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CRUSTACEA, DECAPODA
& STOMATOPODA

BY

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INTRODUCTION

THIS report includes a total of 212 species accommodated in 123 genera. One new species is described and 49 new records are added to the Australian faunal list. No larger number of decapod and stomatopod Crustacea has hitherto been dealt with in a single work covering the marine fauna of the Great Barrier Reef waters of N.E. Australia. Another important fact is that the collection under review was taken in a limited area of central Barrier Reef waters between a point approximating Lizard Island off Lookout Point in the north, and Trinity Passage off Cairns in the south.

A substantial number of the recorded species were linked with the General Survey studies carried out in the environs of the Expedition headquarters, located at Low Isles for a 12-month period bridging the years 1928-29. This locality is an isolated coral reef and cay complex lying about eight miles to seaward of Port Douglas, North Queensland. While not all of the specimens originally labelled as General Survey received a mention in the published results of the Expedition's ecological work (see T. A. Stephenson and others, 1931), all are, without exception, faithfully recorded as such in the present report. Other specimens in the collection were obtained at various Expedition Stations where dredging and trawling operations were carried out. A large proportion of the balance consists mainly of the collections made during the Expedition by five members of the zoological staff of the Australian Museum, Sydney, one of whom was the present author. All the Museum zoologists were attached to the Expedition for periods of from two to three months.

The localities listed under specific headings are arranged in the order detailed above. In the matter of the distribution of species, care has been taken to provide the fullest possible data from all available literature. This has been done at the special request of the late Dr. T. A. Stephenson, leader of the Expedition's ecological studies.

In the following text, under the heading of each of the species named in the 1931 Ecological Report, a full quotation of that reference has been given. However, in a few cases, the 1931 published names have undergone change. The majority of these earlier published preliminary identifications were made by the present author; a few were obtained by T. A. Stephenson direct from the British Museum (Nat. Hist.).

Included in the General Survey data for many specimens, are symbols which indicate areas of the Low Isles environs on a Key Chart originally published in the Expedition's 1931 ecological report. Reference to this chart, republished in the present study (Fig. 1), will serve to indicate the habitats of the particular species concerned.

Regarding the species of *Thalamita* represented in the Expedition's collection, it was considered expedient for these to be first released for critical study and elaboration by Prof. W. Stephenson, University of Queensland, who, with his co-author, Miss J. Hudson, was carrying out research on Australian members of this genus. All specimens of *Thalamita*, including one species then described as new, are again recorded here with more locality detail than that given by Stephenson and Hudson in 1957. Another investigation undertaken by W. Stephenson was the quite recent resurvey of the marine ecology of Low Isles (1958, Stephenson, Endean and Bennett). With the exception of the portunids, all the other species of Decapoda listed in that report (1958) were identified by the present author. During the resurvey a few species were collected which were not represented in the original British Expedition collection, and these warrant inclusion in greater detail in this present study. A further inclusion aimed at bringing together the known decapods from the Expedition's collection, is the two already recorded species of *Lucifer* reported on earlier by Dr. Isabella Gordon in the present series (1956).

Apart from the studies on *Thalamita* and *Lucifer* already mentioned, and the few incidental references to other species listed in the following systematic text, Gurney (1937a, 1938, 1938a, and 1942) is the only other authority known to the author who has published results on Decapoda from the Expedition's Great Barrier Reef collections. With the exception of one post-larval stage, these studies deal only with unidentified or doubtfully identified larvae. For this reason no detailed listing of the material studied by Gurney will be attempted here. However, Barrier Reef Expedition material of the following groups was dealt with in these works: Alpheidae (1938); Hippolytidae – *Eretmocarid*, *Tozeuma* and *Latreutes* (1937a); Palaemonidae (1938, see also 1942:217 for one identified as *Leander tenuicornis*); Thalassinidae (1938a); Callianassidae – ?*Callianassa* (1938a); Upogebiidae – *Upogebia* (1938a); Laomediidae – ?*Naushonia* (1938a); Galatheididae (1942:255) and Dorippidae – ?*Dorippe* (1942:284). The single post-larval stage mentioned (Gurney, 1937a:399) was recorded as *Latreutes mucronatus* (Stimpson), but no substantiating details for this firm identification were given. *L. pygmaeus* was the only species of this genus recognized and recorded from the Expedition's material by the present author. The listing of "*Latreutes mucronatus*?" from the Low Isles area in Holthuis (1947:60) must refer to Gurney's queried determination for the larval, rather than the post-larval, specimen.

Careful consideration has been given to the selection of references to aid in the identification of the various species recorded. The opportunity has thus been taken here to build up a record of literature best suited for future workers on the Australian fauna, with specific accent on an Australian content. This practice has also obviated the need for extensive plate illustrations, which are considered in this case as unwarranted. The photographic reproductions that are included have been taken with special care so as to minimize distortion (plates I, II).

Two quite recently published works will be found to have a general bearing on the present report. While much of their contents deals with species not represented in the British Expedition's collection, their mention here will prove of value for Australian workers. The first, by A. A. Racek and W. Dall, is titled "Littoral Penaeinae (Crustacea Decapoda) from Northern Australia, New Guinea, and Adjacent Waters" (1965). Only three times is specific reference made to this work in the text of the present report, but no reference will be found to the second and equally important paper by the Japanese author, T. Sakai (1965, *The Crabs of Sagami Bay*; Maruzen Co., Tokyo; 206 pages of English text; 100 colour plates). In this last beautifully produced volume, there are many recordings of species represented in the British Expedition's collection which, with accompanying illustrations, largely duplicate references quoted here from another better known Sakai work (1936–1939) entitled "Studies on the Crabs of Japan" Parts I–IV.

The greatly increased total of known Decapoda in modern times has caused workers to confine their studies to sections and, in some cases, even families of the Order. Hence the examination of a large and varied collection like the present one tends to stretch the knowledge of a single author. In this regard it is regretted that a small number of specimens from the Expedition's collection still remain without identification. These are mainly small in size, and are representatives of the families Alpheidae (about 3 species), Paguridae (about 6 species), Pinnotheridae (2 species), Dromiidae (2 species), Xanthidae (about 5 species), Goneplacidae (about 5 species), Palicidae (1 species). As this present extensive and nearly complete report on the Expedition's very large collection has now been prepared, it is the author's earnest hope that some worker will be found to take up the task of determining the small balance of species involved.

In the lengthy study of the Expedition's collection no opportunity has been lost in seeking both the aid and advice of other specialists at home and abroad. Thus the grateful acknowledgement of the author is extended to J. S. Hynd, C.S.I.R.O. Division of Fisheries and Oceanography, N.S. Wales for much assistance with the identification and literature of the Caridea; to Miss Janet Haig, Allan Hancock Foundation, University of Southern California, whose valued assistance with the Porcellanidae made possible the correct recording of many species of that family, and who detected the novelty of the

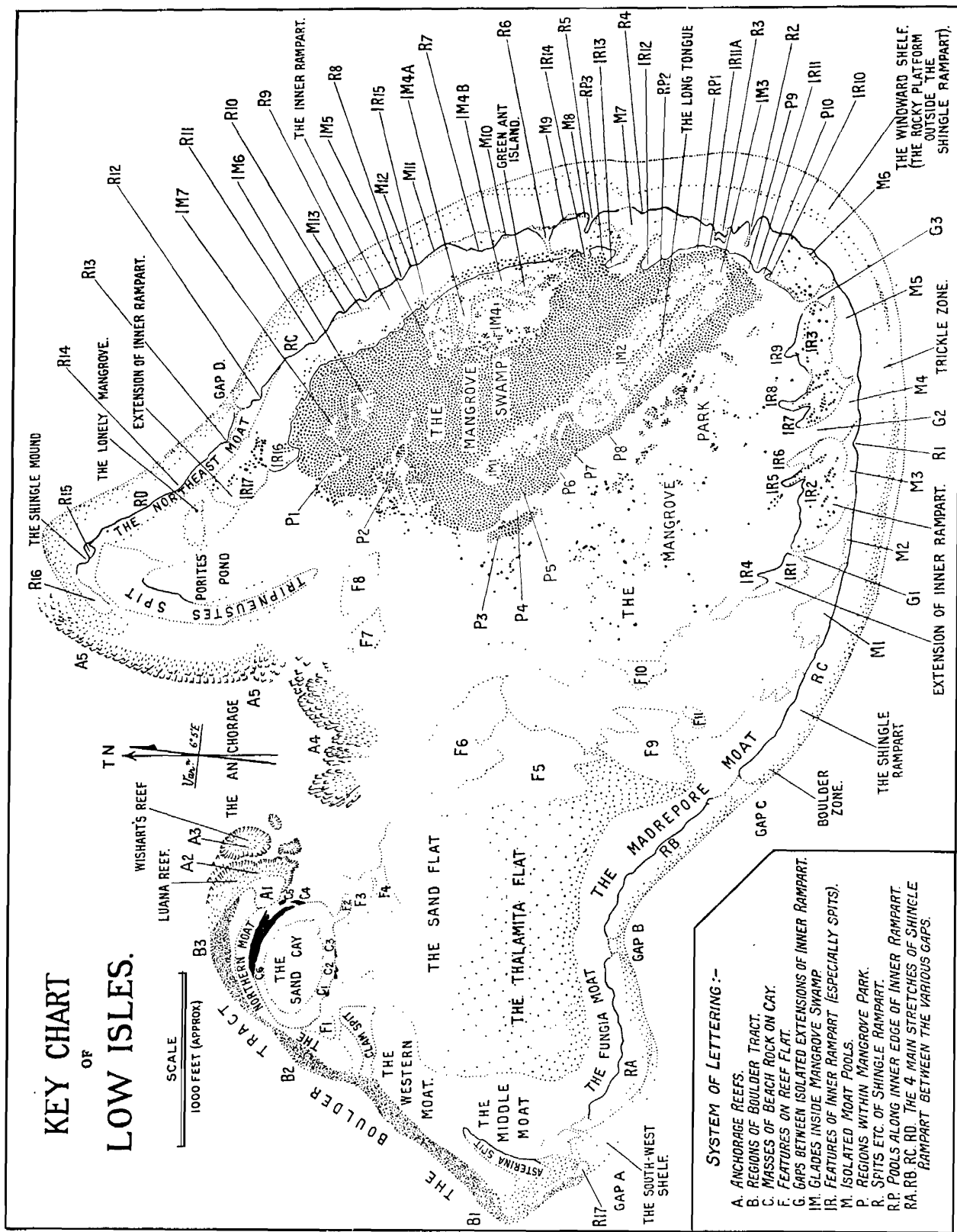


FIG. 1. Key chart of Low Isles, Great Barrier Reef. (After Stephenson, Stephenson, Tandy and Spender, 1931.)

specimen of *Polyonyx* described here as new; to Dr. A. H. Banner, Marine Laboratory, University of Hawaii, for identification of certain Alpheidae unknown to the author; to Dr. L. B. Holthuis, Rijksmuseum van Natuurlijke Historie, Leiden, who identified the two recorded species of Scyllaridae; to Dr. A. A. Racek, School of Biology, University of Sydney, for his advice and the checking of identifications of the recorded Penaeidae; and to Dr. Isabella Gordon, British Museum (Nat. Hist.), for organizing the loan of specimens required for re-examination, and on several occasions, informing the author of important name changes made by visiting specialists to that part of the Expedition's material already lodged in the British Museum. To a friend and co-author, Keith Gillett F.R.P.S. special thanks are due in acknowledgement of his technical help in the production of all but three of the photographs from which the plate illustrations have been prepared.

Finally, the author considers it a duty to record the encouragement and counsel he has received from Dr. J. C. Yaldwyn of the Australian Museum, whose interest and help has been an inspiration during the final stages of preparation of this report for publication.

LIST OF SPECIES INCLUDED IN REPORT

Species not recorded previously from Australian coastal waters are indicated with *. A † denotes additional species recorded from sources other than the British Great Barrier Reef Expedition collection.

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	<i>esculentus</i> Haswell	
	<i>Metapenaeus endeavouri</i> (Schmitt)	
	<i>Metapenaeopsis palmensis</i> (Haswell)	
	<i>rosea</i> Racek and Dall	
	<i>Trachypenaeus granulatus</i> (Haswell)	
	* <i>Sicyonia bispinosa</i> (de Haan)	
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	<i>strenuus</i> Dana	
	<i>socialis</i> Heller	
	* <i>bidens</i> (Olivier)	
	* <i>diadema</i> Dana	
	<i>frontalis</i> (H. M. Edwards)	
	* <i>Alpheus gracilipes</i> Stimpson	
	* <i>parvirostris</i> Dana	

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* <i>Synalpheus coutièrei</i> Banner	
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* <i>streptodactylus</i> Coutière	
* <i>Athanas indicus</i> (Coutière)	
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<i>Anchistus custos</i> (Forskål)	
<i>Conchodytes tridacnae</i> Peters	
<i>Periclimes</i> (<i>Harpilius</i>) <i>elegans</i> (Paulson)	
<i>brevicarpalis</i> (Schenkel)	
*	
<i>rotumanus</i> Borradaile	
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* <i>Scyllarus martensii</i> Pfeffer	
*	
<i>gibberosus</i> (de Man)	
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† <i>Diogenes</i> sp.	

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<i>herbstii</i> de Man	
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<i>Clibanarius virescens</i> (Krauss)	
<i>striolatus</i> Dana	
<i>taeniatus</i> (H. M. Edwards)	
<i>Dardanus megistos</i> (Herbst)	
<i>deformis</i> (H. M. Edwards)	
<i>sanguinolentus</i> Quoy and Gaimard	
* <i>scutellatus</i> H. M. Edwards	
<i>imbricatus</i> H. M. Edwards	
*† <i>Pagurus janitor</i> (Alcock)	
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<i>Porcellana serratifrons</i> Stimpson	
* <i>streptochira</i> de Man (<i>nec</i> White)	
<i>Petrolisthes haswelli</i> Miers	
<i>lamarckii</i> (Leach)	
<i>scabriculus</i> (Dana)	
<i>militaris</i> (Heller)	
* <i>unilobatus</i> Henderson	
<i>Polyonyx obesulus</i> (White) Miers	
<i>suluensis</i> Dana	
<i>haigae</i> sp. n.	
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Family HIPPIDAE	39
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Family DROMIIDAE	40
<i>Cryptodromia tuberculata</i> Stimpson	
† <i>Petalomera lateralis</i> (Gray)	
Section OXYSTOMATA	
Family LEUCOSIIDAE	40
<i>Ixa inermis</i> Leach	
<i>Leucosia anatum</i> (Herbst)	
* <i>margaritata</i> A. M. Edwards	
<i>whitei</i> Bell	
<i>Myra fugax</i> Bell	

Genus *PAGURUS* Fabricius, 1775*Pagurus janitor* (Alcock)

Eupagurus janitor Alcock, 1905, pp. 125, 132, pl. xi, fig. 6: 1905a, p. 832, pl. lxxviii, figs. 2 & 4; Stephenson, Ender and Bennett, 1958, p. 269.

Pagurus janitor: Joan Gordan, 1956, p. 331 (syn. & refs.).

LOCALITY: Low Isles; no specific habitat; an additional record from the locality subsequent to the British Great Barrier Reef Expd. of 1928-29.

DISTRIBUTION: Tropical Indo-west-Pacific – Maldives, N.E. Australia.

The record from Low Isles apparently greatly extends the known range of this species; any other published records of its occurrence in localities additional to those listed here are unknown to the author.

The species was previously listed only as a name among other Decapoda collected at Low Isles (W. Stephenson and others, 1958). No mention was then made of the fact that it had not previously been recorded from Australian waters.

Family COENOBITIDAE

Genus *COENOBITA* Latreille, 1826*Coenobita rugosa* H. M. Edwards

Coenobita rugosus: Alcock, 1905, pp. 141, 143, pl. xiv, figs. 3, 3a (syn. & full refs.); McCulloch, 1909, p. 306 (ref.); Barnard, 1950, p. 469, text fig. 86 (syn. & refs.).

Coenobita rugosa: Fize and Serène, 1955, pp. 5, 12, pl. I, figs. 3, 5, 7, 8-10, text figs. 2A-C, 3A (syn., full refs., descr.).

LOCALITY: Low Isles; sand cay (1 specimen).

DISTRIBUTION: Ranges widely from Red Sea and E. Africa to the eastern region of the Pacific, mainly tropical. Heller's "Sydney", N.S. Wales record of the species is incorrect (see McCulloch, 1909).

REMARKS: The stridulating tubercles on the upper part of the outer surface of the left cheliped are not well developed; this condition is due to the juvenile state of the specimen.

During a prolonged period of drought towards the end of 1928 a number of examples were enticed at night from their hiding places by placing a sack soaked with fresh water in open spaces on the surface of the sand.

Section GALATHEIDEA

Family GALATHEIDAE

Genus *GALATHEA* Fabricius, 1798*Galathea whiteleggii* Grant and McCulloch

Galathea sp. Whitelegge, 1900, p. 191.

Galathea whiteleggii Grant and McCulloch, 1906, p. 45, pl. iv, figs. 2, 2a (ref.).

LOCALITIES: Stn. XII, dredge; Penguin Channel, between Snapper Is. and Cape Kimberley; 10-15½ fms; 24.ii.1929 (1 specimen); off Low Isles; dredged in 12 fms; 16.x.1928 (1 specimen).

DISTRIBUTION: Range appears to be restricted to E. coast of Australia, from temperate to tropical parts.

REMARKS: Although the anterior part of the carapace of the Low Isles specimen is somewhat damaged, it is undoubtedly referable to the above species. This has been established by a careful comparison with the holotype in the Australian Museum. The second specimen from Stn. XII is referred here with but slight reservation. It agrees with the holotype except for the absence of three

definite teeth on the inner border of the merus of the third maxillipeds. The case suggests that this character has not the importance attaching to it that Grant and McCulloch (1906) supposed.

The present record constitutes an addition to the fauna of tropical Queensland, which is believed to be more the natural centre of distribution of the species than the temperate waters of the N.S. Wales coast to the southward, where the holotype originated.

Galathea australiensis Stimpson

Galathea corallicola Haswell, 1882a, p. 761.

Galathea australiensis: Grant and McCulloch, 1906, pp. 43, 44, pl. iv, figs. 1, 1a (syn. & full refs.); Stimpson, 1907, p. 230 (ref.).

LOCALITIES: Low Isles; Madrepore Moat; common among branches of dead growths (17 specimens, including both sexes): Batt Reef, near Low Isles; low tide (1 specimen).

DISTRIBUTION: Temperate and tropical Australian coastal waters, and apparently extending northwards to the waters of southern Japan.

REMARKS: Four male examples of the series possess enlarged teeth or tubercles on the proximal half of the cutting edges of the fingers of the major chelipeds. A further senile male has the right cheliped with the fingers curved and gaping as described by Grant and McCulloch (1906).

Galathea aculeata Haswell

Galathea aculeata Haswell, 1882a, p. 761: Whitelegge, 1900, p. 190 (refs.); Grant and McCulloch, 1906, pp. 43, 48, pl. iv, figs. 4, 4a (refs.).

LOCALITIES: Stn. XIV, dredge; $\frac{1}{2}$ mile S.E. of Lizard Is., off Lookout Point; 19 fms; 7.iii.1929 (3 specimens): Stn. XVI, dredge; about $\frac{1}{2}$ mile W. of N. Direction Is., off Lookout Point; 20 fms; 9.iii.1929 (2 specimens): Stn. XVII, dredge; about $\frac{1}{2}$ mile N. of N. Direction Is.; 19 fms; 9.iii.1929 (3 specimens): dredged off Low Isles; 9-12 fms; 18.x.1928 (1 specimen).

DISTRIBUTION: The known positive occurrences are in the waters of the N.E. Australian coast. Whitelegge (1900) questions the validity of records from off Tonga and the Philippines by Henderson (1888, p. 120) and equal doubt also probably applies to Miers's record of a specimen in the British Museum from the Philippines (1884, p. 278).

All the specimens have been critically compared with Haswell's holotype of the species, from Holborn Is., Queensland, in the collection of the Australian Museum.

Galathea elegans Adams and White

Galathea elegans Adams and White, 1848, p. ii, pl. xii, fig. 7: Grant and McCulloch, 1906, pp. 43, 50, pl. iv, figs. 6-6a (syn. & refs.); Miyake, 1938, p. 37, pl. 2, figs. 1a-c (refs.); Barnard, 1950, p. 487, text figs. 911-k, on p. 484 (syn. & refs.).

LOCALITY: Stn. XIV, dredge; $\frac{1}{2}$ mile S.E. of Lizard Is., off Lookout Point; 19 fms; 7.iii.1929 (1 specimen).

DISTRIBUTION: Ranges widely in warmer Indo-Pacific region - E. Africa to Indian seas and southern Japan, the Malay Archipel., N.W. and N.E. Australia.

Family **PORCELLANIDAE**
 Genus **PACHYCHELES** Stimpson, 1858
Pachycheles pulchellus Haswell

Pachycheles pulchellus Haswell, 1882a, p. 758: Miers, 1884, p. 273, pl. xxx, fig. A.

LOCALITIES: Stn. IX, dredge; Penguin Channel, between Snapper Is. and Cape Kimberley; 12-4 fms; 22.ii.1929 (2 specimens): off Low Isles, dredge; 9-10 fms; 18.x.1928 (2 specimens).

DISTRIBUTION: Known only from a restricted range - Arafura Sea and N. Australia, to S. of New Guinea, Torres Strait and N.E. Australia.

Genus **PISIDIA** Leach, 1820
Pisidia dispar (Stimpson)

Porcellana dispar: Miers, 1884, p. 275, pl. xxx, fig. c; Stimpson, 1907, p. 190, pl. xxiii, fig. 3 (ref.).

Pisidia dispar Haig, 1965, p. 107.

LOCALITY: Low Isles; reef flat generally - no specific habitat (3 specimens): Batt Reef, near Low Isles; low tide; Oct. 1929 (1 male, 2 females).

DISTRIBUTION: Apparently restricted in range from N.W. Australia to N.E. and E. Australian coasts and South Australia.

In the temperate waters of the southern limits of its range this species is very abundant. It is there that examples grow to their largest size, as demonstrated by the great amount of Australian material of the species in the Australian Museum collection.

Genus **PORCELLANA** Lamarck, 1801
Porcellana serratifrons Stimpson

Porcellana serratifrons: Grant and McCulloch, 1906, p. 39 (syn. & refs.); Stimpson, 1907, p. 189, pl. xxiii, fig. 2 (ref.).

LOCALITY: Off Low Isles; dredged 9-10 fms; 18.x.1928 (1 specimen).

DISTRIBUTION: Hongkong, Arafura Sea and N.E. Australia.

REMARKS: Grant and McCulloch's 1906 record is regarded as *Pisidia* cf. *spinulifrons* (Miers) by Janet Haig in her 1965 paper (p. 106), which appeared too late to be referred to in detail here. Haig states that this form is to be redescribed as new by D. S. Johnson in a forthcoming paper. In view of the confusion over the status of the names involved here, the author tentatively retains Stimpson's species.

Porcellana streptochira de Man

Porcellana (Porcellana) streptochira de Man, 1887a, p. 419, pl. 18, fig. 6.

[Not *Porcellana streptochira* White, 1847, p. 64; *nomen nudum*.]

LOCALITY: Off Low Isles, dredge; 12 fms; 16.x.1928 (1 male).

DISTRIBUTION: Indonesian Archipel. (de Man); N.E. Australia (present record).

REMARKS: Miss Janet Haig of the Allan Hancock Foundation kindly examined and identified the single male example recorded here. In doing so she based her decision on the description and figure published by de Man, who believed he was dealing with the same species to which White had given the name *P. streptochira*. A significant fact is that de Man did not state on what grounds he had referred his material to White's *nomen nudum* species. This, according to Miss Haig, was of especial