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A small collection of crabs from New Zealand*

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Recently a small collection of crabs from New Zealand made by Dr. Keiji Baba of Kumamoto University was at our disposal for study. The collection is largely made by a trawlnet in rather deep water, so that the species which are exclusively found in the intertidal zone are not comprised in the collection. The specimens are altogether one hundred and seventy-seven in number and classified to fourteen species of eight families as listed below, of which a new genus for *Ommatocarcinus huttoni* Filhol of the family Goneplacidae and a new species of the family Portunidae are extensively described. In addition, a new generic name, *Glaessneria*, is proposed for a fossil goneplacid crab, *Ommatocarcinus arenicola* Glaessner.

Section Dromiacea
Family Thelxiopidae
Latreillopsis petterdi Grant, 1905—S. Australia and New Zealand.

Section Oxystomata
Family Leucosiidae
Ebalia laevis (Bell, 1855)—Endemic.

Section Corystoidea
Family Atelecyclidae
Trichopeltarium fantasticum Richardson et Dell, 1964—Endemic.

* Contributions from the Zoological Laboratory, Faculty of Agriculture, Kyushu University, No. 413.

Section Brachygnatha
  Superfamily Brachyrhyncha
    Family Portunidae
      Nectocarcinus antarcticus (Jacquinot, 1852)—Endemic.
      Nectocarcinus bennetti sp. nov.—Probably endemic.
    Family Goneplacidae
      Carcinoplax victoriensis Rathbun, 1923—S. Australia and New Zealand.
      Neommatocarcinus huttoni (Filhol, 1885), gen. nov.—Endemic.
    Family Pinnotheridae
      Pinnotheres novaezelandiae Filhol, 1885—Probably endemic.
  Superfamily Oxyrhyncha
    Family Hymenosomatidae
      Elamena longirostris Filhol, 1885—Endemic.
    Family Majidae
      Leptomithrax longipes (Thomson, 1902)—Endemic.
      Leptomithrax richardsoni Dell, 1960—Endemic.
      Leptomithrax garricki Griffin, 1966—Endemic.
      Chlorinoides filholi (A. Milne Edwards, 1876)—Endemic.
      Jacquinotia edwardsii (Jacquinot, 1852)—Endemic.

The members of the crabs of New Zealand are not large in number, but the new species are now turning up from year to year from the deep water. They appear to form a characteristic fauna proper to New Zealand in the Indo-Pacific waters as apparently shown by numbers of the endemic species. Since the appearance of Bennett's excellent revision in 1964, the peculiarity of the crab fauna of New Zealand was made clearer by the series of papers by Griffin, Dell and others. The present paper is mostly based upon those accumulated extensive works.

The terminology employed in this paper follows the precedents, and the system of the measurements supplied is mostly that used by Garth (1958), if not specially mentioned. The measurements are, however, rather approximate in some species, and the approximations in the measurements seem to be inevitable in the spiny crabs. The type-specimens of a new species as well as the others are preserved in the collection of the Zoological Laboratory, Kyushu University (ZLKU).

We are indebted to Dr. R. K. Dell of the Dominion Museum, New Zealand for sending us some papers concerning the New Zealand crabs and also for his kind information about some species dealt herewith. Our cordial thanks are also due to Dr. Keiji Baba of the Faculty of Education, Kumamoto University, for placing the materials for study and for the information about the colour in life.

Family TELXIOPIDAE
Genus *Latreillopsis* Henderson, 1888
Latreillopsis petterdi Grant, 1905

Antlered crab[1]

(Fig. 1, Pl. 1)

Latreillopsis petterdi Grant, 1905, p. 317, pl. 10, figs. 2-2b; Rathbun, 1923, p. 140, pl. 36; Dell, 1956, p. 147, fig. 1; Dell, 1963, p. 244; Bennett, 1964, p. 27, fig. 112; Dell, 1968, p. 23 (in list).

Material examined.

42° 56.5′ S, 178° 21.4′ E (St. 24), 380 m deep, mud; 2 ♂♂, ZLKU No. 13096; Jul. 13, 1968; K. Baba leg.

43° 5′ S, 174° 55.5′ E (St. 27), 380–470 m deep, mud and sand; 1 ♂, ZLKU No. 13099; Jul. 13, 1968; K. Baba leg.

43° 8.7′ S, 178° 14.4′ E (St. 25), 382 m deep, mud; 1 ♂, ZLKU No. 13098; Jul. 12, 1968; K. Baba leg.

43° 9′ S, 175° 54.2′ E (St. 20), 390–400 m deep, mud; 1 ♂, ZLKU No. 13095; Jul. 2, 1968; K. Baba leg.

Measurements (in mm).

	♂ (No. 13096-1)	♂ (No. 13095)	♂ (No. 13099)
Breadth of carapace without lateral spines	52.5	44	39.5
Greatest breadth of carapace just above second ambulatory legs	55	48	42.5
Length of carapace in median line without rostral horn	60	54	56.5
Length of rostral horn	15	12	9.5
Length of supraorbital horn along its inner margin	37	25	35
Length of chela	52	44.5	37.5
Height of palm	9	8.5	5.5

Colour in life. The carapace, chelipeds and ambulatory legs are for their greater parts yellowish, but the carapace is somewhat greyish and the supraorbital and rostral horns are much light-coloured. The granular or spinous prominences on the carapace are reddish. In the cheliped the distal margin of the merus is reddish vermilion, and the distal part of the palm and the proximal parts of both fingers are white. The greater surfaces of the fingers are brownish black with white tips. In the ambulatory legs the upper surface of each merus

[1] The names as such given in the present paper are those cited from Dell's *Native Crabs* (1963, 64 pp.) in the series of "Nature in New Zealand."

is irregularly but somewhat longitudinally coloured with reddish vermilion, and each joint and the whole dactylus are prominently reddish vermilion.

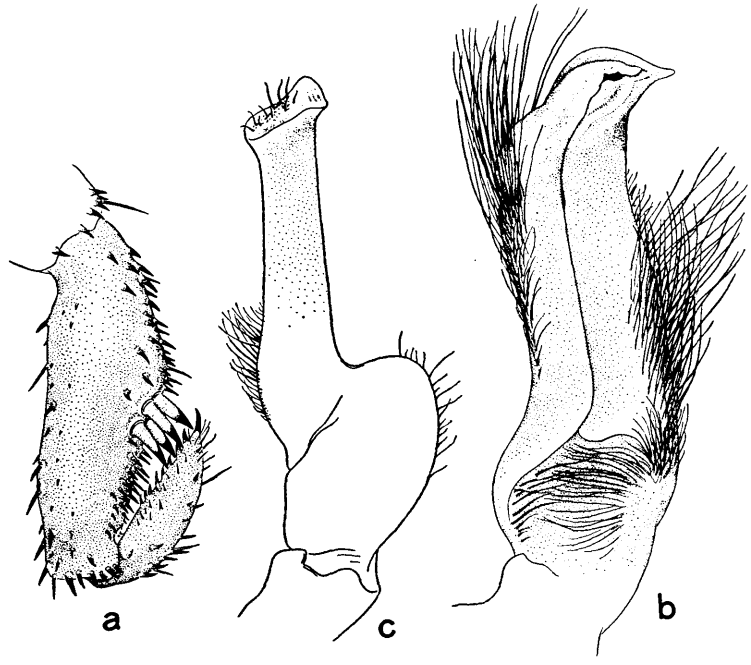

Fig. 1. *Latreillopsis petterdi* Grant, ♂ (No. 13095). a. Propodus and dactylus of left fourth ambulatory leg, ×3.8; b. Left first pleopod in abdominal view, ×5.5; c. Left second pleopod in abdominal view, ×5.5.

Remarks. In the present specimens the supraorbital horns are usually somewhat divergent and weakly curved upwards near the tips, but in two males (No. 13096) they are somewhat convergent. The supraorbital horn always bears two prominent equidistant spines, of which the anterior one is placed laterally and the posterior one somewhat dorsally; the other accessory spinules or granules are minute and sometimes obsolete. The rostral and supraorbital horns are rather variable in length; in the smaller specimens they are proportionally longer than in the larger specimens. Though the present specimens are apparently large enough to bear the sexual characters, the palms of the chelipeds are not inflated unlike the description given by Rathbun (1923).

This large beautiful crab takes, regarding some features, an intermediate position between the genera *Latreillopsis* Henderson and *Paromola* Wood-Mason et Alcock. In comparing this species with the

species of both genera, as already noticed by Griffin (1965), some similarities and differences are apparently pointed out. This species agrees with the species of *Latreillopsis* and differs from the species of *Paromola* in that the supraorbital horn is very prominent and much longer than the median rostral horn, and the distal segment of the eyestalk is much shorter than the basal segment. This species, on the other hand, differs from *Latreillopsis* and agrees with *Paromola* in having the short dactylus of the fourth ambulatory leg and the larger numbers of the gills and epipods. The first male pleopods of the members of both genera are rather alike each other. Gordon (1950) considered with some reservations on the bases of the branchial formula, that this species which has 14 gills plus 6 epipods shoud be placed in the genus *Paromola*. If this species is transferred to the genus *Paromola*, however, the two genera are so difficult to be externally discriminated from each other that the distinction of both genera are largely due to the branchial formulae.

In the present specimens the carapaces are clean except that of one specimen (No. 13096-2), in which the carapace is equipped with numbers of the tube-inhabitant nereids and soft-shelled oysters. Some of the oysters are also attached to the meri of the ambulatory legs. They may be referable to *Notostrea* or a kindred genus.

Distribution. This species was originally recorded from off Port Jackson, New South Wales, Australia, 450 to 540 m deep. The additional localities in Australia are the Great Australian Bight, the Bass Strait, and the east and south of Tasmania, 90 to 575 m deep. According to Dell (1968), in New Zealand this species ranges from the Cavalli Islands (north-east coast of Prov. Auckland) southwards to the Banks Peninsula (Prov. Canterbury), 180 to 355 m deep.

Family LEUCOSIIDAE

Genus *Ebalia* Leach, 1817

Ebalia laevis (Bell, 1855)

Nut crab

(Fig. 2)

Phlyxia laevis Bell, 1855, p. 305, pl. 34, fig. 3; Miers, 1876, p. 56; Filhol, 1885, p. 406.

Phlyxia tumefacta, Kirk, 1878, p. 395.

Phlyxia Cheesmani Filhol, 1885, p. 407, pl. 43, figs. 3, 4.

Ebalia laevis, Miers, 1886, p. 306; Chilton, 1911, p. 266; Yong, 1929, p. 153; Richardson, 1949, p. 68 (in key); Bennett, 1964, p. 20, figs. 1-4, 107; Dell, 1968, p. 22 (in list).

Ebalia tumefacta, Richardson, 1949b, p. 69 (in key).
Ebalia cheesemani Richardson, 1949b, p. 69 (in key), fig. 50; Dell, 1960, p. 4.

Material examined.

43° 26.5′ S, 176° 46.8′ E (St. 22), 260 m deep, rocks and sea anemones; 1 ♂, ZLKU No. 13129; Jul. 2, 1968; K. Baba leg.
43° 59′ S, 173° 28.3′ E (St. 16), 90–116 m deep, sand and small stones; 1 ♂, 1 ♀, ZLKU No. 13100; Jun. 30, 1968; K. Baba leg.
44° 7.2′ S, 175° 55.5′ E (St. 35), 140 m deep, sand; 3 ♂♂, 8 ovig. ♀♀, 7 juv., ZLKU No. 13130; Jul. 16, 1968; K. Baba leg.
44° 14.2′ S, 172° 33.1′ E (St. 18), 64–75 m deep, sand and sea shells; 9 ♂♂, 17 ovig. ♀♀, 1 ♀, ZLKU No. 13102; Jul. 1, 1968; K. Baba leg.

Measurements (in mm).

	Largest ♂	Largest ovig. ♀
Length of carapace with postero-dorsal projection	13.0	12.7
Breadth of carapace with lateral projections	13.2	13.3

Colour in life. The colour in life is very variable. The carapace, chelipeds and ambulatory legs are greyish or whitish mottled with brick red or dark purplish brown. The carapace bears several white pits along the submedian interregional furrows. In the larger male the greater part of the dorsal surface is brick red or dark purplish brown. The ventral surfaces of the carapace, chelipeds and ambulatory legs are uniformly whitish or greyish. In the cheliped the dark reddish colour is the most prominent at the middle of the merus, along the inner border of the carpus, and at the proximal portion of the palm and fingers. In the ambulatory legs only the distal end of each merus and the proximal end of each carpus are dark reddish.

Remarks. As already noted by Bennett (1964), *E. cheesmani* (Filhol) is not substantiated due to a high degree of the sexual and individual variability, especially with respect to the convexity and granulation of the regions, the postero-dorsal projections, the anterolateral contour, the formation of the chelipeds and the granulation of the abdomen and sternum.

The genus *Ebalia* is apparently heterogeneous and should be more subdivided. It is noteworthy that the formation of the male abdomen and pleopods is very different from each other. With regard to the characters in this species the male abdomen is composed of four segments (formura 1+2+R+T), and the second male pleopod is subfiliform and much longer than the first one as represented in Fig. 2. Those features are apparently of generic value of *Phlyxia* Bell distinct from *Ebalia*. Though in most of the cases *Phlyxia* is treated as a subgenus or

synonym of *Ebalia*, *Phlyxia* may be resurrected as here mentioned. In the species referable to it, however, the abdominal formula of female is variable and not constant. The revision of *Ebalia* and its kindred genera is very desirable. At present, therefore, this species is tentatively referred to the genus *Ebalia*.

It is here noted that most of the female specimens examined are berried in July, though Bennett commented after the examination of many specimens that the females are ovigerous chiefly in December and January but there is one record also in May.

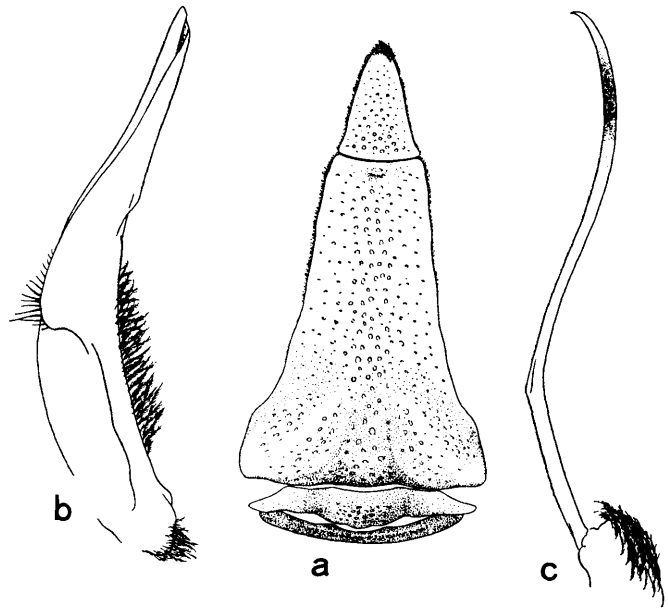

Fig. 2. *Ebalia laevis* (Bell), ♂ (No. 13102-1). a. Abdomen, ×20; b. Left first pleopod in abdominal view, ×22.5; c. Left second pleopod in abdominal view, ×22.5.

Distribution. This species is endemic in New Zealand. It ranges from the Hauraki Gulf southwards to Stewart Island, and eastwards to the Chatham Islands. The bathymetric range is from 20 to 370 m.

Family ATELECYCLIDAE

Genus *Trichopeltarium* A. Milne Edwards, 1880

Trichopeltarium fantasticum Richardson et Dell, 1964

Frilled crab

(Pl. 3, Fig. B)

Trichopeltarion n. sp., Dell, 1960, p. 5.
Trichopeltarion fantasticum Richardson and Dell, 1964, p. 148, figs. 1-11; Dell, 1968, p. 25 (in list).

Material examined.

42° 55.5′ S, 177° 26′ E (St. 30), 424 m deep, mud; 1 ♂, ZLKU No. 13156; Jul. 14, 1968; K. Baba leg.
43° 8.6′ S, 178° 14.4′ E (St. 25), 382 m deep, mud; 1 ♂, ZLKU No. 13151; Jul. 12, 1968; K. Baba leg.
43° 9′ S, 175° 54.2′ E (St. 20), 390–400 m deep, mud; 1 ♂, 1 ovig. ♀, ZLKU No. 13149; Jul. 2, 1968; K. Baba leg.
43° 17.3′ S, 177° 48.5′ E (St. 29), 386–430 m deep, mud and small stones; 2 juv., ZLKU No. 13154; Jul. 14, 1968; K. Baba leg.
43° 21.5′ S, 178° 14′ E (St. 26), 380 m deep, mud; 2 juv., ZLKU No. 13152; Jul. 12, 1968; K. Baba leg.

Measurements (in mm).

	♂ (No. 13149-1)	♂ (No. 13151)	♂ (No. 13156)	Ovig. ♀ (No. 13149-2)
Length of carapace with frontal spines	63.5	63	65.5	51.5
Breadth of carapace with lateral spines	79.7	77.5	85.3	45
Breadth of carapace without lateral spines	55	53.5	56	25

Remarks. This peculiar species was fully described and figured even in the young forms by the original authors. The characteristic ornamentation and armatures of the carapace easily enable one to distinguish the species from the other three representatives of the genus, of which *T. alcocki* (Doflein) may be, however, transferred to the genus *Trachycarcinus*.

Distribution. This species is endemic in New Zealand. It was originally reported from between Maunganui Bluff and Kaipara Bar, and the Bay of Plenty (Prov. Auckland), off Kaikoura, Cook Strait (Prov. Marlborough), and off the Chatham Islands. It was furthermore recorded from two southern localities, Chalky Inlet and the Te Waewae Bay, Province Otago. While this species is one of the deep water crabs of New Zealand, it is also said to occur not infrequently on the shelf in much shallower depth. Its bathymetric range is usually from 70 to 720 m with an exception of a record from 15 to 22 m deep in the Te Waewae Bay, southern New Zealand.

Family PORTUNIDAE

Genus *Nectocarcinus* A. Milne Edwards, 1860

Nectocarcinus antarcticus (Jacquinot, 1852)

Red swimming crab

(Fig. 4, c, d)

Portunus antarcticus Jacquinot, 1852, pl. 5, fig. 1; Jacquinot and Lucas, 1853, p. 51.
Nectocarcinus antarcticus, A. Milne Edwards, 1861, p. 407; Miers, 1876, p. 30; Hutton, 1878, p. 340; Chilton, 1909, p. 608; Chilton, 1911, p. 291; Thomson, 1913, p. 237; Stephensen, 1927, p. 293; Chilton and Bennett, 1929, p. 754; Richardson, 1949a, p. 31 (in key), fig. 1; Dell, 1960, p. 5; Bennett, 1964, p. 65, fig. 130; Dell, 1968, p. 25 (in list).

Material examined.

43° 20.2′ S, 175° 14′ E (St. 13), 110 m deep, sand and sponges; 3 ♂♂, 5 ovig. ♀♀, from stomachs of groupers, ZLKU No. 13272; Jun. 24, 1968; K. Baba leg.

43° 20.2′ S, 176° 35.5′ E (St. 21), 263–270 m deep, rocks and sea anemones; 1 ♂, 3 ovig. ♀♀, ZLKU No. 13171; Jul. 2, 1968; K. Baba leg.

43° 22′ S, 175° 31′ E (Dredge St. 2), 180 m deep, rocks; 1 ♂, ZLKU No. 13157; Jun. 24, 1968; K. Baba leg.

43° 26.5′ S, 176° 46.8′ E (St. 22), 260 m deep, rocks and sea anemones; 7 ♂♂, 7 ♀♀, ZLKU No. 13175; Jul. 2, 1968; K. Baba leg.

44° 14.2′ S, 172° 33.1′ E (St. 18), 64–75 m deep, sand and shells; 5 ♂♂, 4 ovig. ♀♀, 7 ♀♀, ZLKU No. 13160; Jul. 1, 1968; K. Baba leg.

44° 23′ S, 172° 56.2′ E (St. 9), 135 m deep, sand; 1 ♀ from stomach of sea perch, ZLKU No. 13159; Jun. 22, 1968; K. Baba leg.

44° 37.5′ S, 171° 45′ E (St. 5), 79 m deep, sand; 1 ♂, ZLKU No. 13158; Jun. 19, 1968; K. Baba leg.

Measurements (in mm).

	Largest ♂ (No. 13157)	Largest ovig. ♀ (No. 13160-6)	Smallest ovig. ♀ (No. 13160-9)
Length of carapace	30.5	25.3	12.5
Breadth of carapace	40.2	33.0	15.9

Remarks. This species is readily separated from the other members of the genus, *N. integrifrons* (Latreille, 1825), *N. tuberculosus* A. Milne Edwards, 1860, *N. bullatus* Balss, 1924 and *N. spinifrons* Stephenson, 1961. Of those congeners the former two species were excellently illustrated based on the Australian materials by Stephenson and Campbell (1960) and the last one by Stephenson (1961).

This species is known as to be of outstanding importance as food for fishes and other animals, as shown by the present materials found

in the stomachs of fishes (No. 13159; 13272) and by the previous comments such as those of Dawson (1963), Yaldwyn (1958) and Bennett (1964).

Distribution. This subantarctic species is endemic in New Zealand and commoner in the south. It ranges from Wellington through the Chatham Islands to as far south as the Auckland Islands and Campbell Island. This species is commonly found in rather shallow water down to about 100 m. Therefore, it is remarkable that the known bathymetric range is further extended down to 270 m. Balss (1935) gave the distribution of the genus as, "Of the four species, *N. bullatus* (Balss) occurs at Juan Fernandez, *N. antarcticus* (Jacq. and Lucas) in New Zealand, Anckland and Chatham Islands, *N. tuberculosus* A.M.E. in Tasmania and South Australia, and *N. integrifrons* Latr. in the east, south, and west of Australia. The species are therefore fairly distinct in their distribution."

Nectocarcinus bennetti sp. nov.

(Figs. 3, 4, a, b, Pl. 2, Fig. B)

Diagnosis. General appearance much like that of *N. antarcticus*. Carapace without longish hairs. Supraorbital and anterolateral borders prominently serrated. Male abdomen also only with sparse short hairs, and penultimate segment bulged laterally. First male pleopod strongly curved outwards.

Description of holotype. The carapace is evenly convex in both directions and somewhat quadrate in its contour; the dorsal surface is entirely naked without any long hairs to the unaided eye, but it is wholly and uniformly covered with thick microscopical setae or hairs; otherwise, the dorsal surface is rather well divided into regions by wide depressions, and provided with small granules and granulated ridges; those granules are nearly equal in size, and there are considerable degrees of concentrations of those granules on the protogastric, anterolateral and posterior regions; there are a longitudinal granulated elevation on the median gastric region and a less prominent transverse one on the protogastric region; near the first anterolateral tooth is a low granulated prominence, on which the granules are more or less beaded to form a transverse row; a rather flat patch is also demarcated just inside the second anterolateral tooth; its anterior margin is delimited by a row of several granules; a prominent granulated ridge that is sinuate runs inwards from the third (last) anterolateral tooth to the hind margin of the protogastric region; each side of the posterior median gastric region is prominently hollowed; the gastric and intestinal

regions are rather remarkably produced transversely and longitudinally, so that both the regions are united to form T-shaped prominence; at each side of the prominence are many oblique short rows of granules; the posterolateral surface is depressed behind the transverse ridge from the last anterolateral tooth, produced in the middle and then deeply sunken near the posterior corner; the posterior border of the carapace is rimmed with a narrow but distinct ridge.

The front is distinctly four-lobed, and not strongly protruded beyond the orbits; the median lobes are narrower than the lateral ones, all the lobes being weakly upturned and beset with minute conical granules along the margins; the median sinus is U-shaped, while the lateral sinus is most deeply excavated at the base of the median lobe and generally arched along the inner margin of the lateral lobe; the lateral lobe is distinctly separated from the small but acute inner supraorbital lobe.

Both the supraorbital and the infraorbital borders are serrated with a row of sharp minute granules; the supraorbital border is somewhat raised and runs somewhat longitudinally at its inner part, transversely at the greater middle part and obliquely forwards near the external orbital angle; there are two interruptions, of which the inner one is placed just middle of the border, slit-like and more prominent than the lateral one; the external orbital angle is produced in a small but acute tooth; there is also a deep notch just below the external orbital angle, and the infraorbital border is more prominently serrated with a row of spiniform granules than the supraorbital border; the infraorbital border is generally and rather deeply concave in the middle, and its inner angle is prominent and acute; otherwise, the outer half of the supraorbital border and the whole infraorbital border are fringed with a row of short hairs.

The antennule is obliquely retractile to the fossa formed by a transverse crest in the middle of the antennular basal segment just below the front. The antennal basal segment which is truely the second almost completely fills the hiatus between the antennular basal segment and the inner infraorbital angle; the next segment is about a half the length of the former and naturally folded in the sinus between the frontal lateral lobe and the inner supraorbital angle; the flagellum is only slightly longer than the major diameter of the orbit. The epistome is very short and almost hidden under the external maxillipeds which entirely close the buccal cavern and anteriorly overhang the epistome; in the third maxillipeds each segment as well as the pterygostomian and subhepatic regions is uniformly covered with very short hairs like the dorsal surface of the carapace; otherwise, the ischium is fringed with longish hairs at and near its inner margin; the ischium bears a

longitudinal groove that runs somewhat obliquely from the antero-inner angle to the postero-inner angle; the merus is also provided with two longish grooves; the carpus is so truncated along the anterior border that the prominent flat surface is anteriorly formed.

The anterolateral border of the carapace is armed with three spine-tipped teeth behind the external orbital angle and the following serrated ridge; the first tooth bears a spine at the anterior end and is serrated with several spiniform granules along the arched outer border; the second tooth bears the same formation as that of the first, but the outer border is more strongly arched with a deep notch at its posterior end; the third tooth is much sharper than the precedings, and its posterior slope is not distinctly delimited from the posterolateral border; the prolongation of the posterior slope of the third tooth is almost reached the middle elevation of the posterolateral dorsal surface, and then the posterolateral border is only slightly convergent or runs more or less parallel with the median line.

The chelipeds are equal and spiny, but not markedly strong. The merus is slightly exserted from the carapace and armed with a subterminal spine. The carpus is rather sparsely armed with spiniform granules on the outer surface and along the distal margin; in addition, a spine at the half way of the inner upper border, and a spine at the distal outer angle are present; its inner angle is formed by a prominent, high spine-tipped tubercle and a much smaller spine at the inner lower base of the main tubercle. The palm is armed with spinules and spiniform granules that are rather distinctly beaded to form some transverse rows along the ridges; of those ridges, that from the proximal middle part to the base of the movable finger is the most prominent, while of the granules four or five beaded to a row at the outer upper surface are the most prominent; the upper border is rather distinctly crested along the whole length, and armed with a forwards-directing spine. The movable finger is armed with a row of five spines and a row of accessory minute granules along the upper border more than half the length; a prominent, longitudinal granulated ridge in the middle, and a less prominent one near the cutting edge are present, and accordingly, between them a longitudinal cavity is formed. The immovable finger is also ornamented by two longitudinal granulated ridge along the lower border and in the middle. Both the cutting edges bear several but irregular teeth along the whole lengths. The tips are curved and crossed each other.

The ambulatory legs are comparatively stout and conspicuously stregthened by the ridges or carinae. The merus is provided with a low ridge on the upper border near and along the lower border, the carpus with two, one on the upper border and the other on the upper

surface, the propodus with six, one on the upper border, two on the upper surface, one on the lower border and two on the lower surface, and the dactylus with four, one on the upper border, one on the upper surface, one on the lower border and one on the lower surface; the ridges on the upper borders of the propodus and dactylus are carinated and more or less two-ridged. In the natatory legs the propodus and dactylus are depressed and fringed with longish hairs as usual; the dactylus is rather strongly ovated and medially stregthened by a longitudinal thin ridge.

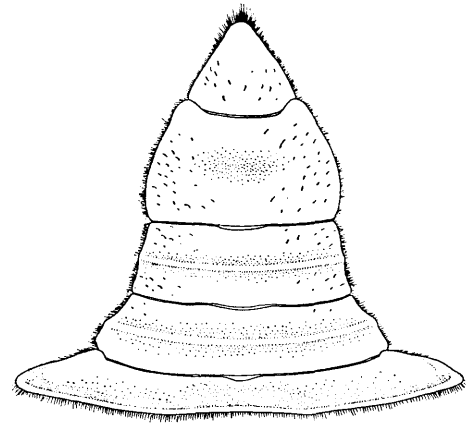

Fig. 3. *Nectocarcinus bennetti* sp. nov., abdomen of holotype, ×2.9.

The sternum is entirely and uniformly covered with very short hairs except for the anterior portion in front of the abdomen, where the longish hairs are implanted. The abdomen is also covered with short microscopical hairs; the second to the fifth segments are medially provided each with a transverse carina, those of the second and third segments being very prominent; the penultimate segment is much longer than the others, and laterally bulged. The first pleopod is twisted and very stout with marked lateral curvature. The second pleopod is longer than the first and whip-like, being flattened near the tip.

Description of paratypes. Two males and three females are available, but they are somewhat young and much more smaller than the holotype, and moreover, one male and one female are badly damaged. The colour in life is much lighter than that of the holotype, and sometimes whitish for the greater surfaces. The ornamentation and hairiness of the dorsal surface, and the formation of the carapace, chelipeds and ambulatory legs are quite like those of the holotype. In the two male specimens, the first male pleopods which are not fully developed are,

however, also curved outwards and distinctly different from that of *N. antarcticus*.

Material examined.

44° 7.2′ S, 175° 55.5′ E (St. 35), 140 m deep, sand; 1 ♂ (holotype), ZLKU No. 13189, 2 ♂♂, 3 ♀♀ (paratypes), ZLKU No. 13190; Jul. 16, 1968; K. Baba leg.

Measurements (in mm).

	Holotype ♂	Paratype Largest ♀
Length of carapace with frontal lobe	32.0	15.3
Breadth of carapace with lateral teeth	39.6	18.4
Breadth of front with lateral lobes	6.7	3.9
Breadth of fronto-orbital border	18.3	10.0
Length of natatory dactylus	14.2	6.5
Height of natatory dactylus	6.7	3.1

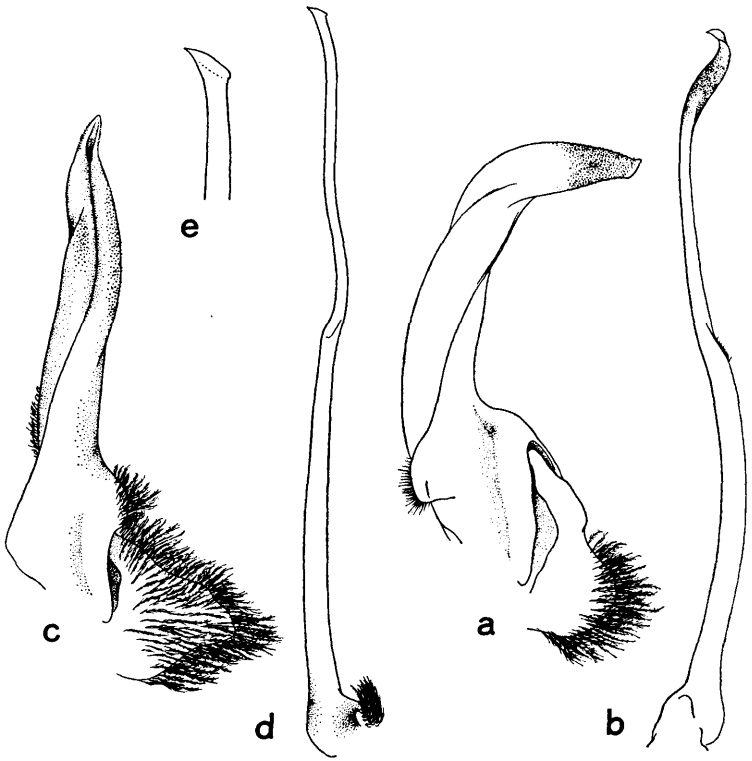

Fig. 4. *Nectocarcinus bennetti* sp. nov., holotype. a. Left first pleopod in abdominal view, ×20; b. Left second pleopod in sternal view, ×20. *Nectocarcinus antarcticus* (Jacquinot), ♂ (No. 13157). c. Left first pleopod in abdominal view, ×20; d. Left second pleopod in abdominal view, ×20; e. Tip of the same enlarged, ×30.

Colour in life. The greater surface of the carapace is light reddish brown with darker granules; the gastric, cardiac and intestinal regions are brownish with reddish granules on the gastric region and with brownish granules on the cardiac and intestinal regions; the anterolateral regions inside the first and second anterolateral teeth are brilliant purplish pink. In the cheliped the inner excavated surface of the merus is dark purplish red, and the outer distal surface of the carpus and the outer upper surface of the palm are pale purple with darker spiniform granules; otherwise, the inner upper surface of the palm is reticulated with dark purplish red. In the ambulatory and natatory legs the ridges stregthening the legs are pale purplish red or brownish; the carinae on the upper and lower borders of the distal three segments are white.

Remarks. According to Dawson (1963), it is already known that two species of the genus *Nectocarcinus* occur in the subantarctic water. Dawson described in the notes on the Auckland Islands as, "It seems that two species or forms of *Nectocarcinus* occur together here and the exact status of these forms will be much more easily determined from the abundance of both sexes which we obtained."

This species is closely related to *N. antarcticus* (Jacquinot) in the general formation of the carapace, chelipeds and ambulatory legs. The armatures of the chelipeds and the ridges or carinae stregthening the ambulatory and natatory legs are in reality quite alike in both species. In *N. antarcticus* the carapace is wholly and densely covered with short hairs that are obviously detected by the unaided eye and bear an appearance of tomentum, while in the new species the carapace is almost naked only with microscopical hairs. In *N. antarcticus* most of the ridges on the dorsal surface are each fringed with a row of granules, but in the new species the granules are aggregated to form a granulated ridge as a whole; moreover, those granulated ridges are more accentuated in *N. antarcticus* than in the new species; the intestinal region is as prominent as the cardiac region in the new species, but it is very low in *N. antarcticus*. The orbit and the anterolateral teeth are more distinctly serrated in the new species than in *N. antarcticus*. The exposed surfaces of the sternum and abdomen are entirely tomentose in *N. antarcticus*, while in the new species the greater surfaces of the sternum and abdomen are almost naked. The natatory leg may be more adapted for swimming with more strongly ovate dactylus in the new species than in *N. antarcticus*. The male abdomen of *N. antarcticus* tapers from the third to the distal segment, the penultimate being not bulged laterally, but in the new species the penultimate segment is prominently bulged. The first male pleopod of *N. antarcticus* bears no lateral curvature, but in the new species it is

strongly curved outwards. The colour in life is distinctly different in both species; in this species the brilliant purple colour on the anterolateral surfaces of the carapace and on the chelipeds makes the species instantly conspicuous, being distinct from the uniformly dark reddish brown colour of *N. antarcticus*.

Family GONEPLACIDAE

Genus *Carcinoplax* H. Milne Edwards, 1852

Carcinoplax victoriensis Rathbun, 1923

Two-spined crab

Carcinoplax victoriensis Rathbun, 1923, p. 101, pl. 19; Dell, 1960, p. 4, pl. 1; Dell, 1963, p. 251; Dell, 1968, p. 25 (in list).

Material examined.

42° 55.5′ S, 177° 26′ E (St. 30), 424 m deep, mud; 1 juv., ZLKU No. 13269, 1 ♀ from stomach of *Scorpaena* sp., ZLKU No. 13270; Jul. 14, 1968; K. Baba leg.

43° 0.1′ S, 177° 2.5′ E (St. 31), 365 m deep, mud; 2 ♂♂, 1 ♀, ZLKU No. 13199; Jul. 14, 1968; K. Baba leg.

43° 5′ S, 174° 55.5′ E (St. 27), 380–470 m deep, mud and sand; 4 ♀♀, ZLKU No. 13195; Jul. 13, 1968; K. Baba leg.

43° 9′ S, 175° 54.2′ E (St. 20), 390–400 m deep, mud; 1 ♀, ZLKU No. 13271; Jul. 2, 1968; K. Baba leg.

Measurements (in mm).

	Largest ♂ (No. 13199-1)	Largest ♀ (No. 15102)
Length of carapace	10.9	20.2
Breadth of carapace with lateral spines	15.6	27.5
Breadth of carapace without lateral spines	13.6	25.3
Breadth of front	4.4	7.5
Fronto-orbital breadth	9.8	16.8

Colour in life. The greater part of the carapace is pale vermilion with darker front. In the cheliped the distal end of the merus, the entire outer surface of the carpus and the upper border of the palm are also pale vermilion. The fingers are pale blackish brown just near the tips. The ambulatory legs are white except for the distal parts of the meri where are the same colour as the carapace.

Remarks. The present materials examined are rather smaller and attain much larger size. The anterolateral border is armed with two

spines, of which that on the lateral angle is very prominent and directed obliquely-forwards and upwards. A small spine behind the low external orbital angle is directed more strongly forwards than the posterior prominent spine.

Distribution. This species was originally reported from some localities off Gabo Island, Vic., Australia, 125–595 m deep. In New Zealand it ranges geographically from the Bay of Plenty to the Chatham Islands and the Chalky Sound, Prov. Otago, and bathymetrically from 125 to 720 m.

Neommatocarcinus gen. nov.

Diagnosis. Carapace wide and vaulted antero-posteriorly. Front constricted between eyestalks. External orbital angle greatly developed, spiniform and directed straightly outwards for reception of enormously long eyestalk.

Basal segments of antennules contact each other without a median septum; antennules completely retractile to their fossae. Buccal cavern narrower in front, and its anterior margin strongly produced in a crest-like ridge. In third maxilliped antero-external angle of merus not produced; palp rather long, and its tip almost reached posterior limit of buccal cavern in median line. Stridulatory mechanism not developed.

Male abdomen of five segments with a fused middle segment, while female abdomen of distinct seven segments; male abdomen narrow and by far not reached to coxae of last ambulatory legs. Male genital opening coxal; second male pleopod subfiliform and longer than first one.

Type-species: *Ommatocarcinus huttoni* Filhol, 1885.

Remarks. According to Balss (1957), the subfamily Goneplacinae is known only by three genera, viz. *Goneplax* Leach, 1814, *Ommatocarcinus* White, 1852 and fossil *Mioplax* Bittner, 1883. The present genus is therefore the third one of the subfamily excluding the fossil genus.

The present new genus is closely related to *Ommatocarcinus* White, 1852 in the general formation of the carapace, chelipeds and ambulatory legs. It is, however, readily distinguished from the latter by the following important features such as the formation of the antennules, buccal cavern, third maxillipeds and male abdomen. The most important generic value is founded on the constitution of the male abdomen.

In the new genus the basal segments of the antennules are medially contact each other without a septum, but in *Ommatocarcinus* they are distinctly separated by a well developed median septum. The antennular peduncles are short and completely retractile to their fossae in the new genus. In *Ommatocarcinus*, however, the antennular peduncles are so

long that they are not completey retractile to their fossae, but protruded laterally. The buccal cavern is narrower in front, and its anterior margin is strongly crested and overhangs the buccal cavern in the new genus, while it is somewhat wider in front, and its anterior margin is bluntly crested and very low in *Ommatocarcinus*. In the new genus the third maxilliped is more incomplete with truncated antero-external angle of merus and with longer palp than that of *Ommatocarcinus* in which the merus is quadrate and the palp is rather short. In the new genus there is no stridulatory mechanism formed by the milled ridge below the infraorbital border together with the ridge on the base of the merus of the cheliped. In the new genus the male abdomen is composed of five narrow segments instead of seven wide segments in *Ommatocarcinus*.

The genus *Ommatocarcinus* has hitherto been represented by the following five recent and two fossil species from the Indo-Pacific areas, and one fossil species from Spain.

1) *O. macgillivrayi* White, 1852 is a type-species of the genus. Its type-locality is Port Curtis, Queensland, Australia, and the additional locality is Japan. As remarked below, however, the record of the occurrence in South Africa known as *O. pulcher*, may be turned to that of the present species. In Japan it ranges from the Sagami Bay southwards to the west coast of Kyushu along the Pacific coast. Its bathymetric range is usually from 15 to 150 m.

2) *O. huttoni* Filhol, 1885 which is endemic in New Zealand was already transferred to the genus *Neommatocarcinus* as a type-species. The morphological note and the geographical and bathymetrical ranges are described in the later pages.

3) *O. orientalis* Tesch, 1918 based on a male from off the Kei Islands, 90 m deep, may be a valid species, though Barnard (1950) stated that it appears to be a juvenile. In the characteristic small crab the antennules are completely retractile to the fossae, the third maxillipeds are wide, and the male abdomen is wide and composed of seven distinct segments. This species therefore remains in the genus in spite of its poor knowledge.

4) *O. fibriophthalmus* Yokoya, 1933 is also known only by a female from between Tsu-shima Island and the Goto Islands, northern Kyushu, Japan, 146 m deep. The species which is the most characteristic in having the enormously long eyestalks still remains in the genus with slight hesitation due to the incomplete specimen and short original description.

5) *O. pulcher* Barnard, 1950 found in a stomach of fish from Natal, South Africa may be reduced to synonymy of *O. macgillivrayi*, as the description and figures are almost exactly applicable even to

the early known species. It is impossible to distinguish both species on the bases of the original description and figures. It is not acceptable that the antenna is three-jointed without flagellum. The fact is apparently due to the damage in the stomach of fish.

6) *O. corioensis* (Cresswell, 1886) which is said to be found from the Eocene and Miocene beds in Victoria, Australia is closely related to the recent *O. macgillivrayi*. It differs from the living species in the outline of the carapace, the shape of the external orbital spine and the regional markings. It may be retained in the genus.

7) *O. arenicola* Glaessner, 1960 from Mt. Brown, Waipara River (Prov. Canterbury), New Zealand is said to have occured from the upper part of the Oligocene to the middle part of the Miocene. Though the specimens may be possibly assigned to an early primitive form of the genus *Ommatocarcinus*, it is impossible to be retained in the genus, and represents a distinct genus due to bearing the quite different contour of the carapace that is less specialized somewhat like that of the genus *Goneplax* Leach, 1814. The new generic name, *Glaessneria*, is therefore proposed for a fossil species, *Ommatocarcinus arenicola* Glaessner, 1960 (Glaessner, 1960, p. 28, fig. 12, b, pl. 7, fig. 3). The genus is close to the genus *Goneplax* in the contour of the carapace, and to the genus *Ommatocarcinus* in the formation of the front and in having the long chelipeds.

8) *O. zariquieyi* via Boada, 1959 is known from the Eocene bed in Spain, and only a representative of the genus from the European areas. It is related to the recent *O. macgillivrayi* in its general formation of the carapace and chelipeds. The front is somewhat triangular, being produced in the middle. It is said that in the male abdomen the third to fifth segments are coalescent like in the case of the genus *Neommatocarcinus*. Accordingly, in spite of the far apart localities and epochs this fossil species may be transferred to the genus *Neommatocarcinus* based on the formation of the male abdomen.

Neommatocarcinus huttoni (Filhol, 1885)

Policeman crab

(Figs. 5, 6, Pl. 2, Fig. A)

Ommatocarcinus Huttoni Filhol, 1885, p. 384, pl. 43, figs. 1, 2.

Ommatocarcinus macgillivrayi, Miers, 1886, p. 247; Chilton, 1911, p. 292; Thomson, 1913, p. 237; Chilton and Bennett, 1929, p. 757; Richardson, 1949a, p. 36 (in key), fig. 21; Dell, 1960, p. 5; Bennett, 1964, p. 74, figs. 79-83, 135; Dell, 1968, p. 26 (in list).

Description. The carapace is transverse and strongly vaulted antero-posteriorly; its dorsal surface is uniformly and microscopically

granulated, but the granules near the supraorbital borders are easily detected by the unaided eye; there is no prominent ridge or depression, but a shallow short oblique depression just inside the anterolateral border and also a shallow rounded pit further inside the border are present; in addition, an oblique region is demarcated at each side of the gastro-cardiac separation by the oblique depression of the posterolateral border of the mesogastric region and some small shallow depressions. The front is strongly declivous so as to conceal the true border in the dorsal view and constricted at the base; at each side of the median small prominence it is only shallowly depressed, and its lateral angle is extended obliquely forwards. The supraorbital border is excavated and entire at its inner one-fourth, convex and granulated in the middle, and then transverse at its outer one-fourth; the external orbital angle is spiniform behind the external orbital spine the lateral border of the carapace is somewhat convex dorsally, and then true posterolateral border runs almost longitudinally; the posterior border of the carapace is prominently concave in the middle. The eyestalk is long, and stouter distally; the cornea is chiefly ventral, and its dorsal part exceeds the external orbital spine. The infraorbital proximal lobe is prominent and directed obliquely outwards; the inner part of the infraorbital border is weakly but more distinctly raised than its outer part.

The chelipeds are equal and almost alike each other, but in reality the formation of the cutting edges of the fingers is somewhat different; the male chelipeds are much longer than those of the females. The merus is armed with a spinule at the middle way of its upper border, two along the distal half of the inner lower border, and one at the distal one-third of the outer lower border; those spinules are minute and granuliform in the male chelipeds. The inner angle of the carpus is not produced in both sexes; in the female cheliped it is armed with a spinule at its outer angle, but in the male cheliped the spinule is obsolete and only rounded. The chelae are rather compressed, especially the fingers are thin; in the palm a weak longitudinal elevation from the proximal part to the base of the movable finger is more or less demarcated; the movable finger is somewhat contorted outwards; along the distal part of the palm and the proximal part of the immovable finger, the lower border is crested and convex; its convexity is much more prominent in the male chelae than in those of the females; both cutting edges are sharply but irregularly toothed.

The ambulatory legs are comparatively slender. The merus bears a subterminal interruption and one or two subterminal spinules; otherwise, its upper border is almost entire, but in reality usually provided with minute granules and more or less serrated. Along the inner

upper borders of the carpus, propodus and dactylus, and the lower borders of the propodus and dactylus are fringed each with a row of dense longish hairs; the dactylus is somewhat twisted and more or less excavated at its inner surface.

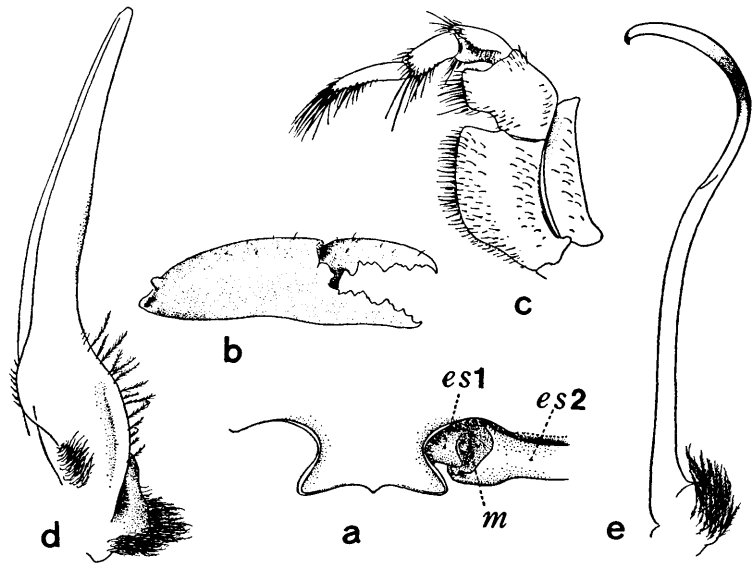

Fig. 5. *Neommatocarcinus huttoni* (Filhol), ♂ (No. 13205-2) a. Fronto-orbital region in frontal view, ×3.5; b. Right chela, ×1.8; c. Left third maxilliped, ×5; d. Left first pleopod in abdominal view, ×12.5; e. Left second pleopod in abdominal view, ×12.5. Abbreviations. *es* 1, *es* 2. Proximal and distal segments of eyestalk. *m*. Membraneous parts of both segments.

Material examined.

43° 26.5′ S, 176° 46.8′ E (St. 22), 260 m deep, rocks and sea anemones; 2 ♂♂, ZLKU No. 13205, 1 ♂, ZLKU No. 13280; Jul. 2, 1968; K. Baba leg.

44° 19.7′ S, 172° 56′ E (Dredge St. 1), 120 m deep, mud; 2 ovig. ♀♀, 1 ♀, ZLKU No. 13202; Jun. 21, 1968; K. Baba leg.

Measurements (in mm).

	♂ (No. 13205-1)	♂ (No. 13205-2)	Ovig. ♀ (No. 13202-1)
Length of carapace	16.4	14.5	12.0
Distance between external orbital angles	38.3	35.0	26.8
Breadth of carapace behind posterior slope of external orbital angle	26.5	23.3	19.5
Breadth of front	6.5	6.3	4.7

Length of eyestalk with cornea	19.3	17.7	14.3
Length of chela along lower border	26.0	20.5	12.7
Height of palm	8.0	6.3	4.6

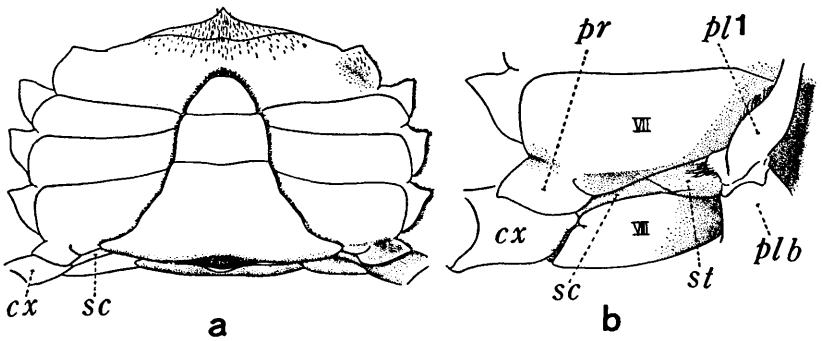

Fig. 6. *Neommatocarcinus huttoni* (Filhol), ♂ (No. 13205-2) a. Thoracic sternum and abdomen, somewhat tilted anteriorly, ×2.9; b. Details of seventh and eighth sternites, ×5.5. Abbreviations. VII, VIII. Seventh and eighth sternites. *cx*. Coxa of fifth ambulatory leg. *pl*1. Right first pleopod. *plb*. Basal segment of first pleopod. *pr*. Prolongation of seventh sternite. *sc*. Calcified part of sperm duct. *st*. Transparent part of sperm duct.

Colour in life. The colour of this species is very beautiful and quite different from that of *Ommatocarcinus macgillivrayi*, in which the carapace is uniformly pinkish with darker spots. In this species the dorsal surface is for its greater surface yellowish vermilion, but the gastric region is somewhat darker; the anterolateral surface behind the external orbital spine is obliquely white, and the posterolateral and posterior surfaces except at its middle of the latter are also white; at each side of the gastro-cardiac separation is a prominent purple region which is bordered with darker colour; in addition, there are two white pits, one just inside the white region at the anterolateral surface and the other just in front of the submedian purple region. The eyestalk is blackish brown near the cornea, which is gradually faded out in the middle of the eyestalk; its prolongation on to the cornea is white. The infraorbital lobe just outside of the antenna and the anterior margin of the buccal cavern are brick red. The chelipeds and ambulatory legs are for their greater surfaces whitish or creamy white. In each merus of the chelipeds the upper border is brick red along its whole length, and the inner surface is yellow at its proximal two-thirds and purple at its distal one-third; in the carpus the outer surface is purple at its half correspondent to the purple region of the merus; the upper border of the palm is pale orange and distally darker. In the ambulatory legs the upper border of each merus is dark purplish

red and more or less patterned; the distal part of the merus beyond the subdistal constriction is the same colour as that of its upper border, but much more darker; both borders of the carpus and the upper border of the propodus are pale purple.

Remarks. The present specimens should attain more larger size in both sexes and have the enormous chelipeds in the males.

The confusion between this species and *Ommatocarcinus macgillivrayi* White had been arisen, since the New Zealand specimens were assigned to *O. macgillivrayi* with a little reservation by Miers (1886) who had completed his work almost simultaneously with Filhol (1885). Miers, however, enumerated some differences and remarked as, "These differences will perhaps be found to be of specific importance." Subsequent New Zealand carcinologists, especially Chilton (1911) and Chilton and Bennett (1929), followed Miers with reagrd to the specific name after the extended discussion. Recently Bennett (1964), however, examined many specimens and remarked as, "In spite of the marked differences, the New Zealand specimens represent only one species, whose identity with the Australian form is however doubtful. If distinct the New Zealand form will take the name *O. huttoni* Filhol." Afterwards Dell (1968) also noted in the checklist of the crabs of New Zealand that the New Zealand form is separable from the Australian. Those two recent authors' comments were proved to be acceptable as already shown in the generic diagnosis. Further small differences between the two species are remarked as follows.

In addition to the generic differences between this species and *O. macgillivrayi*, this species also distinctly different from it in the ornamentation of the carapace, the form of the front and eyestalks, and the colour. In this species the carapace is generally arched anteroposteriorly without any transverse ridge, while in *O. macgillivrayi* the carapace is anteriorly ornamented with a prominent transverse ridge. The front is very shallowly concave at each side of a median small prominence in this species, but deeply excavated in *O. macgillivrayi*. The eystalks of this species are much stouter than those of *O. macgillivrayi*. The colour in life has been already noted above.

Distribution. This species is endemic in New Zealand and mainly known from the south-east coasts of main lands. Bair I., near C. Kidnappers (Prov. Hawkes Bay), 67 m deep; Off Akitio River (Prov. Wellington), 36 m deep; Queen Charlotte Sd., Cook Str. (Prov. Marlborough), 18 m deep; Off Akaroa, Banks Penin. (Prov. Canterbury), 36 m deep; Chatham Is., 42–594 m deep; Off Oamaru, 45–54 m deep, off Otago Heads and Stewart I. (Prov. Otago).

Family PINNOTHERIDAE
Genus *Pinnotheres* Latreille, 1902
Pinnotheres novaezelandiae Filhol, 1885

Pear, or Mussel crab

Pinnotheres pisum, Heller, 1865, p. 67; Miers, 1876, p. 48; Filhol, 1885, p. 394; Chilton, 1906, p. 266; Thomson, 1913, p. 238; Borradaile, 1916, p. 100, fig. 12; Richardson, 1949a, p. 36 (in key), fig. 23.

Pinnotheres Novae-Zélandiae Filhol, 1885, p. 395, pl. 46, figs. 1-6.

Pinnotheres novae-zelandiae, Lenz, 1901, p. 32, figs. 11-14.

Pinnotheres novae-zealandiae, Chilton, 1911, p. 295; Chilton and Bennett, 1929, pp. 775-776; Yong, 1929, p. 152; Richardson, 1949a, p. 36 (in key).

? *Pinnotheres novaezelandiae*, Rathbun, 1923, p. 98, fig. 2, pl. 16, fig. 2.

Pinnotheres novaezelandiae, Scott, 1961, pp. 304-308, figs. 1, 4, 6; Bennett, 1964, p. 76, figs. 84, 85, 92, 93; Dell, 1968, p. 26 (in list).

Material examined.

44° 45.5′ S, 172° 21.3′ E (St. 2), 160 m deep, sand; 2♀♀ from large fan mussel, ZLKU No. 13207; Jun. 18, 1968; K. Baba leg.

Measurements (in mm).

	♀	♀
Length of carapace in median line	14.8	15.0
Breadth of carapace above ambulatory legs	15.9	16.8
Fronto-orbital breadth	5.2	5.7
Length of chela	11	12
Length of movable finger	4.7	5
Height of palm	4.8	5.4

Remarks. The present two females are in good preservation and referred to this polymorphic species in all probability. This species is well figured and distinguished from the other representative of the family from New Zealand, *P. shauinslaudi* Lenz, by Benett (1964). Though Bennett distinguished the two species, Scott (1961) summarized that the family Pinnotheridae is represented in New Zealand by a single polymorphic species, *P. novaezelandiae*, and subsequently Dell (1968) eliminated *P. shauinslaudi* from the checklist of the crabs of New Zealand.

Distribution. This species occurs in New Zealand except for only a record from Flinders Island, the Bass Strait made by Rathbun (1923). The female specimen from the Bass Strait is at least very near to the New Zealand species, but more specimens are needed before the possible identification. This species is, as understood, probably endemic in New Zealand. It ranges from the Spirits Bay, the north coast of Province

Auckland southwards to the Chatham Islands and Stewart Island along the east coasts of both Islands, and from Manukau Harbour, near Auckland southwards to Nelson faced to the Cook Strait along the west coast of North Island.

Family HYMENOSOMATIDAE

Genus *Elamena* H. Milne Edwards, 1837

Elamena longirostris Filhol, 1885

(Fig. 7)

Elamena longirostris Filhol, 1885, p. 403, pl. 46, fig. 7; Borradaile, 1916, p. 101; Tesch, 1918, p. 24; Richardson, 1949b, p. 67 (in key), fig. 40.

Description. The carapace is almost exactly trigonal; its dorsal surface is not strongly convex, but nearly flat posteriorly; the median gastric region is evenly elevated and provided with scant stout setae; otherwise, the cardiac region is obscurely demarcated; the marginal rim of the dorsal sarface is distinct but not raised; the lateral wall of the carapace is weakly expanded and observable along the anterolateral portion of the marginal rim; a high tubercle that is directed obliquely-upwards is present on the marginal rim near the first and second ambulatory legs; near and at the base of the present tubercle are sparse short hairs.

The front is formed by a somewhat triangular rostrum which is strongly extended forwards and upwards; the rostrum is weakly bulged at the middle of each lateral border and acute at the tip; the lower surface of the lobe is equipped with a short but high median crest just near the tip; in addition, a very high tubercle that is curved forwards near the tip and fringed with sparse stout setae at the lower surface is placed medially just in front of the antennules.

The antennular basal segments are very stout, and each antero-outer angle is strongly produced in a prominent lobe that is extended forwards; the inter-antennular septum is basally developed as a blunt septum; accordingly, the antennular basal segments are not contact each other, though they become closer in front; the antennular peduncles are obliquely folded at each side of the median tubercle.

The antennal basal segment is oblique, curved and forms the inner part of the infraorbital border; the second segment is longitudinal and hardly reached the anterior margin of the antennular basal segment, being fringed with several stout setae along the outer border; the third segment is as long as the second, but less stouter; the flagellum is as long as or slightly shorter than the second and third segments.

The eyestalk is short and stout, being fringed with several short stout setae at the ventral distal margin; its anterior border is weakly tuberculated in the middle, and the ventral surface near the cornea is shallowly excavated; its prolongation on to the cornea is terminally tuberculated. In the dorsal view the cornea and the distal half of the eyestalk are observable. The orbit is very incomplete, but its external angle is produced in an acute prominent tooth.

The epistome is rather sunken posteriorly. The buccal cavern is narrower in front, and its antero-external angle is produced in a tubercular tooth. The third maxillipeds are broad so as to close the buccal cavern and covered rather sparsely with longish stout setae; the antero-inner angle of the ischium is strongly extended as a lobe which is curved obliquely-outwards and somewhat upwards; the antero-outer angle of the merus is also produced in a lobe which is greatly extended forwards; the carpus is expanded distally and armed with a prominent spine at its distal upper part; the propodus is crested at the upper border along the whole length; the dactylus is slender and about twice as long as the propodus. The pterygostomian region is inflated at the outer middle part, at where a high tubercle is present.

The chelipeds are equal and slender. The merus is armed with a terminal tubercle. The carpus is swollen distally and as high as the palm which is rather slender and covered with more or less longitudinally disposed short setae. The fingers are longer than the palm and curved inwards near the tips; the cutting edges are microscopically serrated along the whole length, and in addition, each of them is armed with three distant, larger spiniform teeth in the middle and two smaller ones near the tips; the tips are sharply pointed and crossed each other.

The ambulatory legs are very long. The merus is covered with several long hairs and short setae and armed with a high terminal tubercle. The carpus is also armed with a terminal tubercle which is much smaller than that of the merus; in addition, a still smaller prominence associated with a tuft of short hairs is present near the proximal part of the upper border. The propodus is somewhat depressed, widening distally; its lower border is thickly provided with short hairs. The dactylus is depressed and slightly curved; both the upper and the lower borders are densely fringed with short hairs or setae; near the small terminal claw are two teeth, of which the main one is somewhat directed inwards and the accessory distal one somewhat outwards.

The abdomen is roughly eroded and so greatly developed that the whole sternum is covered; it bears a median and some transverse elevations; its margin is rather irregular, and the marginal hairs are short.

Material examined.

43° 59′ S, 173° 28.3′ E (St. 16), 90–116 m deep, sand and small stones; 1♀, ZLKU No. 13209; Jun. 30, 1968; K. Baba leg.

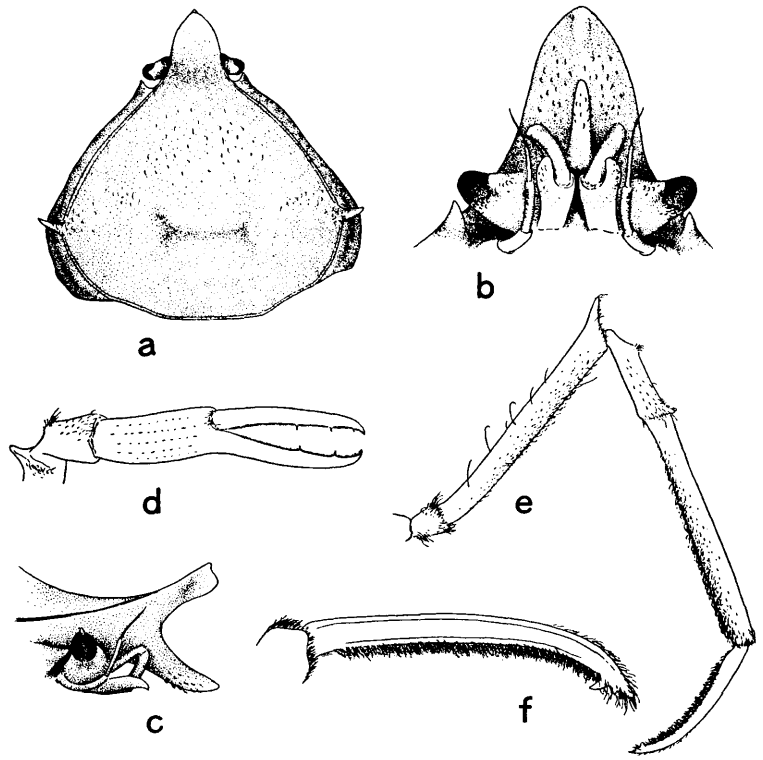

Fig. 7. *Elamena longirostris* Filhol, ♀ (No. 13208). a. Carapace, ×4.5; b. Fronto-orbital region in lower view, ×10; c. Profile of the same, ×7.5; d. Right chela, ×4.5; e. Right third ambulatory leg, ×4.5; f. Dactylus of the same leg enlarged, ×10.

Measurements (in mm).

Length of carapace without rostrum	10.6
Length of rostrum	2.3
Breadth of rostrum	1.7
Breadth of dorsal surface without lateral tubercles	9.3
Breadth of dorsal surface with lateral tubercles	10.8

Colour in life. The carapace, chelipeds and ambulatory legs are entirely light pale brown, but the dorsal surface of the carapace is somewhat greyish and the ambulatory legs are darker brown.

Remarks. In the general contour of the carapace this species bears much resembrance to the members of the genus *Trigonoplax*, e.g. *T.*

cimex Kemp from the Chilka Lake and *T. xavieri* Kemp from Portuguese India. However, the carapace is not as thin as a wafer but rather thick and the male chelipeds are much stouter than the ambulatory legs. This species is otherwise different from the members of both genera in having the sharp cutting edges of the fingers, a tubercle in front of the antennules and a tubercle at the junction of the anterolateral and posterolateral borders of the dorsal surface. This species takes, as understood, an intermediate position between *Elamena* and *Trigonoplax*. This species is therefore rather tentatively assigned to, but may be more close to the present genus rather than to *Trigonoplax*.

Distribution. This species was originally recorded from Auckland Island. Only other locality known to date is the north of North Island (34° 15′ S, 172° E) recorded by Borradaile (1916). This species is not shore, but offshore.

Family MAJIDAE

Genus *Leptomithrax* Miers, 1879

Leptomithrax richardsoni Dell, 1960

Richardson's masking crab

Leptomithrax richardsoni Dell, 1960, p. 2, fig. 3, pl. 2; Griffin, 1966b, p. 79, figs. 16, 23, 3, 4, pls. 3, 4; Dell, 1968, p. 24 (in list).

Material examined.

43° 8.7′ S, 178° 14.4′ E (St. 25), 382 m deep, mud; 1 ♂, ZLKU No. 13258; Jul. 12, 1968; K. Baba leg.

43° 9′ S, 175° 54.2′ E (St. 20), 390–400 m deep, mud; 1 ♂, ZLKU No. 13257; Jul. 2, 1968; K. Baba leg.

Measurements (in mm).

	♂ (No. 13258)	♂ (No. 13257)
Length of carapace without rostral spines and posterior median spine	80.5	78
Length of rostral spine along its inner margin	22	17
Breadth of carapace without lateral spines	70	66
Length of chela	137	137
Length of movable finger along its upper border	42	41
Height of palm	17	18.5

Colour in life. The dorsal surface is almost entirely greyish pale brown with pale orange tubercles; near the posterior border is a reddish

small region that is irregular in shape. The chelipeds and the ambulatory legs are nearly like the carapace, but the yellowish colour is somewhat darker. The inner surface of the palm is distinctly reddish vermilion which is more or less reticulated.

Remarks. The present specimens are much larger than the specimens reported by Griffin (1966b), and the chelipeds are more enormously developed. They are very different from the young type-specimens, but well agreeable with the additional adult ones by Griffin in having the larger size and much shorter spines of the carapace, the shorter and less divergent rostral spines, and the larger chelipeds. This species is most characterized and readily separated from the congeners by having a strong preorbital spine.

Distribution. This species is known to date from the Chatham Rise, Campbell Plateau and off Milford Sound, the west coast of Province Otago, 304 to 505 m deep.

Leptomithrax garricki Griffin, 1966

(Pl. 3, Fig. B)

Leptomithrax garricki Griffin, 1966b, p. 69, figs. 14, 11, 12, 18-23, 22, 5, 6, pls. 1, 2; Dell, 1968, p. 24 (in list).

Material examined.

43° 8.7′ S, 178° 14.4′ E (St. 25), 382 m deep, mud; 1 ♂, ZLKU No. 13239; Jul. 12, 1968; K. Baba leg.

43° 20.2′ S, 176° 35.5′ E (St. 21), 263–270 m deep, rocks and sea anemones; 1 ♀ young, ZLKU No. 13238; Jul. 2, 1968; K. Baba leg.

43° 22′ S, 175° 31′ E (Dredge St. 2), 180 m deep, rocks; 1 ♀ young, ZLKU No. 13237; Jun. 24, 1968; K. Baba leg.

Measurements (in mm).

	♂ (No. 13239)	♀ (No. 13238)
Length of carapace without rostral spines	59	25.5
Length of rostral spine along its inner margin	13	7.5
Distance between tips of rostral spines	9	6.3
Breadth of carapace without lateral spines	50	21
Breadth of carapace with lateral spines	61	25
Length of chela	55	13.5
Length of movable finger along its upper border	18.5	5.5
Height of palm	8.8	2

Colour in life. The carapace is yellowish brown mottled with brick red. In the cheliped the tubercles on the merus and carpus are coloured with orange, and the inner surface is somewhat reticulated with brick red and vermilion. The ambulatory legs are for the greater surfaces white only with irregular regions of pale orange. In the female, in addition, the outer surface of the palm is wholly pale orange more or less reticulated with darker colour.

Remarks. The present specimens are well agreeable with the original description and figures. Even the subadult two females are distinct from the other two allied congeners, *L. australis* (Jacquinot) and *L. longimanus* Miers. In the male specimen the first male pleopod is quite like that of the original figures and distinguished from those of the two species. This species seems to be most characterized by bearing the spiny but less tuberculated carapace and the long, rather slender male chelipeds.

Distribution. This species was originally recorded from off the Palliser Bay faced to the Cook Strait, 785 m deep, and off Kaikoura, Province Marlborough, 215 m deep.

Leptomithrax longipes (Thomson, 1902)

Long-legged masking crab

Paramithrax longipes Thomson, 1902, p. 362, pls. 7, 8; Chilton, 1911, p. 289, pl. 57; Thomson, 1913, p. 236; Chilton and Bennett, 1929, p. 738; Young, 1929, p. 150.
Leptomithrax longipes, Richardson, 1949b, p. 64 (in key), fig. 31; Dell, 1960, p. 2, fig. 2; Griffin, 1966b, p. 75, figs. 15, 23, 1, 2.
Leptomithrax (Zemithrax) longipes, Bennett, 1964, p. 54, figs. 35, 49-51, 121.
Leptomithrax (Zemithrax) moloch Bennett, 1964, p. 56, figs. 52-54, 122, 123.

Material examined.

43° 20.2′ S, 175° 14′ E (St. 13), 110 m deep, sand and sponges; 2♂♂, ZLKU No. 13244; Jun. 24, 1968; K. Baba leg.
43° 21.5′ S, 175° 31.5′ E (St. 15), 160-178 m deep, rocks; 1♂, ZLKU No. 13246; Jun. 24, 1968; K. Baba leg.
44° 7.2′ S, 175° 55.5′ E (St. 35), 140 m deep, sand; 4♂♂, 1♀, ZLKU No. 13252; Jul. 16, 1968; K. Baba leg.
44° 14.2′ S, 172° 33.1′ E (St. 18), 64-75 m deep, sand and shells; 3♂♂, 2♀♀, ZLKU No. 13247; Jul. 1, 1968; K. Baba leg.
45° 14.3′ S, 171° 29.2′ E (St. 3), 116 m deep, mud; 2♂♂, ZLKU No. 13240; Jun. 19, 1968; K. Baba leg.

Measurements (in mm).

	♂ (No. 13252-1)	♂ (No. 13252-2)
Length of carapace with rostrum	84	78.3
Length of rostrum	7.5	8
Breadth of carapace	71.5	65
Length of chela	65	66.3
Length of movable finger	31	32.5
Height of palm	24	23.4

Colour in life. The carapace is greyish with irregular blotches of dark purplish red. The third maxilliped is covered with dense greyish brown fur; its median boss is glossy white. The chelipeds and ambulatory legs are whitish also with blotches as those on the carapace along the upper borders. Those blotches are more prominent in the smaller specimens.

Remarks. This very distinctive species was elaborately described and figured by Bennett (1964) and Griffin (1966b). Bennett established a new subgenus, *Zemithrax*, on this species. In this species in reality the orbit is more closely shut in by the tendency for the upper fissures to become closed and by the closer approximation of the margins of the postocular spine and the antennal basal segment than in the cases of the other species. The other features are, however, so closely related to the typical forms that the subgenus based on this species seems to be not rigorously separated from the congeners. Accordingly, at present, the subgenus is eliminated, though the subgeneric separation may be possibly available in the monographical treatment based upon not only the relation between the antennal basal segment and the orbit but also upon such features as the formation of the third maxillipeds and the concavities of the thoracic sternum.

Most of the specimens examined the carapaces are rather clean only with some polychaete tubes and acorn barnacles. But in one specimen (No. 13244-1) the carapace is almost entirely covered with several actiniae, and the meri of the ambulatory legs with some.

Distribution. This species is probably endemic in New Zealand. Though this species in mainly known from the Otago district, it ranges rather widely from the Cook Strait and the Chatham Islands southwards to the Foveaux Strait. Otherwise, it is said that this species is reputedly known from Macquarie Island, the southern Tasman Sea. The bathymetric range is from the shallow water to 360 m.

Genus *Chlorinoides* Haswell, 1880

Chlorinoides filholi (A. Milne Edwards, 1876)

Plate-backed crab

Acanthophrys Filholi, A. Milne Edwards, 1876, p. 4; Bouvier, 1906, p. 490.
Acantophrys Filholi, Filhol, 1885, p. 365, pl. 39, figs. 1-3, pl. 40, figs. 6-8.
Chlorinoides filholi, Miers, 1886, p. 52 (in list); Griffin, 1966a, p. 4 (in list); Griffin, 1966b, p. 82, figs. 17, 20, 5, 6; Dell, 1968, p. 24 (in list).
Acanthophrys filholi, Chilton, 1911, p. 290; Thomson, 1913, p. 237; Chilton and Bennett, 1929, p. 741; Richardson, 1949b, p. 64 (in key), fig. 27; Dell, 1960, p. 2, figs. 1, 4-6, pl. 1; Bennett, 1964, p. 57, figs. 55-57, 124.

Material examined.

43° 20.2′ S, 175° 14′ E (St. 13), 110 m deep, sand and sponges; 1 ovig. ♀, ZLKU No. 13216; Jun. 24, 1968; K. Baba leg.
43° 20.2′ S, 176° 35.5′ E (St. 21), 263-270 m deep, rocks and sea anemones; 3♂♂, 2 ovig. ♀♀, 6♀♀, ZLKU No. 13218; Jul. 2, 1968; K. Baba leg.
43° 22′ S, 175° 31′ E (Dredge St. 2), 180 m deep, rocks; 1 ovig. ♀, 1♀, ZLKU No. 13210; Jun. 24, 1968; K. Baba leg.
44° 14.2′ S, 172° 33.1′ E (St. 18), 64-75 m deep, sand and shells; 1♀, ZLKU No. 13217; Jul. 1, 1968; K. Baba leg.
44° 23.6′ S, 171° 41.5′ E (St. 10), 48 m deep, sand; 1 ovig. ♀, ZLKU No. 13215; Jun. 23, 1968; K. Baba leg.
44° 35.09′ S, 172° 15.8′ E (St. 1), 102 m deep, sandy mud; 1 ovig. ♀, ZLKU No. 13212; Jun. 18, 1968; K. Baba leg.
44° 37.5′ S, 171° 45′ E (St. 5), 79 m deep, sand; 1 ovig. ♀, ZLKU No. 13214; Jun. 19, 1968; K. Baba leg.
45° 14.3′ S, 171° 29.2′ E (St. 3), 116 m deep, mud; 1♂, ZLKU No. 13213; Jun. 19, 1968; K. Baba leg.

Measurements (in mm).

	Largest ♂ (No. 13213)	Smallest ovig. ♀ (No. 13215)	Largest ovig. ♀ (No. 13210-1)
Length of carapace without rostrum and posterior dorsal plate	42.3	30.8	36.3
Length of rostrum along inner margin	18.0	9.0	11.2
Breadth of carapace	30.8	22.3	26.7
Breadth of carapace above ambulatory legs	34.0	22.9	27.4
Length of chela	48.0	14.7	17.9
Length of movable finger	19.5	7.4	8.6
Height of palm	14.1	6.7	7.0

Remarks. This distinctive crab is most characterized and readily distinguished from the congeners by having a prominent thin "plate"

or lamella at the posterior slope of the intestinal region. Though this species has been long known as *Acanthophrys*, Griffin (1966a, b) reduced the genus to synonymy with *Hastenus* and transferred most of the species known as *Acanthophrys* to *Chlorinoides*.

In all specimens examined the carapaces and the ambulatory legs are heavily camouflaged with numbers of the polychaete tubes, the ascidians and others.

Distribution. This species is endemic in New Zealand. It ranges from Cape Maria van Diemen southwards to Stewart Island along the east coasts of the Islands, and to the Chatham and Auckland Islands, but mainly known from off the Otago Heads. Its bathymetric range is from 25 to 540 m.

Genus *Jacquinotia* Rathbun, 1915

Jacquinotia edwardsii (Jacquinot, 1852)

New Zealand giant crab

Prionorhynchus edwardsii Jacquinot, 1852, pl. 1, fig. 1; Jacquinot and Lucas, 1853, p. 8; Miers, 1876, p. 11; Miers, 1879, p. 662; Hutton, 1878, p. 340; Filhol, 1885, p. 367, pl. 42, figs. 1-4; Rathbun, 1892, p. 243; Chilton, 1909, p. 608; Chilton, 1911, p. 290; Thomson, 1913, p. 237; Stephensen, 1927, p. 292; Chilton and Bennett, 1929, p. 742.

Paramicippa grandis Hector, 1900, p. 550.

Jacquinotia edwardsii, Balss, 1930, p. 200; Richardson, 1949b, p. 63 (in key), fig. 26; Griffin, 1963, p. 237, figs. 1-4; Griffin, 1966b, p. 86, figs. 18, 23, 5, 6.

Campbellia kohli Balss, 1930, p. 200, figs. 1-4; Richardson, 1949b, p. 64 (in key), fig. 29; Bennett, 1964, p. 60.

Jacquinotia edwardsi, Bennett, 1964, p. 61, figs. 58-61, 125, 126; Dell, 1968, p. 24 (in list).

Material examined.

44° 7.2′ S, 175° 55.5′ E (St. 35), 140 m deep, sand; 2♂♂, 3 ovig. ♀♀, 1♀, ZLKU No. 13230; Jul. 16, 1968; K. Baba leg.

44° 44′ S, 175° 42′ E (St. 36), 995-1,110 m deep, mud; 1♂, ZLKU No. 13236; Jul. 16, 1968; K. Baba leg.

Measurements (in mm).

	(No. 13236) ♂	(No. 13230-1) ♂	(No. 13230-3) Ovig. ♀	(No. 13230-5) Ovig. ♀
Length of carapace without rostrum	128	132.5	112	105
Length of rostrum	12	11	11	11
Breadth of rostrum	23.5	23	20.5	20
Breadth of carapace	129	130	108.5	102

Length of chela	110	93	56	56.5
Length of movable finger	51	47	39	29.5
Height of palm	35	27.5	18.5	17

Remarks. This giant crab is readily distinguished and systematically stable largely due to its large size and the good figures and descriptions hitherto given.

Contrary to the previous statements, of the present specimens dredged up in July, three females are ovigerous, and the another unovigerous female is apparently somewhat young. From this fact it is possibly thought that the adult females are ovigerous throughout the year like in the case of *Chionoecetes opilio* from the North Pacific.

In one specimen (No. 13236) which was dredged up from the unusual depth, the carapace and the chelipeds are much darker in colour and covered with the dense clusters of polychaete tubes, but in the other specimens the carapaces are rather clean and light-coloured.

Distribution. This species ranges from the coast of Province Otago southwards to Campbell Island and the Auckland Islands. Its distribution is therefore distinctly southern. It is said that on Campbell Island and the Auckland Islands this species is commonly found in tide pools amongst seaweed or on sandy beaches, and that the swarming of the great numbers is sporadic. Its bathymetric range is usually from the intertidal zone in the southern islands to the offshore waters down to 540 m around Stewart Island and Otago. The present one record of 995 to 1,110 m deep is apparently unusual.

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Plate 1

Latreillopsis petterdi Grant, 1905.

Fig. A. ♂ (No. 13098): Length of carapace in median line without rostral horn, 45 mm; Length of rostral horn, 12.5 mm; Length of supraorbital horn along its inner margin, 24 mm; Breadth of carapace without lateral spines, 38 mm.

Fig. B. ♂ (No. 13096-1): Length of carapace in median line without rostral horn, 60 mm; Length of rostral horn, 15 mm; Length of supraorbital horn along its inner margin, 37 mm; Breadth of carapace without lateral spines, 38 mm.

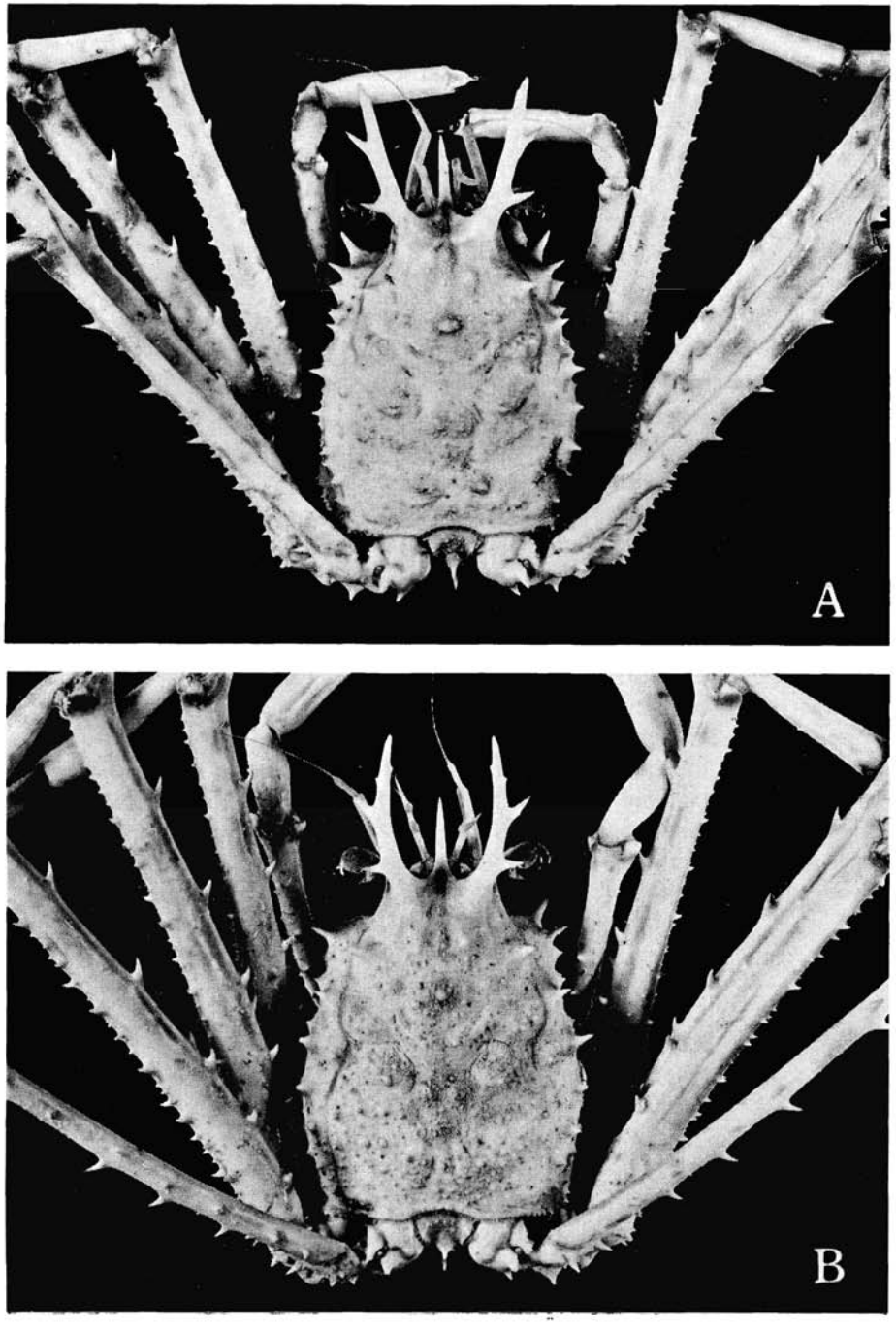
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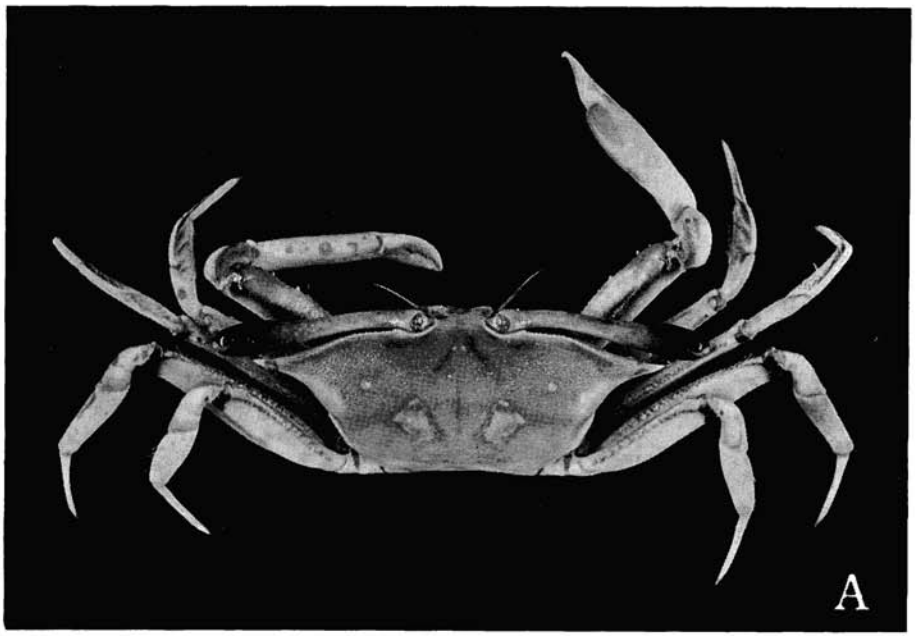
Plate 2

Fig. A. *Neommatocarcinus huttoni* (Filhol, 1885).
♂ (No. 13205-2): Length of carapace, 14.5 mm; Distance between external orbital angles, 35 mm.

Fig. B. *Nectocarcinus bennetti* sp. nov.
Holotype, ♂ (No. 13189): Length of carapace, 32 mm; Breadth of carapace with lateral teeth, 39.6 mm.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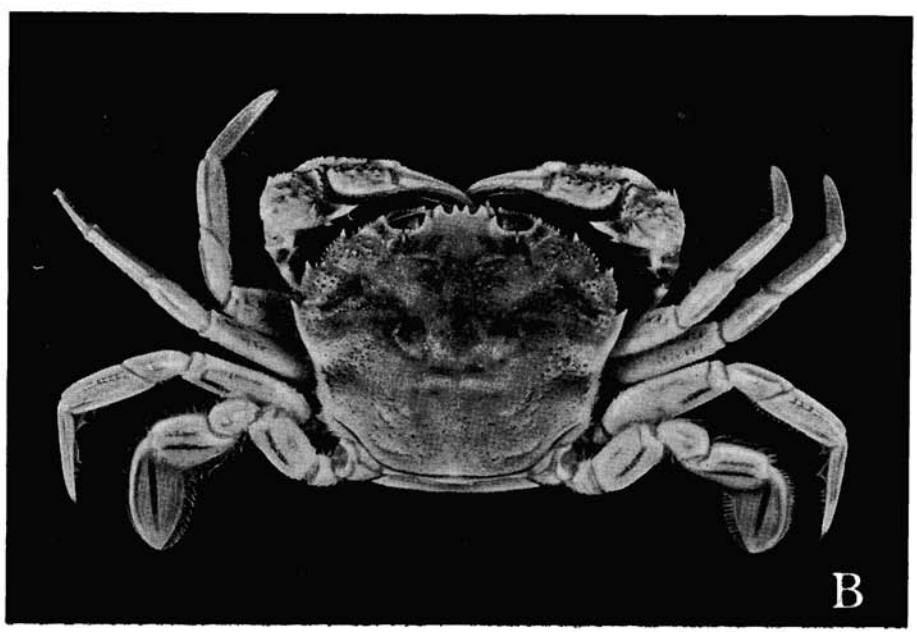
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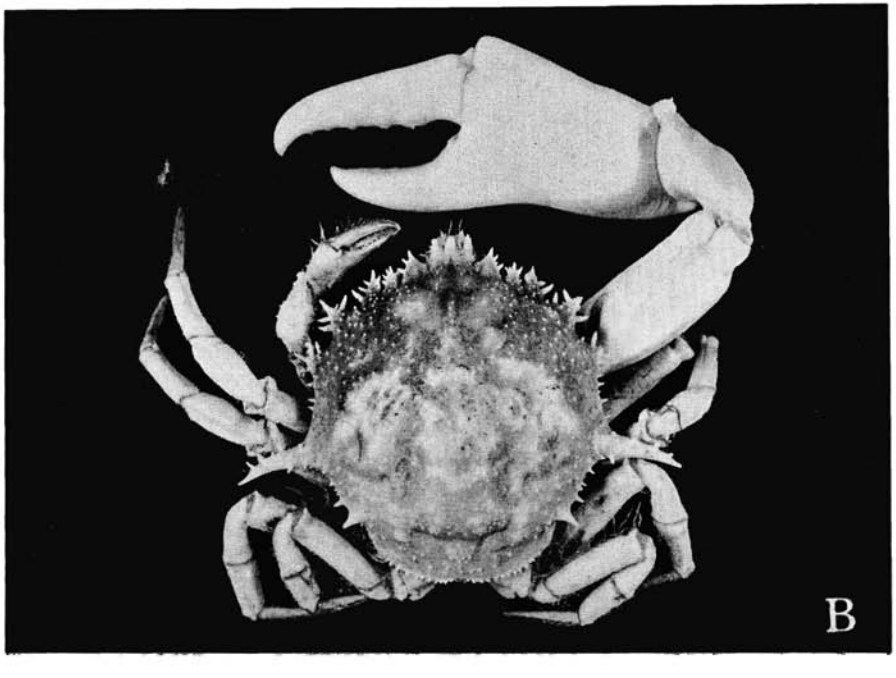
Plate 3

Fig. A. *Leptomithrax garricki* Griffin, 1966.
♂ (No. 13239): Length of carapace without rostral spine, 59 mm; Length of rostral spine along its inner margin, 13 mm; Breadth of carapace with lateral spines, 61 mm.

Fig. B. *Trichopeltarium fantasticum* Richardson et Dell, 1964.
♂ (No. 13156): Length of carapace with frontal spines, 65.5 mm; Breadth of carapace with lateral spines, 84.3 mm.


A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