

REPORT  
TO THE GOVERNMENT OF CEYLON  
ON THE  
PEARL OYSTER FISHERIES  
OF THE  
GULF OF MANAAR,

BY  
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*Anomura by Southwell T.*

WITH SUPPLEMENTARY REPORTS  
UPON THE  
MARINE BIOLOGY OF CEYLON,  
BY OTHER NATURALISTS.

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PART V.

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REPORT  
ON THE  
ANOMURA

LIBRARY  
DIVISION OF CASSIDACEA

COLLECTED BY

PROFESSOR HERDMAN, AT CEYLON, IN 1902.

BY

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[WITH TEXT-FIGURES.]

THIS collection of Anomura, entrusted to me for description by Professor HERDMAN—whose kind help in many ways I desire to acknowledge here—comprises 48 species, distributed amongst 22 genera. Two of these species, viz., *Munida alcocki* and *Porcellana hornelli*, are new to science, and a number of others are new to the marine fauna of Ceylon, and add considerably to our knowledge of the geographical distribution of the group.

The Anomuran fauna of this region of the world has been made known chiefly through the descriptions (1) by HENDERSON of the material collected in the Gulf of Manaar by THURSTON, and (2) by ALCOCK of the collections made during the cruises of the "Investigator," and contained in the Indian Museum. In all, about 52 species have now been recorded from the seas around Ceylon, and the present collection adds 23 more species to that list, in addition to the two new species cited above. The species collected by the "Investigator" and described by ALCOCK are, in many cases, deep-water forms, while the following is a list of the collection made by THURSTON, and described by HENDERSON (8), from shallow water in the northern part of the Gulf of Manaar, the exact locality where the bulk of the present collection was obtained. It will be of interest for comparison with the list in the pages that follow :—

<i>Dromidia unidentata</i> (RÜPP).	<i>Pagurus varipes</i> , HELLER.
„ <i>australiensis</i> , HASWELL.	* „ <i>setifer</i> , MILNE-EDW.
<i>Cryptodromia pentagonalis</i> , HILG.	* <i>Troglopagurus manaarensis</i> , HEND.
<i>Pseudodromia integrifrons</i> , HEND.	* <i>Aniculus aniculus</i> (FABR.).
<i>Raninoides serratifrons</i> , HEND.	* „ <i>strigatus</i> (HERBST).
<i>Hippa asiatica</i> , MILNE-EDW.	* <i>Clibanarius padavensis</i> , DE MAN.
<i>Albunea symnista</i> (LINN.).	„ <i>arethusa</i> , DE MAN.
* „ <i>thurstoni</i> , HEND.	* <i>Eupagurus zebra</i> , HEND.
* <i>Coenobita rugosa</i> , MILNE-EDW.	<i>Petrolisthes dentatus</i> (MILNE-EDW.).
* <i>Diogenes diogenes</i> (HERBST).	„ <i>boscii</i> (AUD.).
* „ <i>merguiensis</i> , DE MAN.	* „ <i>militaris</i> (HELLER).
* „ <i>miles</i> (HERBST).	<i>Porcellanella triloba</i> , WHITE.
„ <i>custos</i> (FABR.).	* <i>Polyonyx obesulus</i> , MIERS.
„ <i>planimanus</i> , HEND.	„ <i>tuberculosis</i> , DE MAN.
„ <i>avarus</i> , HELLER.	* <i>Galathea elegans</i> , WHITE.
* „ <i>costatus</i> , HEND.	„ <i>spinosirostris</i> , DANA.
* <i>Pagurus punctulatus</i> (OLIV.).	<i>Munida spinulifera</i> , MIERS.
„ <i>deformis</i> , MILNE-EDW.	

Of the above 35 species, Professor HERDMAN found the 16 marked with a star, and also 32 additional species which were not obtained by THURSTON.

## ANOMURA.

### HIPPIDEA.

#### FAMILY: HIPPIDÆ.

##### *Remipes testudinarius*, LATREILLE. (See MIERS, 10.)†

Galle, Station XXXVII., depth 7 fathoms; one specimen measuring 5·5 centims. in extreme length, and six smaller ones of 2 centims. Not previously recorded from Ceylon.

##### *Mastigochirus gracilis* (STIMPSON). (See MIERS, 10.)

Galle, Station XL., depth 34 fathoms. Three small male specimens. Not previously recorded from the Indian Ocean.

#### FAMILY: ALBUNEIDÆ.

##### *Albunea thurstoni*, HENDERSON (8).

Localities:—(1) Galle, Station XL., 34 fathoms; (2) off Mutwal Island, Station LXVI., 10 to 35 fathoms; (3) west of Periya Paar, Station LV., 24 fathoms; (4) on Aripu coral reef, shallow water. One specimen from each locality. The carapace of the largest specimen measures 1·6 centims.

† These numbers refer to the literature cited at the end.

## PAGURIDEA.

## FAMILY: COENOBITIDÆ.

**Coenobita clypeatus**, LATREILLE. (See ALCOCK, 1.)

On Watering Point, Galle, Station XXXVII. One large male, carapace measuring 4.5 centims. This is a common form in the Indian Ocean, but apparently has not been previously recorded from Ceylon.

**Coenobita rugosus**, MILNE-EDW. (See ALCOCK, 1.)

Localities:—(1) Foul Point, Trincomalee, Station XXV.; (2) on Watering Point, Galle, Station XXXVII.; (3) Kattanattu Point, on shore; (4) Welligam Bay, Station XXXIV., on shore.

The collection contains a large series of this common species, many of which are females bearing eggs. The average length of the carapace is 3 centims. The specimens from Watering Point at Galle, Kattanattu Point in the Gulf of Manaar, and near Mirissa in Welligam Bay, were collected in rough ground at the top of the beach. Professor HERDMAN'S notes contain the following sentences in regard to Welligam:—"Pagurids of several species, some inhabiting the shells of *Helix* and other land Molluscs, were very common on the upper part of the beach and in the cocoa-nut plantations beyond. A crowd of several dozen were found congregated upon a small heap of dung, evidently feeding. Others were sheltering in numbers about the roots of the trees."

All the specimens, however, belong to *C. rugosus*, and the shells they inhabit have been identified by Mr. R. STANDEN, as follows:—*Ranella bufonia*, *Ranella granifera*, *Littorina scabra*, *Nassa* sp., *Sistrum spectrum*, *Sistrum* sp., *Turbo argyrostoma*, *Purpura persica*, *Nerita* sp., *Trochus* sp., *Cantharus* sp., *Rapana bulbosa*, *Murex trilobus*, *Pyrula vesperilio*, *Natica* sp., *Natica monile*, *Ampularia* sp., *Helix hæmastoma*, *Cyclophorus menkianus*, *Tritonidia nodosa*.

## FAMILY: PAGURIDÆ.

**Diogenes investigatoris**, ALCOCK (1).

Localities:—(1) Gulf of Manaar, under 10 fathoms; (2) Palk Bay, Station XVIII., 7 to 8 fathoms. Several small specimens. Carapace measuring about 5 millims. Found inhabiting shells of *Minolia* sp., *Ranella argo*, and *Buccinum pusilla*. This is a new record for Ceylon.

**Diogenes rectimanus**, MIERS (12).

Localities:—(1) On coral reefs and pearl banks in Gulf of Manaar; (2) off Foul Point, Trincomalee, Station XXV., 8 fathoms. Six specimens found inhabiting shells of *Minolia terebra*, *Minolia* sp., *Terebra duplicata*, *Sistrum spectrum*, *Eburna caniculata*, and *Cancellaria antiquata*. This is a new record for Ceylon.

**Diogenes costatus**, HENDERSON (8).

Localities :—(1) Pearl banks, Gulf of Manaar, under 10 fathoms; (2) off Foul Point, Trincomalee, Station XXV., 8 fathoms. Eight specimens; carapace of largest measuring 7 millims.; found inhabiting shells of *Conus generalis* and *Olivella* sp. This species was found by THURSTON at Rameswaram.

**Diogenes miles** (HERBST). (See ALCOCK, 1.)

Locality :—Welligam Bay, Station XXXIV., 2 to 7 fathoms. Two males, in shells of *Nassa* sp.; length of carapace, 6 millims.

**Diogenes diogenes** (HERBST). (See ALCOCK, 1.)

Locality :—Stat. XV., Periya Paar, Gulf of Manaar, 9 fathoms. Thirteen specimens, in shells of *Strombus marginatus*, *Latirus* sp., *Natica melanostoma*, and *N.* sp., *Ranella bufonia*, *Oliva* sp. and *Tudicla spirillis*. Length of carapace of largest, 1·3 centims.

**Diogenes merguiensis**, DE MAN. (See ALCOCK, 1.)

Locality :—Pearl banks, Gulf of Manaar, under 10 fathoms. Five specimens; carapace measuring 2 centims.; in shells of *Cassis glauca*, *Natica* sp., *Triton* sp.

**Pagurus setifer**, MILNE-EDW. (See ALCOCK, 1.)

Localities :—(1) East Cheval Paar, and other pearl banks in Gulf of Manaar, under 10 fathoms; (2) south of Adam's Bridge, Station LIV., 4 to 40 fathoms; (3) Welligam Bay, Station XXXIV., 2 to 7 fathoms; (4) off Mutwal Island, Station LXVIII., 10 to 14 fathoms; (5) Trincomalee, Station XXI., 8 to 12 fathoms; (6) Aripu coral reef, shallow water; (7) outside pearl banks, Gulf of Manaar, Station LXIII., 50 fathoms; (8) Chilaw Paar, Station V., 9 to 11 fathoms. This is evidently a common species, as it occurred in abundance at various parts of the Coast of Ceylon, including Welligam and Trincomalee as well as the Gulf of Manaar. Amongst the specimens were several females bearing eggs. The carapace of the largest specimen measured 3 centims., that of the smallest, 7 millims.

These specimens were found inhabiting shells of *Turbinella* sp., *Delphinium* sp., *Murex haustellum*, *Murex* sp., *Murex rota*, *Murex trispinosum*, *Natica monile*, *Trochus* sp., *Solarium* sp., *Dolium* sp., *Dolium marginalis*, *Terebra duplicata*, *Cerithium* sp., *Strombus succinctus*, *Strombus elegans*, *Strombus marginatus*, *Strombus gibberulus*, *Pinaxia coronata*, *Xenophora conica*, *Xenophora* sp., *Ranella bufonia*, *Ranella* sp., *Ranella granifera*, *Nassa glans*, *Turritella* sp., *Harpa ventricosa*, *Ancilla ampla*, *Ancilla* sp., *Pyrula reticulata*, *Bulla ampulla*, *Tudicla spirillis*, *Oliva* sp., *Terebra* sp., *Cassis vibex*, *Mitra crebrilyrata*.

**Pagurus asper**, DE HAAN. (See ALCOCK, 1.)

Localities :—(1) Pearl banks off Aripu and elsewhere in Gulf of Manaar, under

10 fathoms; (2) west of Periya Paar, Station LXI., 12 fathoms; (3) Periya Paar Karia, Station LXII., 7 to 13 fathoms. This species, like the preceding one, was fairly abundant. The carapace of the largest measured 3 centims. The specimens were found inhabiting shells of *Dolium marginalis*, *Natica melanostoma*, *Natica* sp., *Ranella bufonia*, *Ranella crumera*, *Cerithium columba*, *Triton angulatus*, *Sistrum spectrum*.

**Pagurus punctulatus**, OLIVIER. (See ALCOCK, 1.)

Two male specimens, one from Station XXXIX., off Galle, depth 16 to 30 fathoms, and the other from the coral lagoon at Galle. Carapace measured 3.2 centims.; eye stalks of a maroon-red colour; chelipeds, legs, and carapace red, the latter with numerous whitish ocelli.

**Clibanarius padavensis**, DE MAN (9).

One female with eggs, from Lake Tampalakam, carapace measuring 2 centims.; also two male specimens having carapace measuring 2.2 centims., from Gulf of Manaar, in shells of *Purpura coronata* and *Natica* sp.

**Clibanarius æquabilis**, var. **merguiensis**, DE MAN (9).

Localities:—(1) Galle coral lagoon, shallow water; two males, carapace measuring 1.6 centims.; (2) Trincomalee, Station XXIII., 4 to 8 fathoms; one specimen in shell of *Cerithium maurus*.

**Calcinus elegans** (MILNE-EDW.). (See ALCOCK, 1.)

Locality:—Off Galle, Station XXXVII., 7 fathoms; and also on the shore at Galle. One female and two male specimens, in shells of *Purpura persica* and *Ricinula horrida*. This is a new record from Ceylon.

**Calcinus gaimardi** (MILNE-EDW.). (See ALCOCK, 1.)

Locality:—Gulf of Manaar, under 10 fathoms. Four male specimens; carapace measuring 9 millims.; in shells of *Latirus nodosus* and *Cerithium* sp. This is a new record for Ceylon.

**Aniculus aniculus** (FABR.). (See ALCOCK, 1.)

Locality:—Lake Tampalakam, Trincomalee, shallow water. Two specimens; carapace measuring 5½ centims.

**Aniculus strigatus** (HERBST). (See ALCOCK, 1.)

Localities:—(1) Pearl banks and coral reefs in Gulf of Manaar, under 10 fathoms; (2) Palk Bay, Station XIX., 4 to 8 fathoms; (3) Aripu coral reef, shallow water. In all about 13 specimens, including three females with eggs; carapace of largest measured 2 centims.; found inhabiting shells of *Strombus succinctus*, *Strombus auris-*

*dianæ*, *Strombus* sp., *Conus tessellatus*, *Conus augur*, *Conus generalis*, *Cyprea ocellata*, and *Oliva* sp. One specimen was found in association with an anemone, containing only the apex of a molluscan shell.

***Eupagurus zebra*, HENDERSON (8).**

Localities :—(1) Coral reefs, Gulf of Manaar, shallow water ; (2) off Mutwal Island, Station LXVI., 10 to 35 fathoms ; (3) south of Galle, Station XXXIX., 16 to 30 fathoms. The largest specimen measured 1 centim. along the carapace ; a few were found in association with anemones, the rest in shells of *Tritonidea nodosa*, *Latirus turritus*, *Pleurotoma tigrina*, *Nassa granifera*, *Triton* sp., and *Fusus* sp.

***Eupagurus carpofoaminatus*, ALCOCK (1).**

Locality :—Station XLIII., off Kaltura, 22 fathoms. Two males, carapace measuring 1.5 centims., with the pin-hole foramen on the under surface of the carpus very distinct.

***Spiropagurus spiriger* (DE HAAN). (See ALCOCK, 1.)**

Localities :—(1) Off Galle, Station XXXIX., 16 to 30 fathoms ; (2) off Foul Point, Trincomalee, Station XXV., 8 fathoms ; (3) Station XLIII., off Kaltura, 22 fathoms. Six males, and one female with eggs ; carapace of largest measured 2.2 centims. ; found inhabiting shells of *Pyrula reticulata*, *Natica monile*, *Natica* sp., *Natica melania*, *Latrunculus zeylanica*, *Harpa minor*.

***Catapagurus ensifer*, HENDERSON (8).**

Localities :—Gulf of Manaar, under 10 fathoms ; (2) west of Dutch Modragam Paar, Station LVI., 8 to 9 fathoms. Five specimens ; the carapace of the largest measured 1 centim. ; found inhabiting shells of *Natica*, 2 spp., carrying anemones. This is a new record for Ceylon.

***Paguristes hians*, HENDERSON (7).**

Locality :—Coral reefs and pearl banks, Gulf of Manaar, shallow water. Three specimens ; carapace measuring 1 centim. ; in shells of *Ranella bufonia*, *Murex* sp., and *Strombus marginalis*. This is a new record for Ceylon.

***Paguristes inomitatus*, ALCOCK (1).**

Locality :—Pearl banks and coral reefs, Gulf of Manaar, shallow water. Eight specimens, including two females with eggs ; carapace measuring 1.1 centims. ; in shells of *Tritonidia nodosa*, *Latirus turritus*, *Ranella* sp., and *Cerithium* sp. This is a new record for Ceylon.

***Paguristes pusillus*, HENDERSON. (See ALCOCK, 1.)**

Localities :—(1) Coral reefs and pearl banks, Gulf of Manaar, shallow water ; (2) Station XLIII., off Kaltura, 22 fathoms ; (3) off Mutwal Island, Station XLVII.,

10 to 14 fathoms. Fifteen specimens in all; two of the specimens were females bearing eggs; carapace of largest measured 2 centims; found inhabiting shells of *Cerithium citrinum*, *Ranella granifera*, *Cancellaria* sp., *Turbo* sp., *Cerithium*, 2 spp., *Seraphs terebellum*, *Pleurotoma* sp., *Triton* sp., *Strombus elegans*.

***Cancellus investigatoris*, ALCOCK (1).**

Locality :—Gulf of Manaar, shallow water. One specimen; carapace measuring 1.5 centims.

***Nematopagurus muricatus*, HENDERSON. (See ALCOCK, 1.)**

Localities :—(1) Gulf of Manaar, shallow water; (2) near Chilaw Paar, Station IV., 9 fathoms. One male from each; carapace measuring 5 millims.

***Nematopagurus* sp.**

Locality :—Gulf of Manaar, shallow water. A damaged male specimen, without chelipeds and legs; carapace measuring 6 millims; cornea but little dilated; antennal acicle curved and setose, and as long as the eye peduncles; ophthalmic scales well separated; rostrum small, obtuse, and rounded, projecting but little; the ophthalmic peduncles reach the middle of the terminal joint of the antennular peduncles; vas deferens protruding on both sides, the right one being much the longer.

The character of the vas deferens shows that this form belongs to the genus *Nematopagurus*, but, in the absence of all the appendages, I cannot venture to identify it further.

***Troglopagurus manaarensis*, HENDERSON (8).**

Locality :—Coral reefs, Gulf of Manaar, shallow water. Two specimens; carapace measuring 1 centim.

***Troglopagurus jousseaumii*, BOUVIER. (See ALCOCK, 1.)**

Locality :—Pearl banks, Gulf of Manaar, shallow water. Five specimens; carapace measuring 7 millims. This is a new record for Ceylon.

## GALATHEIDEA.

### FAMILY: PORCELLANIDÆ.

***Petrolisthes militaris* (HELLER). (See HENDERSON, 8.)**

Localities :—(1) Cheval Paar and other pearl banks, Gulf of Manaar, shallow water; (2) off Galle, Station XXXVIII., 9 to 22 fathoms; (3) Palk Bay, Station XVIII., 7 to 8 fathoms; (4) Periya Paar, Station LV., 11 to 24 fathoms; (5) Muttuvaratu Paar, Station VI., 6 to 9 fathoms; (6) Chilaw Paar, Station III., 9 to 14 fathoms. This species was fairly abundant, the collection comprising about 25 specimens; carapace of largest measured 1.1 centims.



***Petrolisthes* (?) *armatus* (GIBBES). (See HENDERSON, 7.)**

One damaged specimen, from Galle lagoon, is doubtfully referred to this species.

Length of carapace, 4 millims.; the carpus of both chelipeds is armed with 3 spines; ambulatory legs missing. *P. armatus* is a West Indian species, and so would be a new record for Ceylon.

***Petrolisthes serratus*, HENDERSON (7).**

Locality:—Coral reef, Galle; one female bearing eggs. Length of carapace 2 centims. This is a new record for Ceylon.

***Porcellana serratifrons*, STIMPSON. (See HENDERSON, 7.)**

Localities:—(1) Pearl banks, Gulf of Manaar, shallow water, five young specimens; (2) south end of Cheval Paar, Station XLIX., 9 to 13 fathoms, one specimen; (3) south of Galle, deep water, Station XLI., 100 fathoms, two specimens; (4) Galle coral lagoon, shallow water, one specimen. Carapace of largest measured 8 millims. This is a new record for Ceylon.

***Porcellana quadrilobata*, MIERS (12).**

Localities:—(1) Welligam Bay, Station XXXIV., 2 to 7 fathoms, one specimen; (2) Gulf of Manaar, outside pearl banks, Station LXIII., about 40 fathoms, one specimen; (3) off Mount Lavinia, Station XLVI., 25 to 30 fathoms, two specimens; the carapace of largest measured 5 millims. This is a new record for the Indian Ocean, as the species has only been found on the coast of Queensland.

***Porcellana hornelli*, n. sp.—Text-fig. 1.**

Carapace oval in outline, naked, very convex, a little longer than broad,\* and obscurely lineolate; front fairly prominent and four-lobed. The two median lobes—one on each side of the centre—have rounded apices which are minutely notched and are slightly longer and much broader than the two lateral lobes, each of which is triangular, curved, and terminates in a spine.

Eyes small and protruding but little.

Lateral margin of carapace armed with a series of spines. There is a large spine behind the orbit; and very near to it, but still nearer to the eye, is a much smaller one. A little further back are two additional spines, and between them is a rounded lobe bearing a few minute spines.

The external maxillipeds have the ischium a little shorter and broader than the merus. Both these joints are flattened from above, and each has its internal face produced into a rounded lobe.

Chelipeds smooth, obscurely lineolate, and a little longer than the carapace. The merus has its inner border produced into a rounded crest obscurely toothed. Carpus

\* In the figure (p. 219) the carapace is shown rather too narrow.

a little longer than broad, also crested internally, the crest being entire. Palm longer than the fingers. Fingers curved, slightly gaping, crossing at their tips and minutely notched on their opposing surfaces (see figure).

Walking legs short and slender, their last two joints bearing a few setæ.

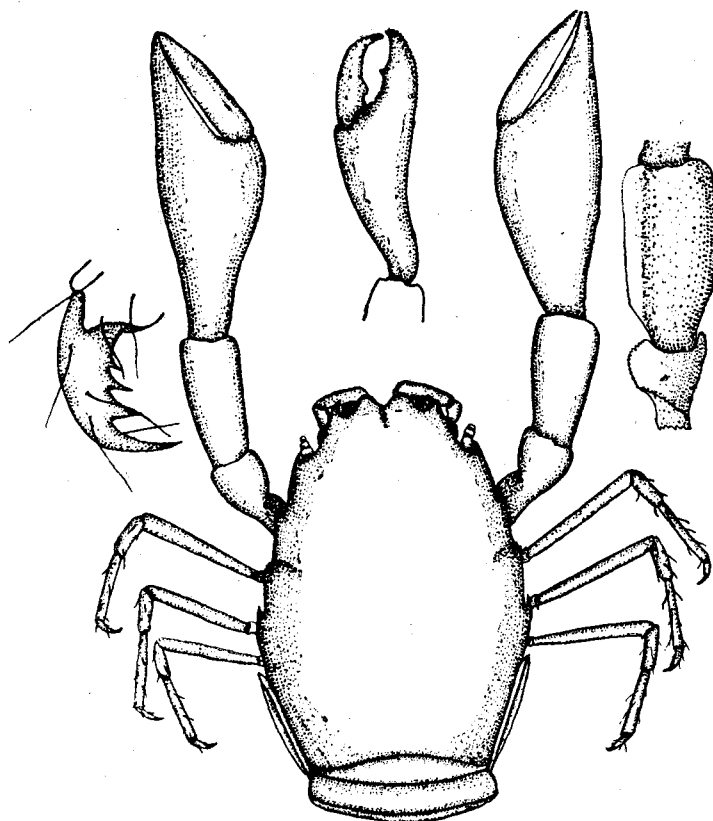


Fig. 1. *Porcellana hornelli*, n. sp.,  $\times 7$ ; showing also right cheliped,  $\times 6$ ; merus and carpus of right cheliped,  $\times 8$ ; and dactylus of third left leg,  $\times 30$ .

Localities :—(1) Aripu reef and other coral banks, Gulf of Manaar, shallow water ; (2) Dutch Modragam Paar, Station LVII., 12 to 36 fathoms. Six specimens ; length of carapace, 7 millims. ; breadth, 6 millims.

This species is named in honour of Mr. JAMES HORNELL, F.L.S., who took an active part in making this collection.

***Polyonyx biunguiculatus* (DANA, 4).**

Localities :—(1) Off Mutwal Island, Station LXVII., 10 to 14 fathoms ; (2) coral banks, Gulf of Manaar, shallow water. Six males, and one female bearing eggs ; length of carapace, 5 millims.

DANA figures the left cheliped of this species a little larger than the right one. Only one of the Ceylon specimens has both chelipeds intact, but in this case the right is very slightly larger than the left. Otherwise the specimens answer to

DANA's description and figure, and the tarsus of the walking legs is very noticeably two-clawed. This is a new record for Ceylon.

***Polyonyx obesulus* (WHITE).** (See MIERS, 12.)

Locality :—Cheval Paar, Gulf of Manaar, shallow water. One specimen ; carapace measuring 1 centim. This is a new record for Ceylon.

This and the last species seem so closely related that it is difficult to believe that they are distinct. Some of our Ceylon specimens seem intermediate in their characters.

***Pachycheles pulchellus* (HASWELL).** (See MIERS, 12.)

Localities :—(1) Cheval Paar and other pearl banks, Gulf of Manaar, shallow water, nine specimens ; (2) South of Modragam Paar, Station LXIV., 4 to 5 fathoms, one specimen.

Carapace of largest measured 9 millims. In these specimens the penultimate joints of the walking legs bear a few hairs on their external surface, and there is a little variation in the size of the crest on the carpus of the chelipedes.

This is a new record for the Indian Ocean, having only been found previously off the coasts of Australia.

FAMILY: GALATHEIDÆ.

***Galathea elegans*, WHITE.** (See HASWELL, 6.)

Locality :—Chilaw Paar, 8 miles from shore, Station V., 9 to 11 fathoms. One specimen ; extreme length 1.9 centims.

***Galathea longirostris*, DANA (4).**

Localities :—(1) North of Cheval, Station LIII., 7 to 9 fathoms ; (2) Gulf of Manaar, shallow water. Three specimens ; extreme length 2 centims. Colour markings well defined. Brought up adhering to specimens of *Antedon bella*. This is a new record for the Indian Ocean.

***Galathea corallicola*, HASWELL (6).**

Localities :—(1) South of Galle, Station XLI., 100 fathoms ; (2) off Kaltura, Station XLIII., 22 fathoms ; (3) coral reefs, Gulf of Manaar, shallow water. Six specimens in all ; carapace of largest measuring 9 millims. This is a new record for the Indian Ocean.

***Galathea australiensis*, STIMPSON.** (See HASWELL, 6.)

Localities :—(1) South of Galle, Station XLI., 100 fathoms ; (2) off Kaltura, Station XLIII., 22 fathoms ; (3) Gulf of Manaar, shallow water. In all, five males and two females bearing eggs ; carapace of largest measured 1 centim.

In one of the specimens the rostrum was armed with only three teeth on the left side, the right side having four—the normal number. In STIMPSON's original description of this species, from a female, it is stated that the fingers of the chelipeds did not gape. MIERS, describing a male of the same species (see 12), specially noticed that the fingers in his specimen "had an hiatus between them when closed." In all the Ceylon specimens the fingers are gaping, some more than others; from which one may conclude that this character is of comparatively little importance. This is a new record for Ceylon. I am inclined to agree with MIERS that this and the last species might well be joined as one.

*Galathea* (?) *grandirostris*, STIMPSON. (See HENDERSON, 7.)

Locality:—Dutch Modragam Paar, Station LVII., 12 to 36 fathoms. A damaged specimen, without chelipeds and legs, is doubtfully referred here. Rostrum long, deflexed, triangular, with a broad base, and armed laterally with small teeth; gastric region unarmed; striæ on the carapace numerous and ciliated; length of carapace, 1.6 centims. This is a new record for Ceylon.

*Munida japonica*, STIMPSON (18).

Localities:—(1) Trincomalee, Station XX., 11 to 13 fathoms; (2) south of Galle, Station XL., 34 fathoms; (3) off Kaltura, Station XLIII., 22 fathoms; (4) outside banks in Gulf of Manaar, Station LXIII., about 40 fathoms; (5) Aripu reef, shallow water. Thirteen specimens, including some females bearing eggs; the carapace of the largest measured 1.5 centims.

ORTMANN ('Zool. Jahr.,' Band 6, Abth. f. Syst., 1891-2, p. 254), in giving a detailed description of this species, pointed out that the abdomen was unarmed, and assumed that this was the case in STIMPSON's original specimens, although STIMPSON himself did not describe the abdomen. ORTMANN also noticed that his types differed from those described by STIMPSON in having a large spine at the antero-lateral angle of the carapace.

The Ceylon specimens agree with ORTMANN's description except in the following points:—

- (1) The supra-ocular spines are as long as the eye.
- (2) The setæ fringing the cornea are short.
- (3) The spines in the transverse row on the anterior gastral region vary a little in number. Usually there are 13, consisting of 6 pairs and a median one. In one of the Ceylon specimens there are only 11 spines, the outer pair—normally situated near the edge of the carapace—being absent. In another specimen the median spine is short, blunt and rounded, with another spine behind it in the middle line.
- (4) The lateral margin of the carapace is armed with 7 or 8 spines.
- (5) The chelipeds vary enormously in length. In the female the fingers of the chelipeds are as long as the palm and scarcely gaping, whilst in the male the fingers

are shorter than the palm and the gape may be very pronounced, or scarcely noticeable.

(6) A few long iridescent hairs occur on the carapace and abdomen.

It might be thought that a variety could be established on these characters, but I prefer to regard them as individual variations. This species is new to the Indian Ocean, being only previously known from Japan.

***Munida alcocki***, n. sp.—Text-fig. 2.

The rostrum is about one-third the length of the carapace, and has about three regular and minute notches towards the apex. It is slightly sigmoid. The supra-orbital spines are as long as the eye and half the length of the rostrum. A few setæ

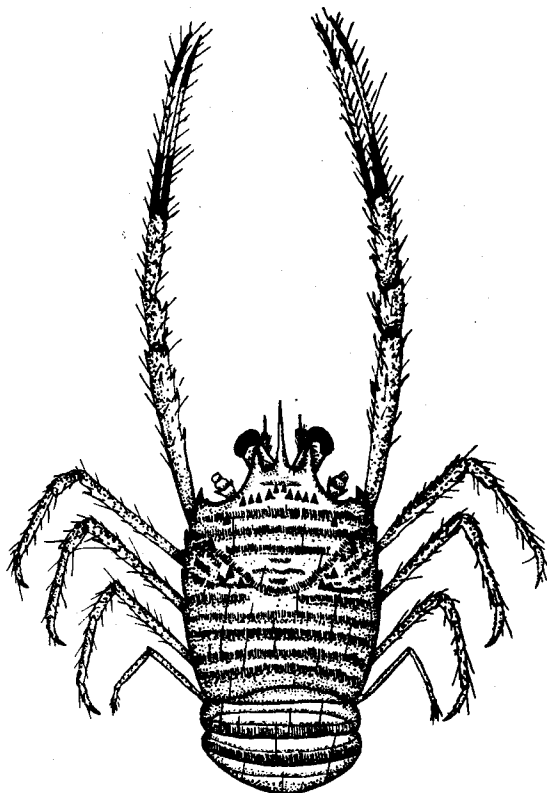


Fig. 2. *Munida alcocki*, n. sp.,  $\times 4$ .

overlap the cornea. The striæ on the surface of the carapace are numerous and pubescent. A few long iridescent hairs arise from the ridges of the thorax and abdomen. There is a transverse row of ten spines at the base of the rostrum. The median pair are situated a little in front of the rest, the second and fourth pairs being a little longer than the third and fifth. Separated from these by the first ciliated line is another pair of spines, situated laterally. Three additional pairs of lateral spines are situated a little behind the cervical groove, making eighteen spines in all. The lateral margin of the carapace is armed with seven spines.

The merus of the third maxilliped bears two large spines at the distal extremity.

The chelipeds are spinose and slender, nearly twice the length of the carapace, and bearing a few hairs. The spines on the merus increase in size distally. The fingers of the chelipeds are cylindrical, acute, slightly incurved, and in spirit specimens are marked with two red bands, one proximal, the other distal.

The walking legs bear a few hairs, and the tips of the anterior pair reach the base of the fingers of the chelipeds.

Localities :—(1) Dutch Modragam Paar, Station LVII., 12 to 36 fathoms ; (2) Aripu Reef and elsewhere in Gulf of Manaar, shallow water ; 23 specimens. The carapace of the largest individual measured 1·7 centims.

This species bears a general resemblance to *Munida honshuensis*, BENEDICT, in the disposition of the spines on the carapace, but differs from it in having (1) the abdomen unarmed ; (2) the carapace a little broader ; (3) the possession of long iridescent hairs ; (4) the rostrum shorter ; and (5) two additional spines on the carapace.

This species is named in honour of Col. ALCOCK, F.R.S., who has done so much to elucidate the Crustacean fauna of the Indian Ocean.

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