To John S. Garth, With sincere best wishes, Griffin, 1963
Des Griffin 1641

REDESCRIPTIONS OF THE AUSTRALIAN MAJID SPIDER CRABS *LEPTOMITHRAX GAIMARDII* (H. MILNE EDWARDS) AND *PARAMITHRAX BARBICORNIS* (LATREILLE)

by

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Redescriptions of the Australian Majid Spider Crabs *Leptomithrax gaimardii* (H. Milne Edwards) and *Paramithrax barbicornis* (Latreille)

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Plates 6 and 7. Figs. 1–14. Manuscript received 14.12.62.

ABSTRACT

Paramithrax gaimardii H. Milne Edwards, 1834, is redescribed and figured from photographs of the holotype. It is regarded as a species of *Leptomithrax* Miers, 1876, conspecific with *L. australiensis* Miers, 1876, and *L. spinulosus* Haswell, 1880. *Paramithrax barbicornis* (Latreille, 1825) is also redescribed and figured and is considered synonymous with *Gonatorhynchus tumidus* Haswell, 1880, following Balss (1929). This species was designated as the type of the genus *Paramithrax* H. Milne Edwards, 1834, by Desmarest (1858) and the genus *Gonatorhynchus* Haswell, 1880, is consequently reduced to synonymy with *Paramithrax*.

INTRODUCTION

In the first volume of H. Milne Edward's (1834) major work on the Crustacea a new species of oxyrhynch crab, *Paramithrax gaimardii*, supposedly collected in New Zealand waters by Quoy and Gaimard, was described, and placed in Section B of Milne Edward's new genus *Paramithrax*. Unfortunately, the description was hardly adequate enough to permit later identification of the species. Consequently, the only mention of this name in later literature was Miers's (1876a : 219) short description and misidentification of the species at present known as *Leptomithrax sternocostulatus* (H. Milne Edwards, 1851) as *P. gaimardii*, and Filhol's (1886 : 356) brief redescription of Milne Edward's original material. Fortunately, Miers's remarks on his *P. gaimardii* left little doubt as to which species he was actually referring, and the mistake was later corrected (Miers, 1879a).

In 1876 Miers (1876a: 219) divided the genus *Paramithrax* into two subgenera, *Paramithrax* (s.s.) and *Leptomithrax*. Included in the latter was a new Australian species, *L. australiensis*. In his description of this species Miers remarked that it bore a general resemblance to the new New Zealand species, *L. longimanus* (the preceding species), but " the carapace is covered with small spinules, and there are three or four larger spines on the branchial regions. Anterior legs shorter (than *L. longimanus*); hand slightly compressed and granulous at the base; palm about as long as the wrist. The whole animal is covered with short, stiff hairs curled at the tips " (Miers, 1876a: 220). No figure of *L. australiensis* was provided.

Haswell (1880a: 441, pl. xxv, fig. 3) described *Leptomithrax spinulosus* from material collected by Mr. Kendall Broadbent in Tasmania. It is interesting to note that this was the same locality from which Miers had earlier described *L. australiensis*.

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Unlike the descriptions of Milne Edwards and Miers, this was detailed and provided with a good figure. More than 20 years later Fulton and Grant (1906a: 6), after examination of the type specimens of *L. australiensis* and *L. spinulosus*, the former in the British Museum of Natural History and the latter in the Australian Museum, Sydney, were able to say that the two species were synonymous. Fulton and Grant further stated: " This view is upheld by a memorandum in the handwriting of the late Mr. E. J. Miers attached to specimens in the British Museum received in exchange from Sydney ". However, most later workers seemed to have missed this paper, the name *L. spinulosus* continuing to appear in the literature.

Rathbun (1918: 21) noted that Filhol (1886) in his description of *P. gaimardii* had observed that the hepatic spine was bifurcate and that there were five marginal branchial spines on the carapace. From this Rathbun suggested that " this species (*L. spinulosus*) may be the *L. gaimardii* of Milne Edwards ". In addition another good figure of *L. spinulosus* was provided. Hale (1927a) figured *L. australiensis* and added some information about the habits of the species. Comparison of the photographs of the holotype of *Paramithrax gaimardii* with the descriptions and figures of *Leptomithrax australiensis* and *L. spinulosus* and with photographs of the holotype of the former species leads me to the conclusion that all three are conspecific and should therefore be known in future as *Leptomithrax gaimardii*.

The identity of the Australian *Paramithrax barbicornis* (Latreille, 1825) presents a problem rather similar to that posed by the foregoing species, having been figured only once and never adequately described. Originally described as *Pisa barbicornis* it was placed in section A of the genus *Paramithrax* by Milne Edwards (1834), but transferred to a separate new genus, *Lobophrys*, by Filhol (1886: 360) after examination of a species from New Zealand, supposedly closely related to *P. barbicornis* and formerly confused with it. This New Zealand species was called *Paramithrax cristatus* by Filhol, apparently unaware that Miers (1876a: 219) had already given it the name *P. latreillei*.

In the Australian literature Haswell (1880a: 437, pl. xxv figs. 4, 4a) described and figured a new genus and species of crab, *Gonatorhynchus tumidus*. Like his description and figure of *Leptomithrax spinulosus* these were quite satisfactory for later identification and the name became widely established in Australian literature (Fulton and Grant, 1906b; McCulloch, 1913; Hale, 1927a). In his revision of the majid Brachyura, Balss (1929: 17, 18, pl. 1 fig. 4) was able to show from an examination of a photograph of Latreille's type of *P. barbicornis* that this species and *Gonatorhynchus tumidus* were one and the same and he therefore adopted the name *Gonatorhynchus barbicornis*.

Ward (1933) made an interesting and important point when he noted that Desmarest (1858) had designated *P. barbicornis* as the type of the genus *Paramithrax*. The following are Desmarest's own words: " *Paramithrax* Edw.: groupe ne renfermant qu'un petit nombre d'espèces particulières a l'Australasie, et dont le type est la *Pisa barbicornis* Latreille." (Desmarest, 1858: 14). Dr. John S. Garth, Allan Hancock Foundation, Los Angeles, and Dr. L. B. Holthuis, Rijksmuseum van Natuurlijke Histoire, Leiden, have both (pers. comm.) confirmed the validity of Desmarest's designation. Unfortunately, Ward's paper was missed by later workers and Miers's (1879b) designation of *Paramithrax peronii* H. Milne Edwards, 1834, as the type of *Paramithrax* has consequently been accepted by nearly all recent workers on the group. It would appear, however, that *Paramithrax barbicornis* is not congeneric with *P. peronii* and the other species at present referred to *Paramithrax*, and it is intended to discuss this point in more detail elsewhere (Griffin, 1963).

The remaining part of the present paper is devoted to a redescription, based on photographs of the holotype, of *Leptomithrax gaimardii*, a species widely known in Australian literature as either *L. australiensis* or *L. spinulosus*, and of the type species of *Paramithrax*, *P. barbicornis*, which is recorded in the Australian literature as *Gonatorhychus tumidus*.

The terminology employed in this paper is based on that used by Rathbun (1925: 1, figs. 1, 2), and the system of dimensions follows that of Garth (1958: 27).

SYSTEMATIC DISCUSSION

Genus **Leptomithrax** Miers, 1876

Leptomithrax gaimardii (H. Milne Edwards, 1834)

Text figs. 1-6; pl. 1 figs. 1, 2; pl. 2 figs. , 1.

Paramithrax gaimardii H. Milne Edwards, 1834: 325. Filhol, 1886: 356. Not *P. gaimardii* Miers, 1876a: 219 = *Leptomithrax stenocostulatus* (H. Milne Edwards, 1851).

Leptomithrax gaimardii, Rathbun, 1981: 18, 21.

Leptomithrax australiensis Miers, 1876a: 220. Haswell, 1880a: 440; 1882: 16. Fulton and Grant, 1906a: 6. Hale, 1927a: 135, fig. 135; 1927b: 311.

Leptomithrax spinulosus Haswell, 1880a: 441, pl. 25 fig. 3; 1882: 16. Rathbun, 1918: 20, pl. 9. Balss, 1935: 125.

Holotype: Female, length 107 mm., width 84 mm. (measurements supplied by J. Forest), Muséum National d'Histoire Naturelle, Paris. The photographs (pl. 1) show this specimen to be in a very damaged condition with most of the dorsal surface of the carapace broken and the abdomen and ambulatory legs missing.

Type locality: New Zealand; Quoy and Gaimard, collectors.

Types of Leptomithrax australiensis and L. spinulosus:—

L. australiensis: Holotype in the British Museum of Natural History, London (pl. 2). Female (B.M.N.H. Reg. No. 1962.7.19.1) length 76 mm., width 57 mm. (from photograph), a dry specimen in reasonably good condition with parts of some of the ambulatory legs missing. There is no locality label attached, but on a pin beneath the crab is a small blue label " *australiensis* Miers " in Miers's own handwriting (I. Gordon, pers. comm.).

L. spinulosus: A total of 11 syntypes in the Australian Museum, Sydney. A lectotype is here selected as follows:

Lectotype: Male [Aust. Mus. No. G.5116 (old No. A.5474)], length 71 mm., width 54.5 mm. (measurements by J. C. Yaldwyn), an undamaged, dry specimen mounted on glass with printed label " Type G.5116 *Leptomithrax spinulosus* Haswell. Loc. Tasmania " and hand-written label " 27. Tasmania. Type specimen. A.5474." Dr. J. C. Yaldwyn (pers. comm.) states that this specimen is almost certainly that on which Haswell's figure (Haswell, 1880a: pl. 25 fig. 3) and measurements were based.

Paralectotypes: The two dried females (A.5479 and A.5483) and presumably also a collection of eight specimens in spirit (A.5468, A.5482, A.5484, A.5497-8, A.5502-3), loc. Tasmania, coll. Mr. Kendall Broadbent. The status of a dry male specimen also in the collection of the Australian Museum, labelled " Type *Leptomithrax spinulosus*, Bass St., 30 fm." (Aust. Mus. No. P.11384) is unknown. There is no evidence that this was one of Haswell's syntypes.

Two specimens in the British Museum of Natural History, London (Aust. Mus. No. A.5470 and A.5490), in spirit in a jar with a label written in pencil, " *Leptomithrax spinulosus* Haswell, Loc. Tasmania ", are syntypes (now paralectotypes) of *L. spinulosus* Haswell, having been sent to the British Museum by the New South Wales Government for the International Fisheries Exhibition of 1883.

Localities subsequently reported: No specimens of this species have been recorded from New Zealand since that of Quoy and Gaimard, and, moreover, as the collections of Brachyura in New Zealand do not contain any specimens which might be regarded as belonging to this species, it seemes likely that the locality label of the holotype is incorrect. However, several workers have recorded this species from Australia (as either *L. australiensis* or *L. spinulosus*) as follows:—

King George's Sound, Albany, Western Australia (Haswell, 1882); Port Phillip and Bass Strait, common (Fulton and Grant, 1906a); numerous F.I.S. " Endeavour " stations from New South Wales to Eucla, including Tasmania (Rathbun, 1918); Beare's Point, Kangaroo Island, South Australia (Hale, 1927b); Oyster Harbour, Albany, Western Australia (Balss, 1935).

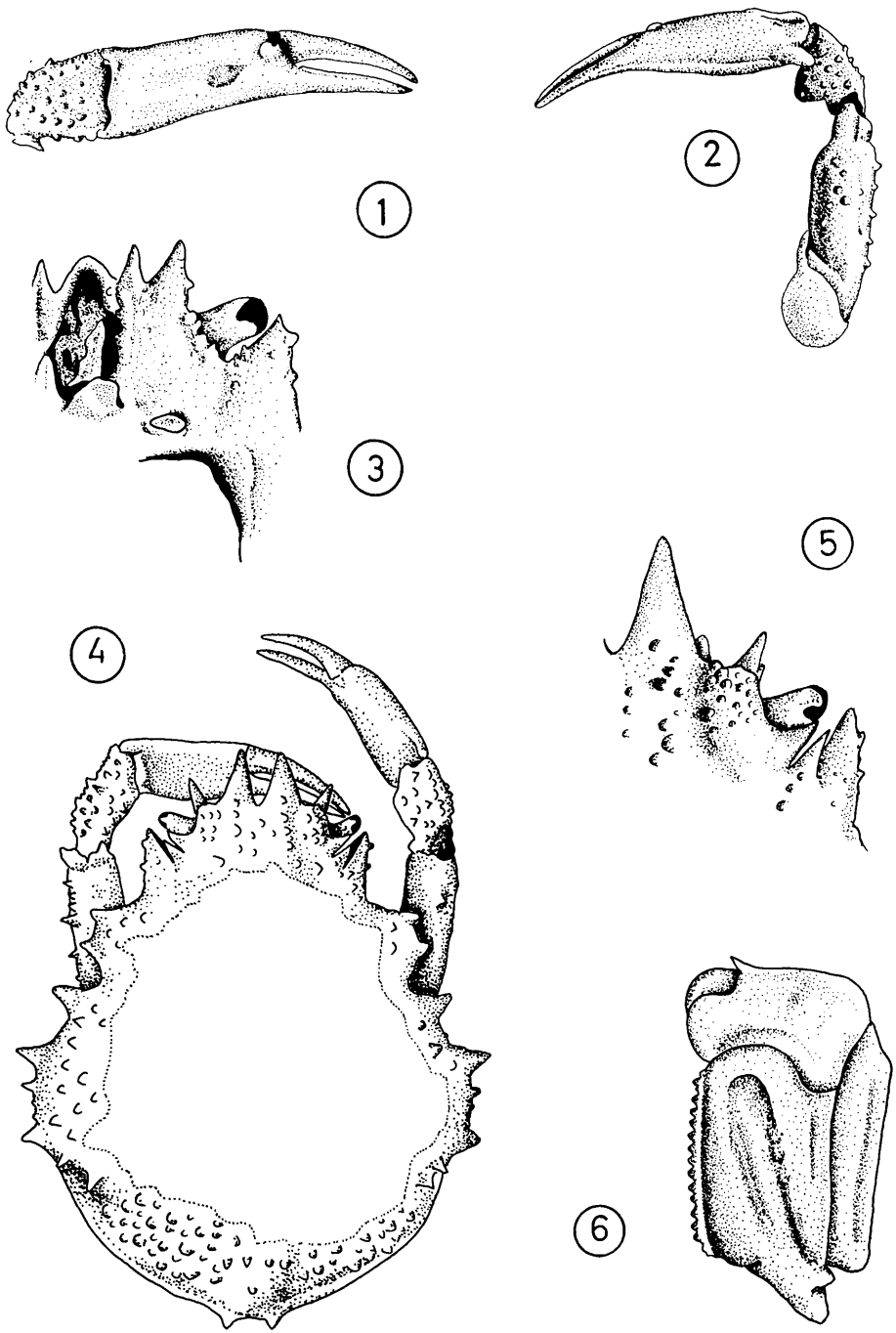
Distribution: South-east Australia, Tasmania, South and south-west Australia; common in Australian waters (Hale, 1927a).

Diagnosis: Carapace broadly pyriform, densely tuberculated dorsally, four prominent marginal branchial spines and several smaller spines. Rostral spines short, stout. Postorbital lobe with two subequal, more or less spinous, tubercles on posterior edge, one close to tip and one about one-third from base. Anterolateral spine of basal antennal article barely exceeding anteromedial spine in length, edges of article tuberculated. Outer maxillipeds swollen at union of ischium and merus but not conspicuously so.

Description: Carapace broadly pyriform in dorsal aspect (length approx. 1.3 times width), densely covered by tubercles dorsally, a row extending posteriorly from base of rostral spines on each side of midline at least as far back as level of postorbital lobe. Rostral spines short and stout, less than one-tenth length of carapace, elongate triangular in dorsal aspect, sharply-pointed. Hepatic margin with two short, widely spaced spines. Branchial margin bearing four prominent conical, subequidistant spines with several small spines or tubercles situated between these at a higher or lower level. Posterior intestinal margin with two short spines situated close together submedially. A larger medial tubercle close to posterior intestinal margin.

Orbit consisting above of supraorbital eave, intercalated spine and postorbital lobe, the three closely approximated and separated only by narrow deep fissures; supraorbital eave broad, sharply angled anteriorly, lateral edge straight posteriorly, dorsal surface tuberculated, a moderately long, acute spine at posterolateral corner; intercalated spine as long as posterolateral spine of eave, acute; postorbital lobe long, about one-and-a-half times as long as intercalated spine, broad-based, acute distally, anterior surface excavated to form a " cup ", a fringe of hairs surrounding margin of excavation, posterior edge of lobe bearing two prominent tubercles, one situated close to tip, the other about one-third from base, a smaller tubercle just basal to the latter. Orbit incompletely formed below by basal antennal article so as to leave eyestalk almost completely visible in ventral view. Eyestalk short, stout, not quite reaching postorbital lobe, bulbous basally; cornea large, subterminal, slightly ventral.

Interantennular spine well-developed, directed downwards, the sharply pointed tip weakly curved forwards.



Text figs. 1-6: *Leptomithrax gaimardii* (H. Milne Edwards), holotype female. 1. right cheliped, carpus and chela, outer aspect; 2. left cheliped, ventral aspect; 3. infraorbital detail, left side; 4. entire specimen, dorsal aspect; 5. supraorbital detail, right side; 6. left third maxilliped.

Basal antennal article broadly subrectangular, lateral edge with several small tubercles grouped close together along basal two-thirds, medial edge also with several tubercles, anterior angles bearing two strong, forwardly directed spines, the anterolateral one slightly longer and at a higher level than anteromedial and visible in dorsal view.

Outer maxillipeds moderately gaping. Ischium longitudinally sub-rectangular, medial edge coarsely toothed, medial half of distal edge abruptly extended anteriorly as a rounded process, outer surface excavated medially as a prominent, wide, shallow, longitudinal groove. Merus subquadrate, as wide as, but shorter than ischium, distal edge deeply notched, a prominent sharp spine at lateral angle of notch; junction of ischium and merus weakly elevated as a transversely oval area.

Chelipeds slightly shorter than carapace; merus and propodus subequal, basis extending along ventral surface of ischium for almost one-third length of latter, carpus almost half length of merus. Merus and carpus densely tuberculated on all surfaces, tubercles of ventral surface smaller and scattered, two larger spinous tubercles on dorsal surface of merus, one about half-way along and the other overlying distal edge; propodus lacking tubercles, compressed and diminished distally, fingers bluntly toothed along inner edges; dactyl half length of propodus, lacking a basal tooth (in the female).

Measurements: Large male, length 165 mm. (Hale, 1927a); ovigerous female, length 136 mm., width 118 mm. (Rathbun, 1918).

Colour: Red in life, fingers and undersides of hand yellow (Hale, 1927a). A small orange-red spot on the outside of the chela near the articulation of the propodus and dactyl (Rathbun, 1918).

Depth: Shore to at least 450 fms. (Hale, 1927a).

Remarks: The holotype of *Leptomithrax australiensis* Miers, according to photographs (pl. 7) kindly forwarded by Dr. I. Gordon of the British Museum of Natural History, London, agrees extremely well with the holotype of *L. gaimardii* described above, differeing only in that the marginal spines of the carapace in the former are somewhat sharper. The Australian Museum syntypes of *Leptomithrax spinulosus* Haswell differ only from the types of *L. gaimardii* and *L. australiensis* in the greater prominence of the accessory spinules of the postorbital spine and basal antennal article. Also the lectotype and most of the paralectotypes of *L. spinulosus* lack the small tubercles associated with the accessory spinules of the postorbital spine in the types of the other two species. However, some of the other paralectotypes of *L. spinulosus* do possess these smaller tubercles. Such differences as have been outlined above are not considered sufficient to warrant separation into three species and *L. australiensis* Miers, 1876, and *L. spinulosus* Haswell, 1880, are therefore reduced to synonymy with *L. gaimardii* H. Milne Edwards, 1834.

Several additional characters of this species have been recorded in the literature. Rathbun (1918) noted that the ventral surface was especially setose in the females and young, but a transverse band at the articulations of the merus and ischium of the outer maxillipeds was always naked and smoothly rounded, and that the sternal segments in the male bore concavities but were not deeply guttered. These excavations are also found in several other species of *Leptomithrax*. Hale's figure (1927a: fig. 135) of a senile male shows the merus and carpus of the cheliped as smooth. This feature is in marked contrast to the situation found in several other species of *Leptomithrax* such as *L. australis* (Jacquinot, 1853) and *L. longipes* (Thomson, 1902), in which these segments of the cheliped are strongly tuberculate in the adult but smooth in the juveniles and females. Hale also noted that numerous large males of this species

were washed up on shore after heavy storms, the fingers of the cheliped in these old individuals being frequently crossed and utterly useless as pincers and, in addition, that the carapace was frequently covered by a dense framework of fine, macerated fibres of seaweed which had collected masses of silt.

Leptomithrax gaimardii is closely related to several other Australian species, namely *L. waitei* (Whitelegge, 1900), *L. globifer* Rathbun, 1918, and *L. sternocostulatus* (H. Milne Edwards, 1851) and a single New Zealand species, *L. richardsoni* Dell, 1960, all of which have accessory spinules or tubercles on the posterior edge of the postorbital spine. The less spinous carapace distinguishes *L. gaimardii* from *L. waitei* and the more numerous marginal branchial spines separate it from *L. sternocostulatus*. The absence of a spine on the anterolateral corner of the supraorbital eave distinguishes *L. gaimardii* from *L. richardsoni*, so that the closest relative is *L. globifer*, from which it differs in the stouter carapace and rostral spines and the presence of small spinules between the major marginal branchial spines.

Genus **Paramithrax** H. Milne Edwards, 1834

Paramithrax barbicornis (Latreille, 1825)

Text-figs. 7-14.

Pisa barbicornis Latreille, 1825: 141.

Paramithrax barbicornis, H. Milne Edwards, 1834: 324. Desmarest, 1858: 14. Not *Paramithrax barbicornis* Miers, 1876a: 219 = *Paramithrax ursus* (Herbst, 1788).

Lobophrys barbicornis, Filhol, 1886: 360.

Gonatorhynchus tumidus Haswell, 1880a: 437, pl. 25 figs. 4, 4a; 1880b: 145, 1882: 10. Miers, 1886: 25. Fulton and Grant, 1906b: 16. McCulloch, 1913: 335, fig. 46. Hale, 1927a: 130, fig. 129.

Gonatorhynchus barbicornis, Balss, 1929: 18, pl. 1 fig. 4.

Holotype: Female (dimensions not available), Muséum National d'Histoire Naturelle, Paris. A photograph of this specimen was published by Balss (1929: pl. 1 fig. 4), from which it may be seen that, apart from the absence of the second and third left and fourth right ambulatory legs, the propodus and dactyl of the fourth left and second right, and the dactyl of the remaining ambulatory legs except that of the third right, the specimen is in excellent condition. However, according to Dr. J. Forest (pers. comm. 1962) this specimen is no longer available in the collections of the Museum.

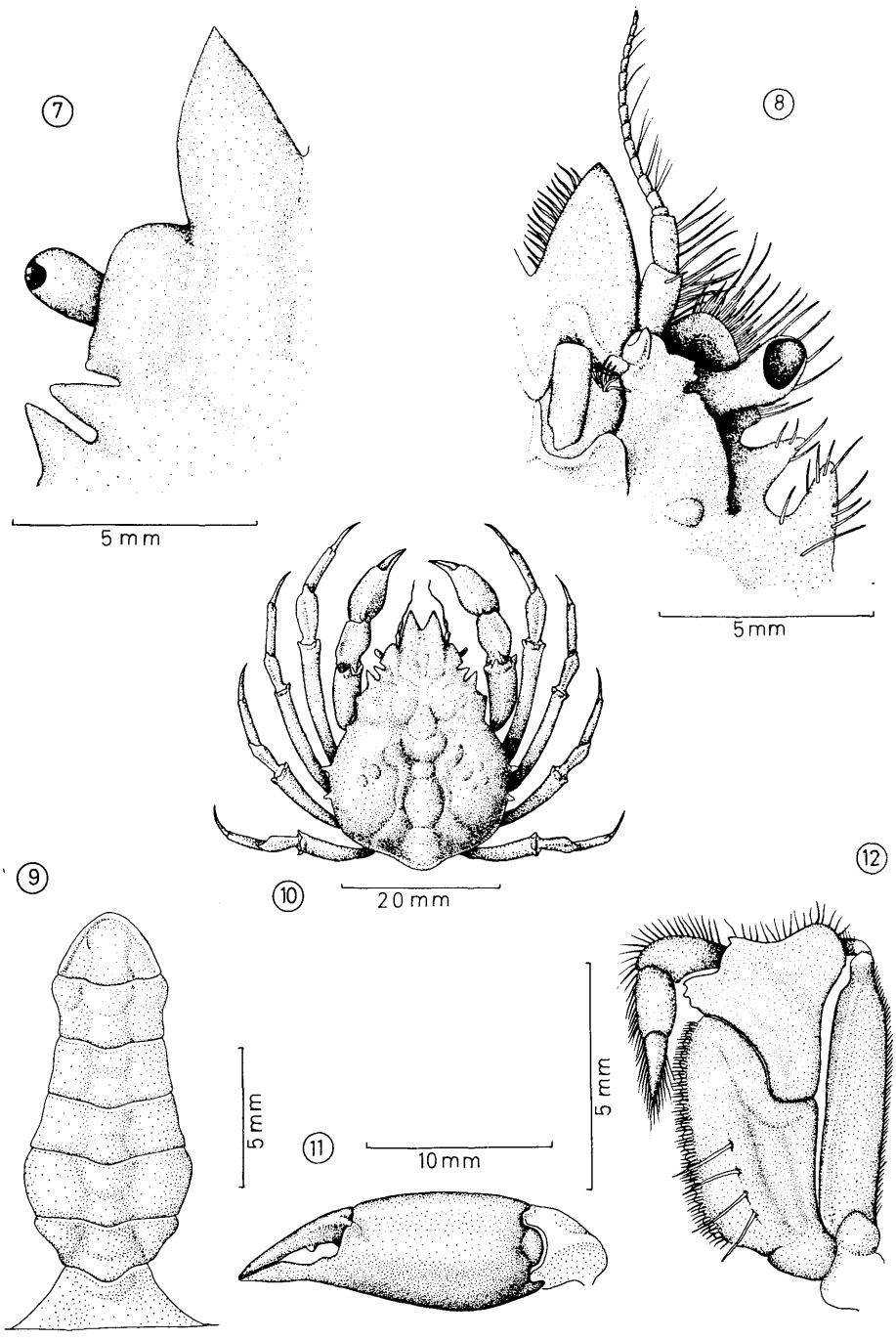
Type locality: Australia.

Types of Gonatorhynchus tumidus:—

Two syntypes, both dry male specimens (Aust. Mus. No. G.5107) mounted on glass with printed label "Type. G.5107. *Gonatorhynchus tumidus* Haswell. Loc. Port Jackson, New South Wales" and hand-written label "17. Port Jackson". A lectotype is here selected as follows:—

Lectotype: The lower of the two syntypes, referred to as G.5107a, length 30 mm., width 20.5 mm. The right cheliped is now missing and the left hand is detached, but the specimen is cleaned. According to Dr. Yaldwyn (pers. comm.) this is definitely the specimen on which Haswell's figure (Haswell, 1880a: pl. 25 fig. 4) and measurements were based.

Paralectotype: The upper of the two syntypes (G.5107b), an undamaged and uncleaned specimen.



Text figs. 7-12: *Paramithrax barbicornis* (Latreille), 30 mm. study male. 7. supraorbital detail, left side; 8. infraorbital detail, left side; 9. abdomen; 10. whole specimen, dorsal aspect; 11. left chela, outer aspect; 12. left third maxilliped.

Localities subsequently reported: Port Jackson, New South Wales, to Port Phillip, Victoria, south-western Australia (McCulloch, 1913); South Australia (Hale, 1927a).

Material examined: A single male (Aust. Mus. No. P.11721) from the collections of the Australian Museum, Sydney: three miles off Broken Bay, New South Wales, disgorged by rock cod caught with hand line and baited hook, coll. J. Phipps.

Diagnosis: Carapace narrowly pyriform, dorsal surface with scattered tubercles, margins weakly spinous. Rostral spines short, fused for basal third. Postorbital and intercalated spines short, subequal. Basal antennal article notched laterally close to anterolateral angle, anterolateral tooth flattened, short, outwardly directed, anteromedial tooth spinous, curved downwards and forwards. Merus of external maxillipeds expanded laterally. Carpus of cheliped with a strong lateral ridge, no dorsal ridge, dactyl with a small basal tooth on inner edge.

Description: Carapace narrowly pyriform in dorsal aspect (length about 1.4 times width), moderately swollen, setose. Rostrum of two short, stout, triangular, depressed spines (one-eighth length of carapace), fused for basal third, margins weakly convergent. Hepatic margin with a small tubercle midway along; branchial margin with two short spines situated close together at widest part of carapace and a small tubercle anteriorly. Dorsal surface of carapace smooth, lacking spines, a row of small, irregularly shaped tubercles extending along medial margin of branchial regions. Regions of carapace moderately well defined by shallow grooves.

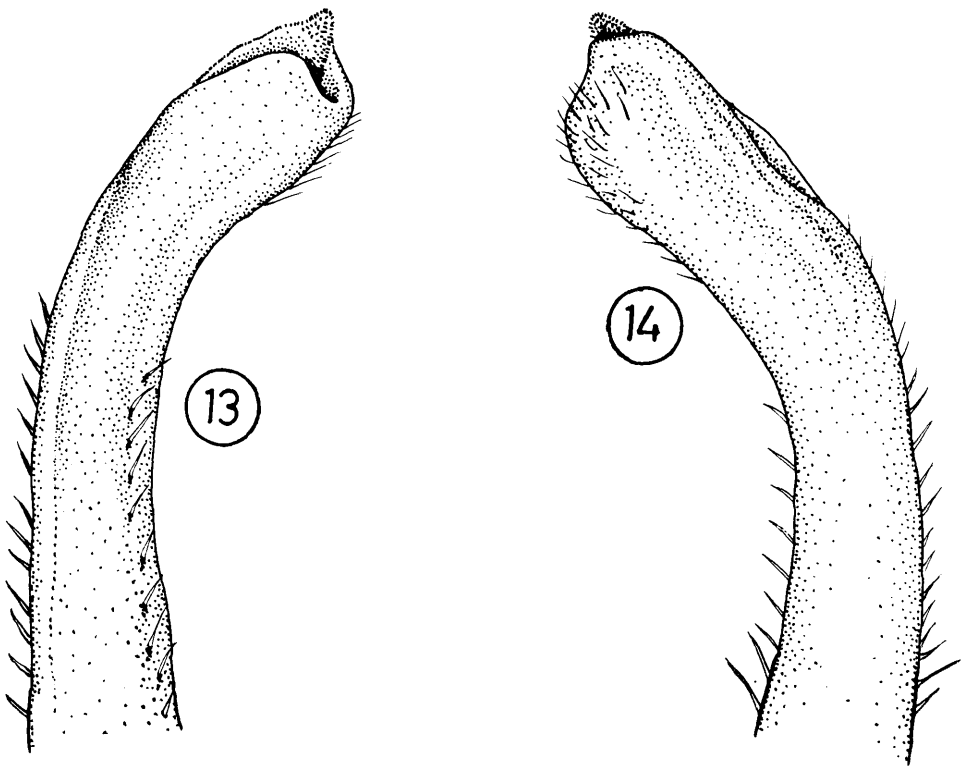
Orbit consisting above of supraorbital eave, intercalated spine and postorbital spine, the three separated by wide fissures; supraorbital eave broad, sharply angled anteriorly, a small tooth at posterolateral corner; intercalated spine short (one-third length of rostrum), subconical; postorbital spine remote from orbit, very slightly longer than intercalated spine, subconical. Orbit incompletely formed below by basal antennal article. Eyestalk short, slender, bulbous basally; cornea small, subterminal, slightly ventral.

Interantennular spine poorly developed, blunt.

Basal antennal article narrowly subrectangular, narrowing slightly anteriorly, lateral edge notched anteriorly, anterolateral angle extended laterally as a short, flattened, rounded, crenulate tooth; anteromedial angle curved downwards and forwards as a short, conical spine; flagellum long, extending for half its length beyond, and visible in dorsal view on each side of, rostrum.

Ischium of outer maxilliped longitudinally subrectangular, medial edge coarsely toothed, overlain but not concealed by a thick fringe of long hairs, medial half of distal edge produced distally as a long, narrow, rounded process; outer surface excavated medially as a wide, shallow groove, a few long hairs arising medial to groove. Merus subquadrate, very slightly wider, but somewhat shorter than, ischium, anterolateral corner produced laterally as a rounded process, distal edge notched, a small sharp tooth at lateral angle of notch, anterior part of lateral edge fringed by long hairs, outer surface weakly elevated as a rounded ridge extending along medial edge. Palp arising from notch of merus, stout, subcylindrical, tapering to a blunt point, segments subequal; lateral surface of all segments and medial surface of dactyl setose.

Chelipeds short, almost as long as carapace, subcylindrical to compressed, surfaces lacking spines or tubercles, naked; merus and propodus subequal, each about one-quarter total length of cheliped, carpus hardly as long as merus, dactyl slightly shorter than propodus. Merus weakly compressed, bluntly carinate dorsally; carpus subcylindrical, a blunt entire ridge extending obliquely across lateral surface, somewhat dorsal proximally; propodus strongly compressed, enlarged midway along, diminished



Text figs. 13, 14: *Paramithrax barbicornis* (Latreille), 30 mm. study male, Broken Bay, N.S.W.: left first pleopod tip. 13. abdominal aspect; 14. sternal aspect.

distally, upper surface blunt for entire length; fingers acute, moderately gaping basally, finely toothed along inner edges for distal half; dactyl cylindrical, a small inwardly projecting basal tooth on inner edge.

Ambulatory legs short, stout, cylindrical, covered by very long hairs, dactyl terminating in a sharp claw. First leg the longest (1.1 times carapace length), legs decreasing rapidly and uniformly to the last (0.7 times carapace length).

Abdomen of seven segments. Male abdomen widest at middle of third segment; first segment wide basally, narrow distally, second segment widening distally, fourth and following segments narrowing slightly to base of sixth segment which widens distally, seventh segment subtriangular; surface of all segments except first elevated in midline as a rounded longitudinal ridge bearing a small medial tubercle distally, a small tubercle laterally on each side of ridge in third segment.

Male first pleopod long, rather stout, bulbous basally, outwardly curved distally, aperture located terminally, opening medially as a short longitudinal groove; medial surface expanded distally as a stout process almost completely filling groove formed by curved lateral surface, and extending a short way beyond; lateral surface densely covered distally by short, fine setae; a row of slightly stouter and longer, simple setae along lateral surface for almost entire length, except distally; a row of similar setae scattered along medial surface to base of aperture.

Measurements: Study male, length 30 mm., width 21.5 mm., rostral length 4 mm., rostral width 5 mm., cheliped 27 mm., chelar length 15.5 mm., chelar height 6 mm., dactyl 7 mm., first ambulatory leg 34 mm.

Remarks: Comparative examination of the study specimen before me and of the photograph of the holotype of *Paramithrax barbicornis* (Latreille) given by Balss (1929) shows many similarities and no important differences. The two specimens agree in the pyriform shape of the carapace, the form of the short, double rostrum, in orbital detail, and in the number and arrangement of the marginal spines of the carapace. In the holotype the lateral ridge of the carpus of the cheliped is less pronounced and the chela is somewhat more slender than in the specimen before me. Since the holotype is a female and the study specimen a male, the latter difference may be attributed to sexual dimorphism. In addition, although both specimens have the dorsal surface of the carapace smooth with but a few low tubercles, in the holotype the regions are less well defined. In view of the foregoing remarks, I have no hesitation in assigning the study specimen to *Paramithrax barbicornis* (Latreille).

This study specimen differs from the holotype of *Gonatorhynchus tumidus* as described by Haswell in only three main features: Haswell (1880a: figs. 4, 4a) shows the hepatic margin with several small spinules, not present in this specimen; the basal antennal article is shown as hardly narrower anteriorly than posteriorly, presumably an error on Haswell's part; and the junction of the excavation and the distal toothed portion of the fixed finger of the chela is shown as somewhat sharper than in the specimen before me. None of these differences are sufficient to separate the study specimen specifically from the holotype of *G. tumidus*.

As noted above, *Paramithrax barbicornis* was designated as the type species of the genus *Paramithrax* H. Milne Edwards, 1834, by Desmarest (1858), and therefore must retain the generic name *Paramithrax*. Thus *Gonatorhynchus* Haswell, 1880, and *Lobophrys* Filhol, 1886, are reduced to synonymy with *Paramithrax*, as they are both based on the same type species. Comparison of *P. barbicornis* with those species at present included in *Paramithrax* (e.g., *P. peronii* H. Milne Edwards, *P. minor* Filhol, *P. baeckstroemi* Balss, etc.) indicates that the latter species are not congeneric with *P. barbicornis*. The status of the genus *Paramithrax* and the generic position of the above species will be considered in more detail elsewhere (see Griffin, 1963).

Comparison of *P. barbicornis* with the New Zealand and Australian *P. ursus* (Herbst, 1788) (= *P. latreillei* Miers, 1876) reveals at once why these two species were confused by early carcinologists. The general appearance of the two is indeed very similar, e.g., carapace pyriform, ambulatory legs short, carapace and legs covered by very long hairs, rostral spines short and other spines of the carapace restricted to the anterolateral margins. It is only closer examination of the spines, orbit, basal antennal article, third maxillipeds, male abdomen and male first pleopod which shows up differences of sufficient importance to separate the two at least specifically.

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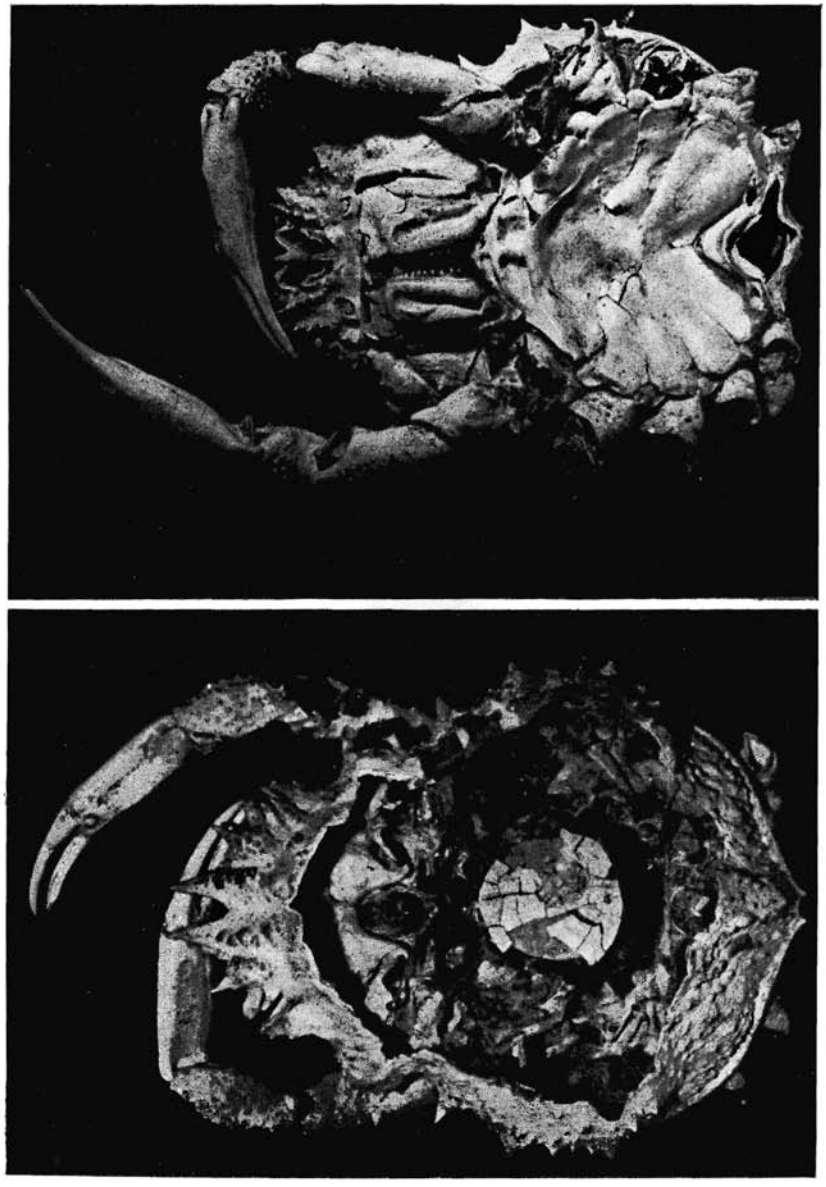
EXPLANATION OF PLATES

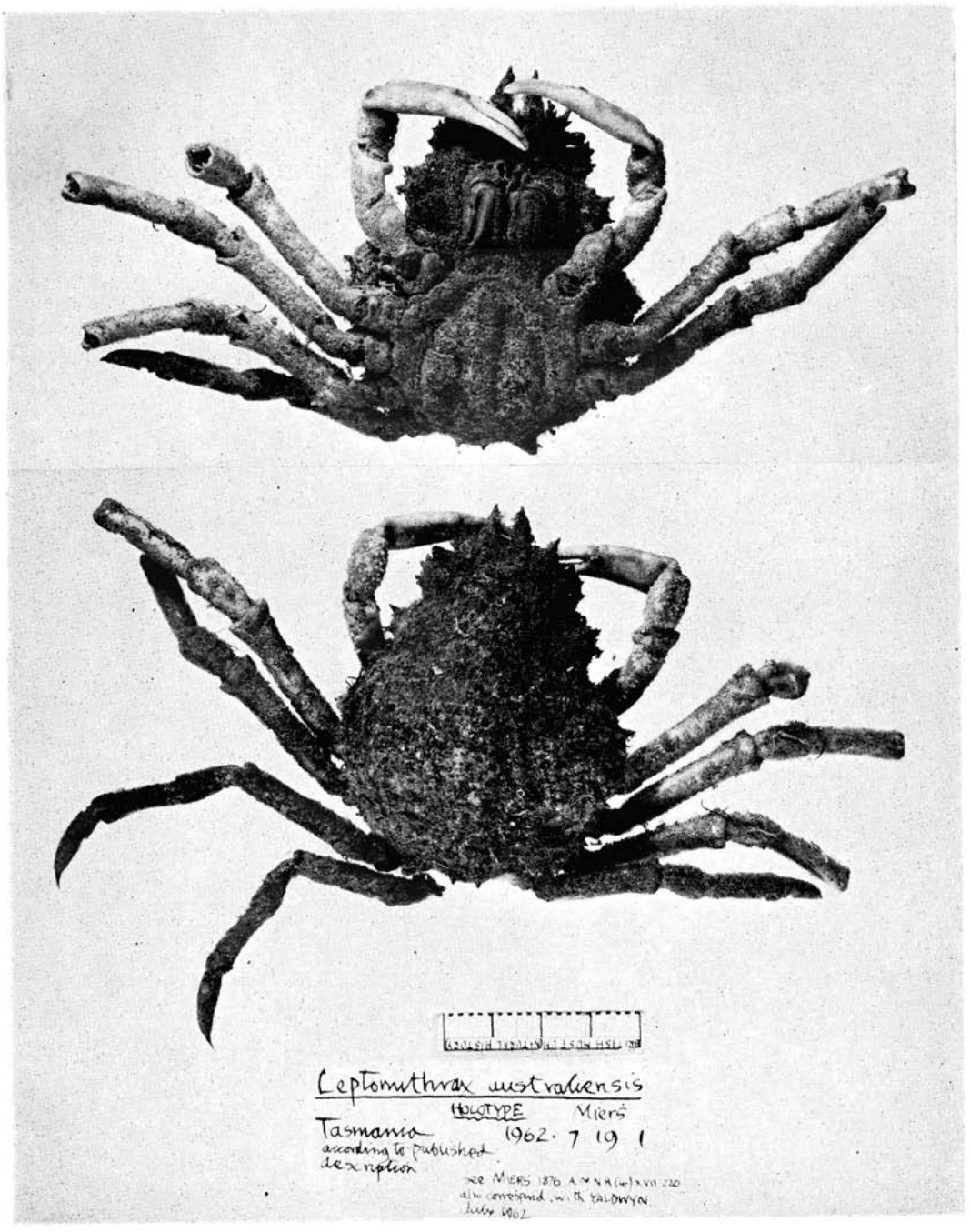
Plate 6. *Leptomithrax gaimardii* (H. Milne Edwards, 1834), holotype, 107 mm. female, Muséum National d'Histoire Naturelle, Paris, loc. New Zealand, coll. Quoy and Gaimard. (Photographs reproduced through kindness of M. J. Forest). Left: dorsal aspect; right: ventral aspect.

Plate 7. *Leptomithrax australiensis* Miers, 1876, holotype (=*L. gaimardii*), 76 mm. female, British Museum (Natural History), B.M. Reg. No. 1962. 7.19.1, loc. Tasmania (according to published description). (Photographs reproduced through kindness Dr. I. Gordon). Lower fig., dorsal aspect; upper fig., ventral aspect.



Right

Left


Leptomithrax australiensis
HOLOTYPE Miers
Tasmania 1962. 7 19 1
according to published description
see MIERS 1876 A.M.N.H.(4) XVII 220
a/w compared with BALDWYN
July 1962