68.
[9] Dana—Wilkes U.S. Explor. Exped., Crust., i., 1852, p. 165, pl. iv., figs. 2*a-d*.
[10] Hess—Arch. Nat., xxxi., 1865, p. 129, pl. vi., fig. 1.

orbit and the postorbital spine *N. tumida* is intermediate between *Naxia* and *Microhalimus*, and as regards the legs, the penultimate joint is often as little dilated in *N. aurita* Latreille[11] as in *M. deflexifrons*.

*Naxia*, *Microhalimus*, and an allied new genus *Zewa*, may be distinguished as follows :—

*a*. Eye-stalks of medium length, not or barely reaching the anterior hepatic spine when laid back. Penultimate joints of ambulatory legs more or less dilated.

*b* A post-ocular spine separated from the orbit by a more or less distinct interspace ; postero-superior orbital spine present or absent. Penultimate joints of legs usually much compressed and dilated distally..... .....*Naxia*.

*bb*. No post-ocular spine, only a postero-superior orbital spine. Penultimate joints of legs very little dilated .....*Microhalimus*.

*aa*. Eye-stalks long and slender, reaching to or beyond the anterior hepatic spine when laid back. Penultimate joints of legs cylindrical, not dilated ... .....*Zewa*.

### NAXIA (MICROHALIMUS) DEFLEXIFRONS, *Haswell*.

(Plate x, figs. 1—4).

*Microhalimus deflexifrons*, Haswell, Proc. Linn. Soc. N. S. Wales, iv., 1880, p. 435, pl. xxv., fig. 2, and Cat. Austr. Crust., 1882, p. 7. *Id.*, Whitelegge, Proc. Roy. Soc. N. S. Wales, xxiii., 1889, p. 225. *Id.*, Fulton and Grant, Proc. Roy. Soc. Vict., xix, (n.s.), 1906, p. 16.

Carapace subpyriform, the regions well defined and the surface uneven but smooth ; together with the legs, it is more or less densely covered with hooked hairs, among which are groups of stronger, curled ones. Branchial regions with two short but strong lateral spines followed by a tubercle ; a second smaller tubercle may be present anteriorly, above the first spine. A rounded tubercle on the hinder margin of the carapace on the median line, and another just in front of it. A low swelling is present on either side near the groove between the branchial and gastric regions, and the cardiac region may tend to form two

[11] Latreille—see *ante*.

low tubercles. Gastric region greatly swollen, almost or quite smooth. Two prominent tubercles between the eyes. Rostrum more or less obliquely deflexed, more so in females than males, and formed of two rather thick, widely diverging spines, which are about as long as the distance from their base to the hinder orbital margin. Orbits without an anterior spine; posterior spine present and sometimes preceded by a very small notch. No post-orbital spine.[12] Eyes of moderate length, and with a small, distal tubercle. Hepatic region with two diverging spines of which the anterior is much the larger and usually has a small tubercle on its front margin; latero-inferior surface with a small tubercle. Basal joint of the antenna much longer than broad with a long denticulate spine at its antero-exterior angle projecting obliquely forward, and visible from above; flagellum stout, nearly twice as long as the rostral horns and wholly visible from above. Merus of external maxilliped with its antero-exterior angle forming a rounded lobe, its front border slightly emarginate; flagellum articulated at the antero-internal angle. Pterygostomial regions each with a prominent tubercle, and there is a smaller one before each anterior angle of the buccal cavern.

Arm of cheliped with obscure tubercles of which the most prominent are two or three on the median line above; a large compressed distal spine or lobe. Wrist with an obtuse crest on the outer surface in the male, rounded in the female. Palm compressed, smooth, much longer than broad, its edges rounded; fingers rather long and slender though shorter than the palm, curved, finely denticulated and acutely pointed. Ambulatory legs of moderate size, decreasing in length backwards. The penultimate joints only very slightly dilated and provided with long, coarse, curved setæ on their lower surfaces; dactyli rather long, curved, with a double row of spinules on their inner margins.

Abdomen of the male consisting of seven segments, of the female, five.

Described from six specimens, one male 12 mm. long being the specimen figured, and five females 14-18 mm. long.

This species is allied to *Naxia tumida*, Dana, from which it may be readily recognised by having the penultimate joints of the ambulatory legs much less dilated and the gastric region smooth, not tubercular.

[12] I consider that the second posterior orbital spine mentioned by Haswell belongs to the hepatic region.

*Hab.*—Haswell's original specimens were collected in Port Jackson and are the only ones I have seen. Fulton and Grant recorded the species from Port Phillip, Western Port, and Wilson Promontory, but the only specimens labelled *M. deflexifrons* in Mr. Grant's collection, which was purchased by the Trustees, are really *N. tumida*, so that those records possibly refer to that species.

## Genus ZEWA,[13] *gen. nov.*

Carapace subpyriform, convex, either tuberculate or smooth, without long spines. Rostrum formed of two diverging spines. Eye-stalks long, partially retractile towards the sides of the carapace. No true orbit: supraocular eave with a spine at its hinder angle; no true postocular spine, but a flattened one projects forwards from the hepatic region which is not cupped and affords little shelter to the eye when retracted. Basal antennal joint of moderate breadth, its antero-external angle a little produced outwards; flagellum visible from above. Merus of external maxillipeds a little broader than the ischium, expanded at the antero-external angle, and bearing the palp at the antero-internal angle. Chelipeds of adult male enlarged. The first pair of ambulatory legs the longest. Penultimate joints of all the legs cylindrical, not expanded distally. Abdomen of the male composed of seven distinct segments.

*Type.*—*Z. banfieldi*, sp. nov. Also includes *Pseudomicippe varians*, Miers.

This genus is allied to *Pseudomicippe*, Heller, from which it differs in the formation of the orbits, there being no large antero-superior lobe as in that genus, while the hinder angle is produced as a sharp spine. It differs from *Naxia*, Latreille (*Halimus*, Auct.) in having no large spines on the carapace and in the penultimate joints of the legs being cylindrical instead of dilated distally.

### ZEWA BANFIELDI, *sp. nov.*

(Plate x., figs. 5-6).

Carapace elongate-triangular, the regions fairly well defined, the surface uneven and rough with large tubercles. A very

[13] "Zewa," a name for a crab in the Miriam language, Torres Strait.

prominent tubercle above each orbit. Gastric region with four strong ones on the median line and two others on either side. Cardiac region surmounted by two pairs of small tubercles, between which and a sharp intestinal one is a still smaller pair. A large tubercle in the hollow between the gastric and branchial regions, while many others are present on the hepatic, branchial, and hinder regions of the carapace. Rostral horns a little deflexed, cylindrical, their length equal to rather more than one-third the rest of the carapace. Anterior hepatic (post-orbital) spine directed obliquely forwards, broad distally, followed by a small tubercle; a large infero-lateral and one or two postero-lateral hepatic tubercles.

Antennal flagella stout, a little longer than the rostral horns and wholly visible from above. Antero-external angle of the merus of the maxillipeds forming a broadly rounded lobe. Pterygostomial regions each with a large external tubercle, and there is another in front of each anterior angle of the buccal cavern.

Anterior segment of the sternum of the male with two raised ridges diverging backwards, ending in small tubercles, and parallel with the margins; each of the three following segments bears several tubercles. Abdomen with a large median tubercle on each segment, the fifth joint narrowest, the last broadly triangular.

Arm of the chelipeds with two or three tubercles on the median line above and a compressed distal lobe. Wrist with an obtuse crest on its outer surface. Palm a little swollen, longer than broad, and smooth; fingers pointed, finely denticulated, slightly gaping posteriorly. All the joints with long, coarse scattered setæ. Walking legs long and slender, decreasing in length backwards; all the joints except the dactyli, are cylindrical and are provided with stiff setæ, among which are groups of curled setæ on their upper surfaces. The penultimate joints have also numerous long and strong setæ on their lower surfaces. Dactyli long and curved, with a double row of spinules on their inner margins.

*Hab.*—Described from a single male specimen, 29 mm. long including the rostrum, from Dunk Island, near Cairns, Queensland. It is named after its collector, Mr. E. J. Banfield, to whom the Trustees are indebted for many rarities of both Crustacea and fish.

### ZEWA VARIANS, Miers.

*Pseudomicippe? varians*, Miers, Ann. Mag. Nat. Hist., (5), iv., 1879, p. 12, pl. iv., fig. 8, also Zool. "Alert," 1884, p. 197, and "Challenger" Rept., Zool., xvii., 1886, p. 68. *Id.*, Ortmann, Zool. Forsch. Austr., v., 1894, p. 40. *Id.*, Calman, Trans. Linn. Soc., (2), viii., 1900, p. 39, pl. ii., figs. 25-26.

Both Miers and Calman have expressed doubts as to this species being correctly referred to *Pseudomicippe*, though their opinion was not shared by Ortmann. I consider that it belongs to the same genus as my *Zewa banfieldi*, differing from *Pseudomicippe* in the general form of the anterior portion of the carapace and particularly in the structure of the orbits.

I have examined two specimens, the first a female with a carapace, including the rostral horns, 18 mm. long, from Thursday Island; the second is a small male, 10 mm. long, collected at Dunk Island by Mr. E. J. Banfield. The species is also recorded from Port Denison, Queensland; Torres Strait; and Shark Bay, Western Australia. Miss Rathbun has kindly re-examined the Port Jackson specimen received from this Museum as *P. varians*,[14] and informs me that it is really *Micippoides longimanus*, Haswell, so that *Z. varians* is probably confined to the tropics.

### TUMULOSTERNUM, *gen. nov.*

(Fig. 45).

Carapace triangular, with tubercles and short tubercular spines; the regions fairly well delimited. Rostrum formed of two short broad spines, which are a little oblique in the male, and more so in the female. Eyestalks short, each retractile against a stout, angular post-ocular spine, which is somewhat excavated to receive it; no preocular spine, hinder angle of supraocular eave produced outwards. Basal antennal joint broad, bilobed anteriorly and deeply grooved on the lower surface. External maxillipeds deeply sculptured, the merus as wide as the ischium, with a broad external lobe; palp articulated at antero-internal angle. Pterygostomian and hepatic regions with large upstanding flat-topped tubercules, of which the two largest are on the side of the hepatic regions, and are visible from above.

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[14] Rathbun—Proc. U.S. Nat. Mus., xvi., 1893, pp. 67 and 92.

Legs rather short and thick; chelipeds very large in the male with broad, flattened palms.

Abdomen consisting of seven segments in both sexes.

*Type.* — *Micippoides longimanus*, Haswell (fig. 45).

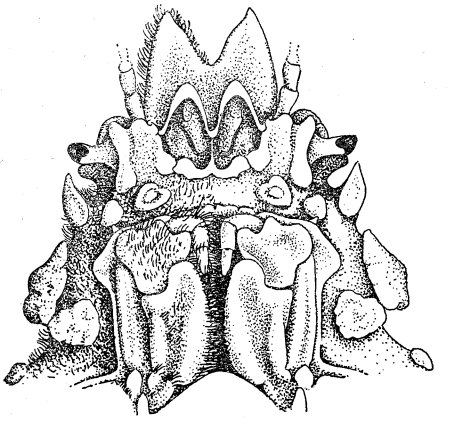

Fig. 45.

When describing *M. longimanus*, Haswell recognised that it was probably distinct from *Micippoides*, A. Milne Edwards, while Miss Rathbun has recently informed me that she also thinks that it does not belong to that genus. It differs in the form of the basal antennal joint and the structure of the orbit, while *Micippoides* also lacks the flattened tubercles which are so characteristic of *longimanus*.

GONATORHYNCHUS TUMIDUS, *Haswell.*

(Fig. 46).

*Gonatorhynchus tumidus*, Haswell, Proc. Linn. Soc. N. S. Wales, iv., 1880, p. 437, pl. xxv., fig. 4, and Ann. Mag. Nat. Hist. (5), v., 1880, p. 145; *Id.*, Haswell, Cat. Austr. Crust., 1882, p. 10. *Id.*, Miers, "Challenger" Rept., Zool., xvii., 1886, p. 25. *Id.*, Fulton and Grant, Proc. Roy. Soc. Vict., xix. (n.s.), 1906, p. 16.

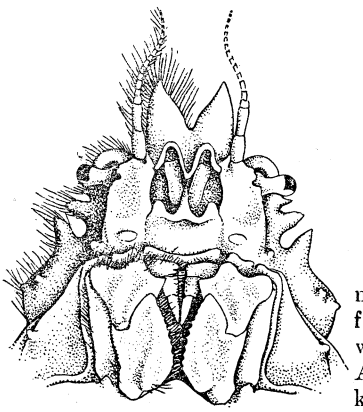

Fig. 46.

A large female specimen, 33 mm. long, is in the Museum from South-western Australia, which was collected by Mr. A. Abjornssen. The species is known from Port Jackson and Port Phillip.

ERUMA, *gen. nov.*

(Fig. 47).

Carapace triangular, smooth, the regions well defined. Rostrum formed of two rather short spines, obliquely deflexed. Eyestalks long, retractile against the sides of the carapace when they are partly hidden from above by the two postocular spines; no preocular spine, hinder angle of the supraocular eave produced outwards. Basal antennal joint broad with the antero-external angle greatly produced, visible from above; a very small spine near the antero-internal angle. Merus of external maxillipeds as wide as the ischium, the antero-external angle scarcely expanded; palp articulated at the antero-internal angle.

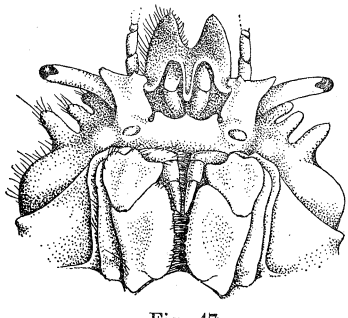

Fig. 47.

Legs rather short and thick, the propodus and dactylus of each with a small raised buttress fitting against the overlapping lobes of the preceding joint. Chelipeds not much enlarged in the male.

Abdomen consisting of seven segments in both sexes.

*Type.*—*Paramicippa hispida*, Baker.

ERUMA HISPIDUM, *Baker.*

(Fig. 48).

*Paramicippa hispida*, Baker, Trans. Roy. Soc. S. Austr., xxix., 1905, p. 126, pl. xxiv., fig. 6, 6*a*.

Two specimens, a male and female, are in the Museum which were received from Mr. W. Baker as his *P. hispida* from South Australia. They differ so much in some important details from his figures that I have re-figured them here.

Mr. Baker compared his species with *P. tuberculosa*, Milne Edwards, which is the type of the genus *Paramicippa* and belongs to the subfamily Maiinæ, but it appears to me to belong

to the Inachinæ and is closely allied to *Gonatorhynchus*, Haswell. I have therefore proposed the new genus *Eruma* for it as above.

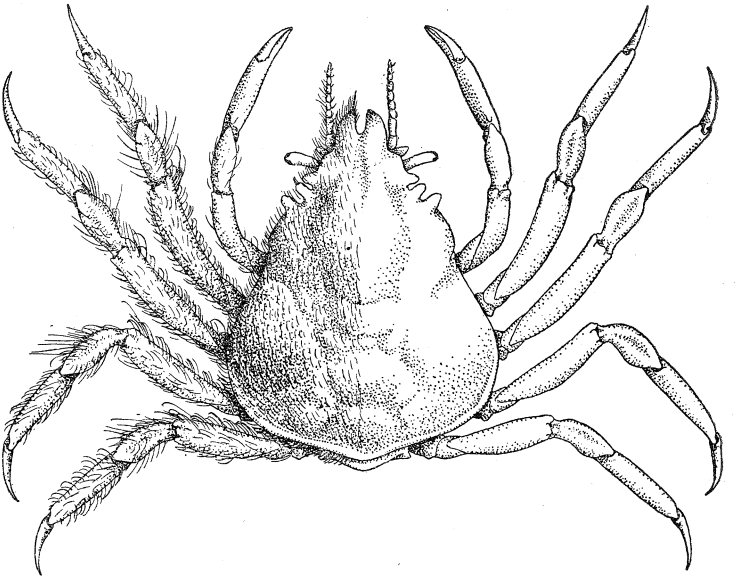

Fig. 48.

## Subfamily MAIINÆ.

### PARAMICIPPA TUBERCULOSA, *Milne Edwards.*

*Paramicippa tuberculosa*, Milne Edwards, Hist. Nat. Crust., i., 1834, p. 333. *Id.*, Baker, Trans. Roy. Soc. S. Austr., xxix., 1905, p. 125. *Id.*, Fulton and Grant, Proc. Roy. Soc. Vict. (n.s.), xix., 1906, p. 17.

*Micippa parvirostris*, Miers, Ann. Mag. Nat. Hist. (5), iv., 1879, p. 13, pl. iv., fig. 9. *Id.*, Haswell, Cat. Austr. Crust., 1882, p. 23.

Acting on information written on the label of the type specimen of *Micippa parvirostris* in the British Museum, Fulton and Grant referred to that species as *P. tuberculosa* in their Census of the Victorian Decapod Crustacea, though they did not give their reasons for doing so. Baker also did the same without

explanation. I therefore forwarded a specimen of *M. parvirostris* to the Paris Museum for comparison with the type of *P. tuberculosa*, and Professor L. E. Bouvier has very kindly informed me that it is undoubtedly identical with that species.

## Family PARTHENOPIDÆ.

### CERATOCARCINUS DILATATUS, *A. Milne Edwards.*

*Ceratocarcinus dilatatus*, A. Milne Edwards, Nouv. Arch. Mus. Paris, viii., 1872, p. 256, pl. xiv., fig. 2.

A fine female example, dredged near Murray Island, Torres Strait, agrees very well with the figure quoted. Neither the genus nor the species appear to have been previously recognised from Australia.

## Family PAGURIDÆ.

### PAGURISTES SQUAMOSUS, *sp. nov.*

(Fig. 49).

*Paguristes barbatus*, Whitelegge, Proc. Roy. Soc. N. S. Wales, xxiii., 1889, p. 232. *Id.*, Stead, Zoologist, 1898, p. 208 (? not *Clibanarius barbatus*, Heller).

Carapace smooth only towards the centre, otherwise rough with irregular pits and furrows; frontal region hollowed out above with some larger and smaller elevations. Sides of the carapace hairy, while scattered tufts are present on the rougher parts above. Rostrum triangular, projecting well beyond the antero-lateral angles, each of which bears a minute spine; the interspaces between them and the rostrum are excavated and have thick raised edges. Eye-stalks rather slender, their length equal to about two-thirds the width of the anterior portion of the carapace, a trifle longer than the antennular peduncle. Ophthalmic scales large, bi- or trifid at the tip. Basal portion of antennal acicle broad, densely setose, with 3-4 external, and 1 internal spine; anterior portion styliform, hairy, with 2-3 strong spines on its inner and outer borders, reaching almost to the end of the peduncle. Flagellum extending to the tips of the chelipeds.

Chelipeds subequal, densely covered with hair, especially on the edges where it is long and felted, and completely hides the characters beneath it. Arms with some spines along their lower edges, and two or more above. Inner border of wrist with about four strong black-tipped spines; remaining portions of upper surface densely spiny, the spines changing to

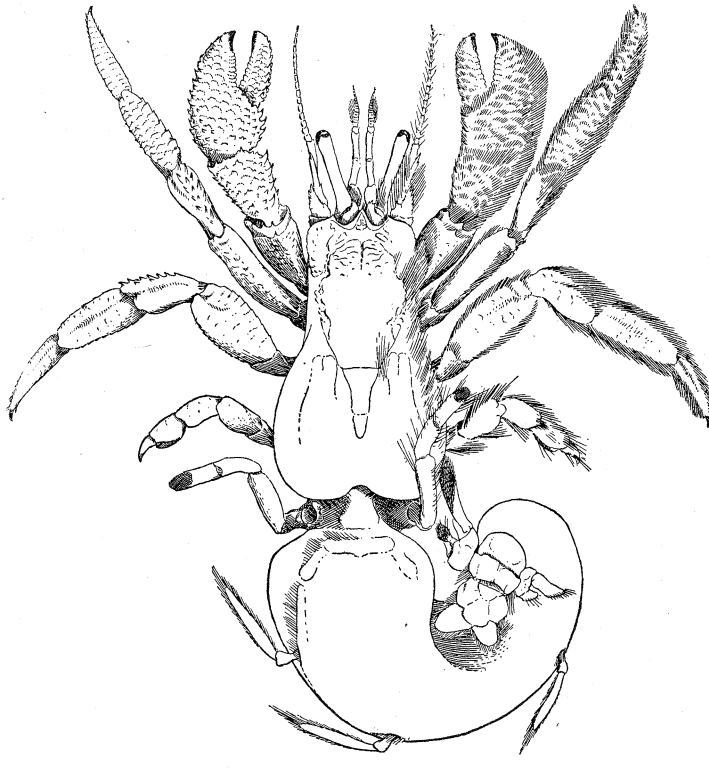

Fig. 49.

more or less squamiform tubercles anteriorly; lower and inner surfaces smooth, a small spine at the lower articulation with the hand. Hand with three strong black-tipped spines in a line with those of the carpus; outer surface with irregular rows of spines, upper surface with squamiform tubercles which have crenulated edges and are fringed with hairs. Fingers with similar tubercles, the upper also with spines; their cutting

edges are crenulate and have broad black horny tips, and meet along their whole length. Inner surfaces of hands a little rough, with tufts of setæ.

Second and third legs reaching beyond the chelipeds, with long felted hairs along their upper and lower borders. All the legs are similar. Upper border of the merus with a few weak spines which are most distinct on the third pair. Carpus with strong spines above, and a very distinct groove on the hinder surface which also extends on to the propodus and dactylus. Anterior faces of the last two joints with broad squamiform tubercles which have crenulate and hairy margins like those of the chelipeds. Dactylus broad and longer than the penultimate joint, with a black terminal spine, and some smaller ones on the upper and lower edges near it.

*Colour.*—Whitish in spirits. In life, pink with pale brownish hairs; the rougher parts more or less tinted with green. Spines on chelipeds madder brown. Eye-stalks green. Antennules, antennæ, and third maxillipeds with alternating brown and white rings. Abdomen translucent grey and white, caudal appendages white.

I have examined the specimens which Whitelegge doubtfully identified as *Paguristes barbatus*, Heller, and find them to be identical with those described above. I consider that they differ from that species in having the upper surface of the hand covered with squamiform tubercles. Neither Heller nor Ortmann mention any such tubercles in their description of *P. barbatus*, whereas they are so distinct in all that I have seen that it is not likely that they would have been overlooked. Mr. Stead has enabled me to examine the specimens which he recorded as *P. barbatus*, but I regard them also as distinct from that species.

*Type.*—A male, with a carapace 19 mm. long, from Maroubra, near Sydney. Others are in the Australian Museum from the same locality which are somewhat larger; Whitelegge's specimens were from several localities in Port Jackson and on the coast near Sydney.

### PAGURISTES BARBATUS, *Heller.*

*Clibanarius barbatus*, Heller, Verh. zool. bot. Ges. Wien., 1862, p. 524, and Reise "Novara", Crust., 1865, p. 90, pl. vii., fig. 5. *Id.*, Miers, Cat. Crust. N. Zealand, 1876, p. 67. *Id.*, Filhol, Miss. l'ile Campbell, iii., 1886, Crust., p. 424. *Id.*, Thomson, Trans. N. Z. Inst., xxxi., 1898, p. 172.

*Paguristes barbatus*, Henderson, "Challenger" Rept., Zool. xxvii., 1886, p. 78. *Id.*, Ortmann, Zool. Jahrb., vi., 1892, p. 279, pl. xii., fig. 7.

Henderson was the first to indicate that *Clibanarius barbatus*, Heller, was really a *Paguristes* when he compared it with his *P. subpilosus*, but Ortmann has since described Japanese specimens, which he identifies as Heller's species, and gives his reasons for placing it in *Paguristes*.

Heller's type was said to have been taken at Auckland, New Zealand, while Miers identified specimens in the British Museum as *C. barbatus* from the same locality. Thomson, however, states that these are the only records of its occurrence in New Zealand, and that it has not been again collected there; as many of the "Novara" localities were incorrect, and as but little reliance can be placed on Miers' identification, it may be that *P. barbatus* is not a New Zealand species.

I have shown (*ante*) that the specimens from New South Wales, which were identified by Whitelegge and Stead as *P. barbatus*, are not that species, but *P. squamosus*. Lucas[15] recorded a specimen of Heller's species from Port Phillip, Victoria, but the late Mr. F. E. Grant, according to his notes, believed that it was really *P. sulcatus*, Baker. If this is correct, as I think probable, the true *P. barbatus* has not yet been recognised from Australia.

### PAGURISTES PUGIL, *sp. nov.*

(Fig. 50).

*Paguristes*, sp., Whitelegge, Proc. Roy. Soc. N. S. Wales, xxiii., 1889, p. 232, sp. 361.

Frontal region hollowed out as in *P. squamosus*. Sides of carapace hairy, upper parts with scattered tufts. Rostrum elongate triangular, projecting well beyond the antero-lateral angles, each of which forms a minute spinule; the interspaces between them and the rostrum are excavated and have thick raised edges. Eye-stalks slender, their length equal to the width of the carapace, a trifle longer than the antennular peduncles. Ophthalmic scales large, bi- or trifid at tip. Basal portion of antennal acicle with 2-3 external and 1-2 internal spinules; anterior portion styliform, tomentose, with several strong spines on their inner and outer borders, reaching to the anterior third

[15] Lucas—Proc. Roy. Soc. Viet., xxii., 1886 p. 62

of the peduncle. Flagellum not nearly reaching the tips of the chelipeds.

Chelipeds sub-equal, densely covered with felted hair which is longest on the outer edges and largely hides the characters beneath it. Arms with a row of spiniform tubercles along each lower edge, those of the inner the most prominent; two spinules

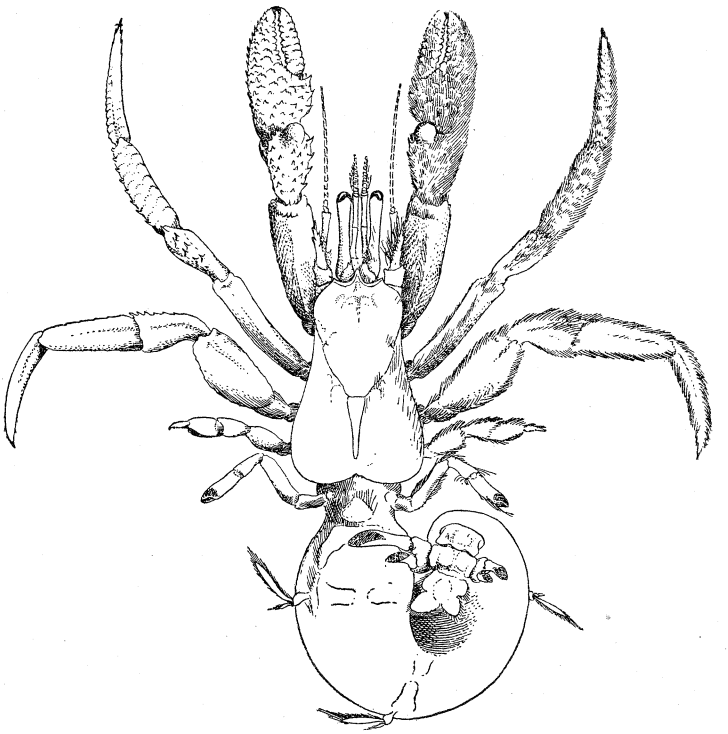

Fig. 50.

are present on the upper anterior margin, and some smaller ones on the ridge behind the distal constriction. Inner border of wrist with four strong black-tipped spines, while other smaller ones cover the upper surface; a very large rounded boss over the upper articulation with the hand. Lower and inner surfaces smooth, only a small spinule at the lower anterior articulation. Hand with three strong black-tipped spines in a line with those of the wrist; outer surface thickly set with

spiniform tubercles, which become squamiform with crenulate and hairy edges on the upper face. Fingers similar to the hand; they have black tips, and leave a narrow gap between them when closed. Inner face of the hand swollen, with tufts of bristles.

Second and third legs reaching well beyond the chelipeds, with long felted hairs along their upper and lower borders. All the legs are alike, but the armature of the hinder pairs is weaker than that of the front. Upper and lower borders of the merus with some very indistinct tubercles, which are largest in the third pair. Carpus with large spines above, and a very deep sulcus behind which also extends on to the propodus and dactylus. Anterior faces of the last two joints with broad squamiform tubercles which have crenulate, hairy edges, like those of the chelipeds; both are rather longer than in *P. squamosus*, and the dactylus is a little longer than the propodus. It terminates in a black spine and there are some small ones on the edges near the tip.

*Colour.*—Whitish in spirits, the hairs pale brown.

This species is very similar to *P. squamosus* but is characterised by the large rounded bosses on each wrist. It has also more slender legs and chelipeds than that species, and the eyestalks are longer.

*Type and Localities.*—A male, with a carapace 11 mm. long, from Watson Bay, Port Jackson. Another smaller specimen from the same locality is also in the museum collection, while Mr. J. Gabriel has also sent me three others which he dredged in Port Phillip, Victoria.

### PAGURISTES TUBERCULATUS, *Whitelegge.*

(Fig. 51).

*Clibanarius*, sp., Whitelegge, Proc. Roy. Soc. N. S. Wales, xxiii., 1890, p. 232, No. 359.

*Paguristes tuberculatus*, Whitelegge, Mem. Austr. Mus., iv., 1900, p. 169, figs. 11, 11*a*.

The Trustees have received from Mr. C. T. Harrison a fine large male of this species which he collected in the estuary of the Derwent River, Tasmania. It is more than twice the size of Whitelegge's specimens, the carapace being 11·5 mm. long, which in the type is scarcely 5 mm. It differs from the type

only in having the dactylus of the third left leg more distinctly hollowed out behind, and the posterior margin prominent and provided with tubercles like that of the propodus. As Whitelegge's figures only show portions of the animal I take this opportunity of giving a complete figure of the Tasmanian specimen.

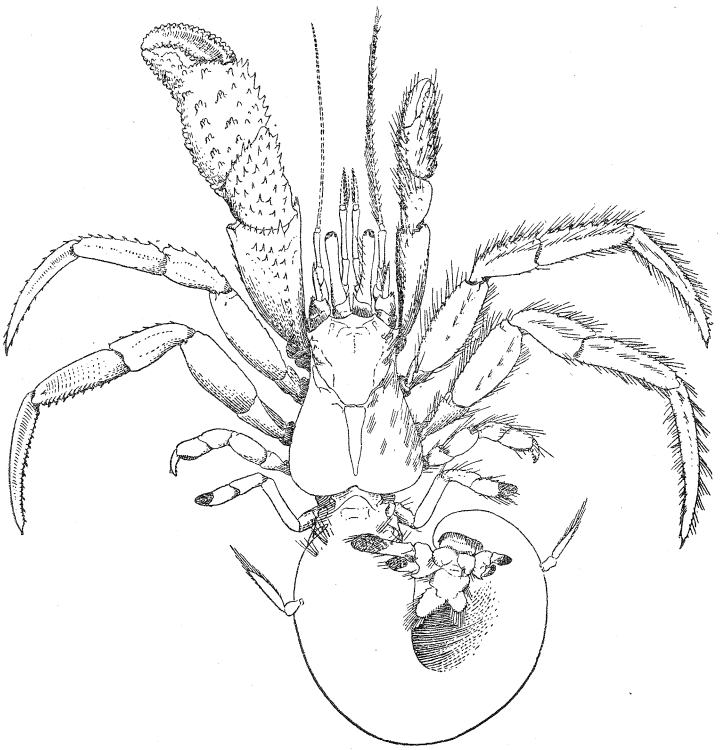

Fig. 51.

The specimen from off Port Jackson which Whitelegge identified as *Clibanarius*, sp., in a shell of *Turritella gunni*, is still in the Museum collection, and is really *Paguristes tuberculatus*. Four others from near Albany, West Australia, are in the Australian Museum (Coll. A. Abjornssen).

While withdrawing a number of the "Thetis" specimens from their shells for their better preservation, I noticed that

almost every shell had a colony of Polyzoa growing around its mouth. It is possibly a species of *Cellepora*, and the fact that it is the same on all leaves little doubt that the association of the two animals is not accidental. Similar growths occurred on the shells of specimens from Wreck Bay, New South Wales, 20 fathoms (Coll. C. Hedley).

### PAGURISTES ACICULUS, *Grant.*

*Paguristes aciculus*, Grant, Proc. Linn. Soc. N. S. Wales, xxx., 1905, p. 319, pl. xi., figs. 3, 3*a*.

Having re-examined the type of *P. aciculus* I find that several important characters have not been quite correctly described by Grant. He also makes no mention of a row of minute spinules on the raised margin behind the anterior constriction on the arms of the chelipeds. The merus joints of the anterior ambulatory legs have spines along their lower margins; they are described as being without spines. The dactyli also have a row of very fine spinules along their supero-internal angles, which, however, are not easily distinguished among the long hairs. The armature of the second ambulatory legs is not nearly so strong as that of the first.

In the figure the legs are drawn as viewed obliquely from above, so that the joints appear more slender than they really are. The antennal peduncles are too long, they being slightly shorter instead of longer than the eye-stalks.

The following is a key to the Australian species of *Paguristes* represented in the Australian Museum:—

*a*. Left cheliped much larger than the right.

*b*. Hands and fingers with rows of large compound tubercles, interspaces smooth ..... *tuberculatus*.

*bb*. Hands and fingers closely covered with very small granules ..... *frontalis*.

*aa*. Chelipeds sub-equal.

*c*. Dactyli of legs stout, their anterior faces and those of the propodi with squamiform tubercles having hairy edges.

*d*. Chelipeds and legs with long felted hair which hides the characters beneath it; upper face of hand with squamiform tubercles.

*e.* Wrist with a large anterior rounded boss...*pugil.*

*ee.* Wrist without such a boss.....*squamosus.*

*dd.* Hair on chelipeds and legs, though thick and long, not hiding the characters beneath it; upper surface of hand with spines.....*sulcatus.*

*cc.* Dactyli slender; propodi and dactyli without squamiform tubercles on their anterior faces.

*f.* Spines on hand numerous and evenly distributed over the whole upper surface .....*aciculus.*

*ff.* Spines on hand fewer, upper surface with broad smooth interspaces..... .....*hians.*

### PAGURUS LACERTOSUS, *Henderson.*

*Eupagurus lacertosus*, Henderson, "Challenger" Rept., Zool., xxvii., 1888, p. 63, pl. vi., fig. 7. *Id.*, Grant in Sayce, Vict. Nat., xviii., 1902, p. 155.

The only record of this species in Australian waters is that of the late Mr. F. E. Grant, who dredged it off Queenscliff, in Port Phillip, together with its variety *nana*, Henderson. As the typical form is a deep-water species, having been taken in 275 fathoms off New Zealand, Grant's identification needs confirmation. Seven specimens, received from Professor J. Thomson Flynn, were dredged in 40-60 fathoms outside Schouten Island, Tasmania, and others are in the Museum collection from 100 fathoms, five miles east of Cape Pillar, Tasmania. The latter were dredged by Messrs. Hedley and May in 1907, together with many other invertebrates on a firm bottom of sand, pebbles and shells.

### CLIBANARIUS VIRESCENS, *Krauss.*

(Plate xi., fig. 2).

*Pagurus virescens*, Krauss, Südafrik. Crust., 1843, p. 56, pl. iv., fig. 3.

*Clibanarius virescens*?, Dana, Wilkes U.S. Explor. Exped., Crust., i., 1852, p. 466, pl. xxix., figs. 6*a.b.*

*Clibanarius virescens*, de Man, Journ. Linn. Soc., Zool., xxii., 1888, p. 247. *Id.*, Whitelegge, Mem. Austr. Mus., iii., 1897, p. 143. *Id.*, Grant and McCulloch, Proc. Linn. Soc. N. S. Wales, xxxi., 1906, p. 34.

*Clibanarius*, sp., Whitelegge, Proc. Roy. Soc. N. S. Wales, xxiii., 1890, p. 232, No. 358.

Anterior portion of carapace much longer than broad, almost smooth, but with more or less numerous minute pits ; a few tufts of long setæ on the sides and behind the cervical groove. Rostrum triangular, acute, projecting a little beyond the antennal angles, which are broad and without terminal spines. Eye-stalks slender, as long as or longer than the width of the anterior portion of the carapace, and a trifle longer than the antennular peduncles. Ophthalmic scales close together, their outer margins rounded and finely denticulated. Antennal scales with long setæ; their bases each with a single external spine, and five or six on the anterior portions, which reach to or slightly beyond the penultimate joints of the peduncles. Flagellum reaching well beyond the chelipeds.

Chelipeds equal and similar, with very long setæ. No spines on the arm above, but one or two at their infero-external extremities; lower internal margin with a row of spiniform tubercles, the inner and outer surfaces with slightly raised white prominences of varying size, which are largest anteriorly. Wrist with three spines on its upper margin increasing in size forwards ; outer surface with or without one or two pointed tubercles and a more or less striking white spot. Hands and fingers with large upstanding spines, white in colour, some with darker tips. Fingers slightly gaping, with large black horny tips.

Legs of the left side shorter than, but otherwise almost similar to, those of the right. The meropodites have one or two spinules at the infero-external extremities. The carpopodites have each a strong distal spine, and the propodites are only armed with some small denticulations on their lower extremities; that of the hinder left leg is shorter and thicker than the others, and has a distinct, somewhat tubercular ridge separating the upper and outer surfaces. The dactylopodites are usually considerably shorter than the preceding joints, and are tipped with a strong black, curved spine; there are six or seven rather strong spinules in a row along the lower surface.

*Colour.*—Legs, chelipeds and other appendages greenish or olive-brown, the dactyli white or yellowish. Carapace lighter, only the anterior angles brownish. Eyes with a white ring just before the cornea. Antennal flagellum blue. All the spines and roughnesses of the chelipeds are white or yellowish, as is the greater part of the fingers. The propodites of the legs have a

broad dark terminal band following a small white distal spot; the dactyli may have a median darker band, but this is often entirely wanting.

*Hab.*—The specimen figured is a male from Cairns Reef, off Cooktown, Queensland, with a carapace 12 mm. long. Many other specimens are in the Australian Museum from the following localities: Funafuti, Ellice Group; New Caledonia; Lord Howe Island, South Pacific; Queensland, various localities from Murray Island, Torres Strait to Port Curtis; Port Jackson; Western Australia.

I am indebted to Miss M. J. Rathbun for a copy of Krauss' description and figures of this species, while she has also examined Australian specimens for me and agrees that they are *C. virescens.*

### Clibanarius strigimanus, *White.*

*Pagurus strigimanus*, White, Proc. Zool. Soc., 1847, p. 121.

*Pagurus aculeatus*, Milne Edwards, Ann. Sci. Nat., Zool. (3), x., 1848, p. 62.

*Clibanarius strigimanus*, Miers, Zool. "Erebus" and "Terror," Crust., 1874, p. 3, pl. ii., fig. 4.

On the supposition that *Pagurus strigimanus* and *P. aculeatus* were identical, I forwarded a specimen of the former from Western Port, Victoria, to Professor L. E. Bouvier for comparison with Milne Edwards' type, which came from the same locality. He has kindly looked into the matter, and informs me that the type no longer exists in the Paris Museum, it being probably lost in the confusion caused by the war in 1870. He agrees with me, however, that the description of *P. aculeatus* fits the specimen very well, and that the name should be considered a synonym of *P. strigimanus.*

### Clibanarius striolatus, *Dana* (?).

*Clibanarius striolatus*, Dana, Wilkes U. S. Explor. Exped., Crust., i., 1852, p. 463, pl. xxix., figs. 3-3*a*. *Id.*, Haswell, Cat. Austr. Crust., 1882, p. 159. *Id.*, Alcock, Cat. Ind. Dec. Crust., pt. ii., 1905, p. 46, pl. iv., fig. 7.

A single damaged specimen from Western Australia in the Australian Museum is either *C. striolatus*, Dana, or *C. padavensis*, de Man. The former has already been recorded from

Australia by Haswell, while there are Australian specimens of *C. padavensis* in the Australian Museum from Murray Island, Torres Strait (Coll. Hedley and McCulloch, Aug., 1907); Cooktown, Queensland (Coll. Hedley and McCulloch, Aug., 1906); Hood Bay, New Guinea; and New Caledonia.

### CLIBANARIUS TÆNIATUS, *Milne Edwards.*

(Plate xi., fig. 1).

*Pagurus clibanarius*, Quoy and Gaimard, Voy. "Uranie and Physicienne," 1825, p. 529, pl. lxxviii., fig. 1 (not Herbst).

*Pagurus tæniatus*, Milne Edwards, Ann. Sci. Nat., Zool. (3), x., 1848, p. 63.

*Clibanarius tæniatus*, Stimpson, Proc. Acad. Nat. Sci. Philad., 1858, p. 235. *Id.*, Miers, Zool. "Alert," 1884, p. 265. *Id.*, de Man, Notes Leyd. Mus., xii., 1890, p. 113. *Id.*, Grant and McCulloch, Proc. Linn. Soc. N. S. Wales, xxxi., 1906, p. 34.

Although the original figure of this species shows the characteristic colour marking, it is very imperfect in other details, so I take this opportunity of figuring a specimen from Cooktown.

*Hab.*—The specimen described by Quoy and Gaimard was collected in Shark Bay, Western Australia. Others are in the Australian Museum from North Australia; Mapoon, Gulf of Carpentaria (Coll. C. Hedley, 1903); Cooktown, Queensland (Coll. Hedley and McCulloch, 1906); Holborn Is., near Pt. Denison (Coll. W. A. Haswell); Rat Is., Pt. Curtis (Coll. McCulloch, 1909); Masthead Is., off Pt. Curtis (Coll. F. E. Grant, 1905); Port Hacking, New South Wales. The specimen recorded by Whitelegge[16] from Pleasant Island, Central Pacific, is not this species, but *C. eurysternus*, Hilgendorf.

### CLIBANARIUS EURYSTERNUS, *Hilgendorf.*

*Pagurus (Clibanarius) eurysternus*, Hilgendorf, Monatsber. Akad. Wiss. Berlin, 1878, p. 822, pl. iii., figs. 9-10.

*Hab.*—I collected six specimens of this species at Murray Island, Torres Strait, in shells of *Strombus luhuanus*, Linne; it has not been previously recognised from Australia. The characteristic dark lines on the carapace and legs are much more striking than in Hilgendorf's figure.

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[16] Whitelegge—Rec. Austr. Mus., v., 1903, p. 11.

### CLIBANARIUS CORALLINUS, *Milne Edwards.*

*Pagurus corallinus*, Milne Edwards, Ann. Sci. Nat., Zool., (3), x., 1848, p. 63.

*Clibanarius corallinus*, Borradaile, Proc. Zool. Soc., 1898, p. 463. *Id.*, Alcock, Cat. Ind. Crust., pt. ii., 1905, p. 48, pl. v., fig. i.

*Clibanarius cruentatus*, Whitelegge, Mem. Austr. Mus., iii., 1897, p. 143. *Id.*, Grant and McCulloch, Proc. Linn. Soc. N. S. Wales, xxxi., 1906, p. 33 (not *C. cruentatus*, M. Edw.).

Having examined Whitelegge's Funafuti specimens, and those determined by Grant and myself as *C. cruentatus*, I find they are not that species, but are *C. corallinus*. The differences between the two are clearly shown in Alcock's splendid paper. Other specimens of *P. corallinus* are in the Museum collection from Murray Island, Torres Strait (Coll. Hedley and McCulloch, Aug. 1906) and from the Solomon Islands.

Ours being the only record of *P. cruentatus* from Australia, that species must be struck off the Australian list.

### CLIBANARIUS INFRASPINATUS, *Hilgendorf.*

(Fig. 52).

*Clibanarius infraspinatus* (Hilgendorf), de Man, Journ. Linn. Soc., xxii., 1888, p. 237. *Id.*, Ortmann, Zool. Jahrb.Syst., vi., 1892, p. 290. *Id.*, Alcock, Cat. Ind. Crust., pt. ii., 1905, p. 44.

A fine series of this species was collected by Mr. C. Hedley, at Mapoon, in the Gulf of Carpentaria, which I have compared with specimens from Tavoy, India, received from the Indian Museum. Ortmann has recorded a specimen from Sydney, but it is a tropical species, and this locality is almost certainly incorrect; it has not been taken here by any Australian collectors.

As no figure of this species appears to have been published, I take this opportunity of illustrating my largest specimen from Mapoon. Its carapace is 37 mm. long.

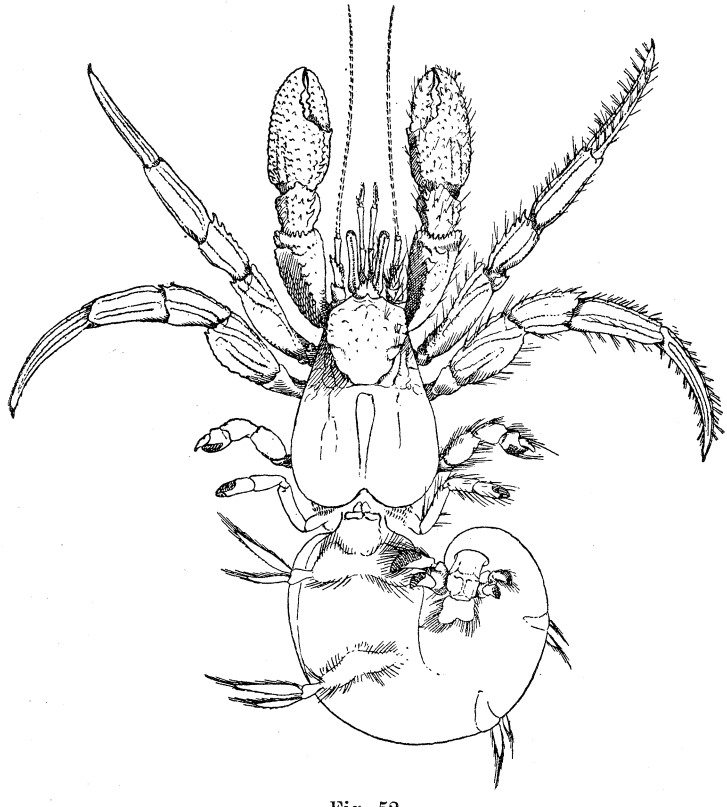


Fig. 52.

Key to Australian species of *Clibanarius.*

*a.* Dactylus of third leg as long as, or shorter than the propodus.

*b.* General colour dark red, legs spotted with yellow. Chelipeds and legs thickly hirsute, especially the propodus of third left leg .....*corallinus.*

*bb.* General colour greenish, fingers and dactyli whitish. Chelipeds and legs normal, not thickly hirsute ...*virescens.*

*aa.* Dactylus of third leg longer than the propodus.

*c.* Inner faces of hands with raised, file-like stridulating surfaces. Reddish, legs with yellow spots ...*strigimanus.*

*cc.* Inner faces of hands without stridulating surfaces. Legs longitudinally banded.

*d.* Carapace remarkably flattened. Carapace and all its appendages with conspicuous, dark, longitudinal bands ..... *eurysternus.*

*dd.* Carapace normal, not remarkably flattened.

*e.* Eye-stalks shorter than the antennular peduncles. Arms of chelipeds with a prominent tubercle or obtuse spine below.....*infraspinatus.*

*ee.* Eye-stalks as long as or longer than antennular peduncles.

*f.* Spines on chelipeds very large, wrist with several strong spines. Carapace as well as legs with striking colour bands .....*tæniatus.*

*ff.* Spines on chelipeds smaller, wrist with only 1-2 spines. Markings on the carapace indefinite or absent.

*g.* Hands about twice as long as broad. Rostrum but little more prominent than antennal angles. Eye-stalks as long as front of carapace ...*striolatus.*

*gg.* Hands more than twice as long as broad. Rostrum more prominent than antennal angles. Eyestalks longer than front of carapace ...*padavensis.*

### PETROLISTHES ELONGATUS, *Milne Edwards.*

*Petrolisthes elongatus* (Milne Edwards), Miers, Cat. Crust. N. Zealand, 1876, p. 60. *Id.*, Haswell, Cat. Austr. Crust., 1882, p. 146 (after Miers).

*Hab.*—According to Miers, this common New Zealand species occurs rarely on the Australian coast. As there does not appear to be any other reference in which a definite Australian locality is assigned to it, I take this opportunity of recording specimens received from Professor J. Thomson Flynn, who collected them in the estuary of the Derwent River, Tasmania, where the species is very common.

PETROLISTHES BOSCII, *Audouin*

(Fig. 53).

*Porcellana boscii* (Audouin), de Man, Journ. Linn. Soc., Zool., xxii., 1888, p. 217.

*Petrolisthes rugosus* (Milne Edwards), Miers, Zool. "Alert.," 1884, p. 270.

*Petrolisthes boscii*, Henderson, Trans. Linn. Soc. (2), v. 1893, p. 427. *Id.*, Ortmann, Zool. Jahrb., x., 1897, p 284.

*Hab.*—As *P. rugosus*, Miers has already recorded this species from North Australia. The specimen figured is from Port Hedland, North Western Australia.

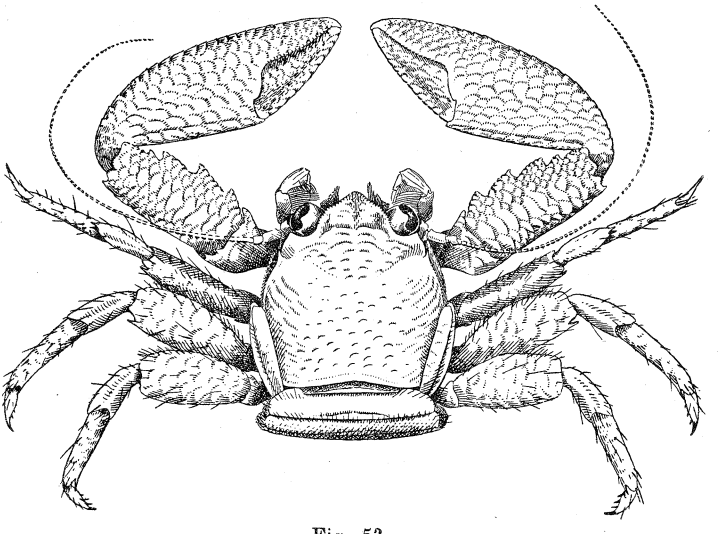


Fig. 53.

## EXPLANATION OF PLATE X.

Fig. 1. *Naxia* (*Microhalimus*) *deflexifrons*, Haswell.

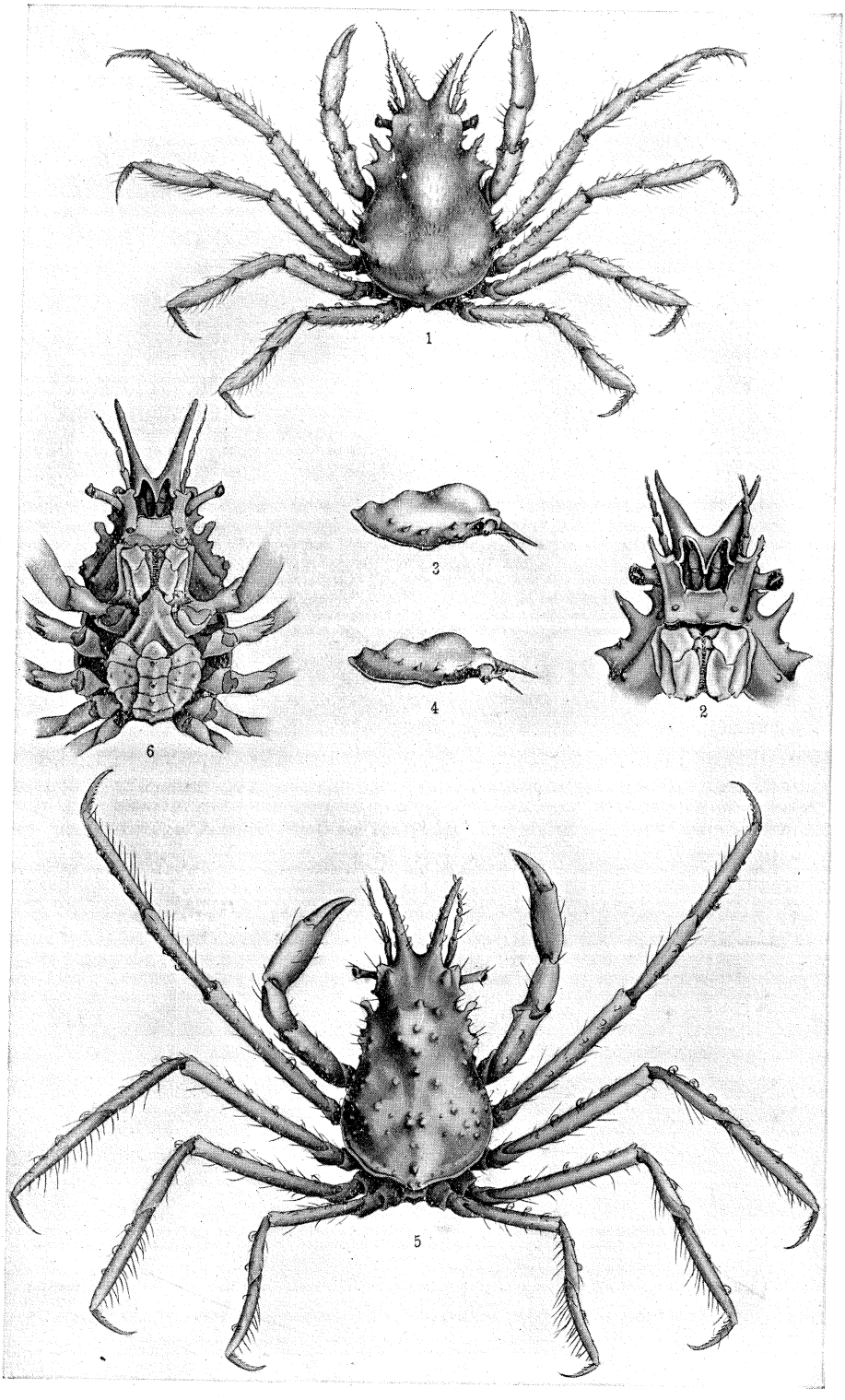
,, 2. *Naxia* (*Microhalimus*) *deflexifrons*, Haswell. Lower surface of cephalothorax.

,, 3. *Naxia* (*Microhalimus*) *deflexifrons*, Haswell. Side view of carapace of female.

,, 4. *Naxia* (*Microhalimus*) *deflexifrons*, Haswell. Side view of carapace of male.

,, 5. *Zewa banfieldi*, McCulloch.

,, 6. *Zewa banfieldi*, McCulloch. Lower surface.

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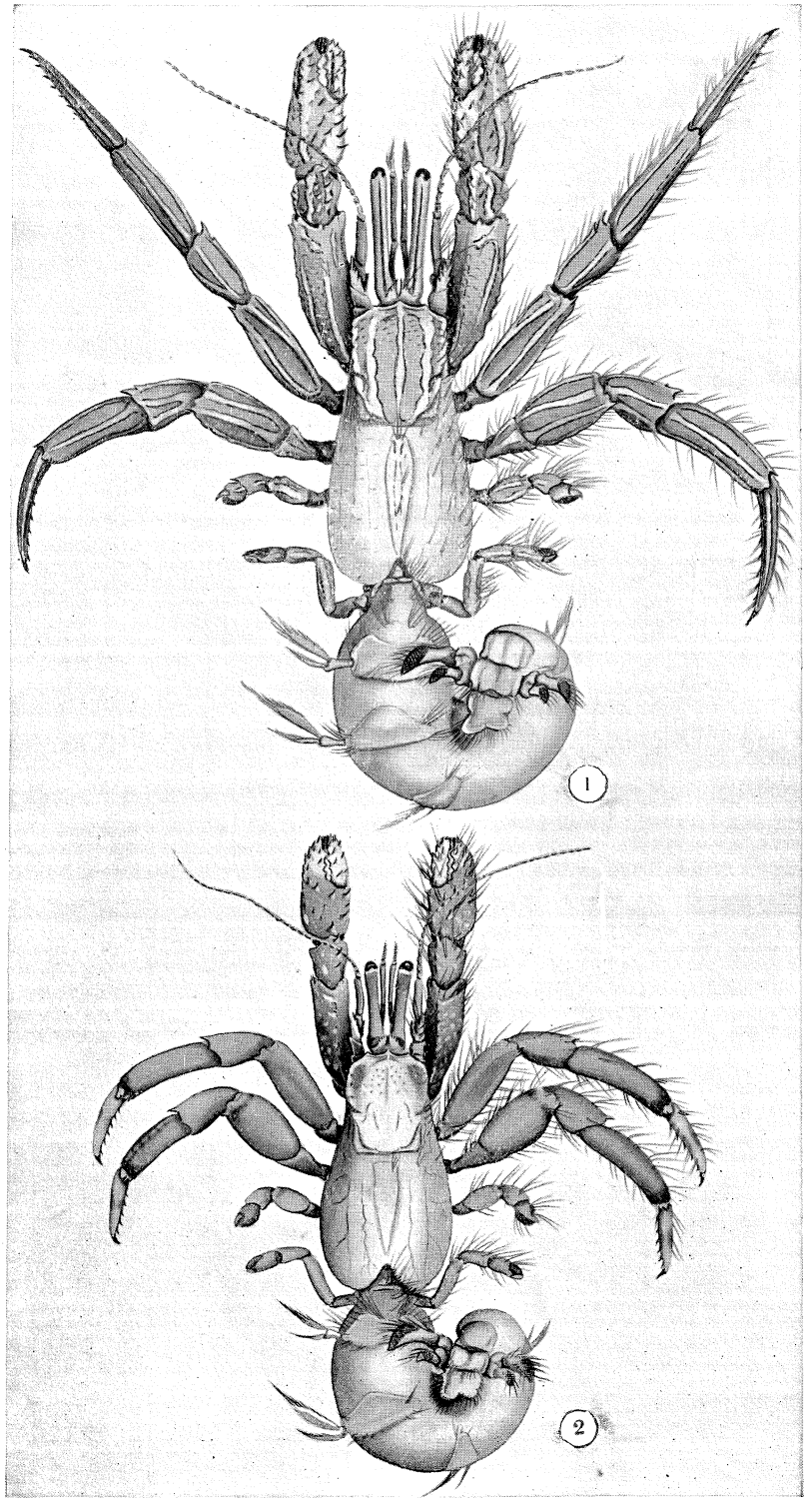
## EXPLANATION OF PLATE XI.

Fig. 1. *Clibanarius tæniatus*, Milne Edwards.

,, 2. *Clibanarius virescens*, Krauss.

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