

## NO. XI.—MARINE BRACHYURA.

BY MARY J. RATHBUN, *Assistant Curator, Division of Marine Invertebrates,  
United States National Museum, Washington, U.S.A.*

(Plates 15—20 and Text-Figures 1, 2.)

(COMMUNICATED BY PROF. J. STANLEY GARDINER, M.A., F.R.S., F.L.S.)

Read 2nd February, 1911.

THE collection of crabs is a large one, comprising 245 species and subspecies; of these, 33 species and 3 subspecies are new to science, and for 3 of the species new genera are constructed.

The majority of the previously described species are entered in the works by Alcock, Laurie or Borradaile on the Brachyura of India, Ceylon and the Maldives, or form part of the Indo-Pacific fauna. Among the exceptions are three species from the Seychelles which have been recorded hitherto only from the Red Sea, or Persian Gulf, or both, viz.: *Atergatopsis signata*, *Actumnus bonnieri* and *Eumedonus granulosus*. Another Red Sea form, *Actumnus globulus*, was taken by the "Sealark" at the Chagos Archipelago.

The results of the expedition show no connection with the West African fauna. The genus *Callinectes*, it is true, is found for the first time in the Indian Ocean. This genus reaches its greatest abundance both as to species and individuals, in temperate and tropical America, and is fairly abundant on the west coast of Africa. The Indian species, however, is similar to, if not identical with, that lately recorded from the "Albatross" collection in the South Pacific.

Most numerous among the "Sealark" crabs are the small oval Xanthids, as *Actæa*, *Carpilodes*, *Pilumnus*, etc. To the same family belongs a new and widely divergent type with a stridulating mechanism, which has been named *Gardineria* in honour of the leader of the expedition. A different arrangement for producing sound is presented by a new species of *Manella*; it is the first occurrence of the sort noted among the Palicidæ. There is an entire absence of Pinnotheridæ and, save for one species of *Typhlocarcinops*, of those hemispherical forms of the Gonoplacidæ which were so abundant in Dr Mortensen's collection in the Gulf of Siam\*.

\* K. D. Vidensk. Selsk. Skr., 7 R., n.—m., Afd. v. 4, 1910, pp. 303—368, text-figs. 1—44, pls. 1—2, 1 map.



*List of species, subspecies and varieties in the collection.*

- Dromidia cranioides* de Man.  
*Cryptodromia canaliculata* Stimpson.  
     " *pentagonalis* Hilgendorf.  
     " *ornata*, sp. nov.  
*Homalodromia coppingeri* Miers.  
*Dynomene hispida* Desmarest.  
     " *predator* A. Milne Edwards.  
     " *pugnatrix brevimana*, subsp. nov.  
     " *spinosa*, sp. nov.  
*Latreillia pennifera* Alcock.  
*Dorippe dorsipes* (Linnaeus).  
*Calappa calappa* (Linnaeus).  
     " *hepatica* (Linnaeus).  
     " *gallus* (Herbst).  
     " *bicornis* Miers.  
     " *alata*, sp. nov.  
*Mursia spinimanus* Rathbun.  
*Oreophorus reticulatus* Adams & White.  
*Heteronucia ingens*, sp. nov.  
*Præbebalia extensiva*, gen. et sp. nov.  
*Persephona fugax* (Fabricius).  
     " *brevimana* (Alcock).  
     " *darnleyensis* (Haswell).  
*Leucosides jecusculum*, sp. nov.  
     " *angulata*, sp. nov.  
*Pseudophilyra melita* de Man.  
*Nursilia dentata* Bell.  
*Parathranites orientalis* Miers.  
*Caphyra rotundifrons* (A. Milne Edwards).  
     " *hemisphaerica*, sp. nov.  
*Lissocarcinus polybioides* Adams & White.  
     " *orbicularis* Dana.  
*Portunus* (Achelous) *petreus* (Alcock).  
     " (Achelous) *granulatus* (Milne Edwards).  
     " (Achelous) *orbitosinus*, sp. nov.  
     " (Achelous) *orbicularis* (Richters).  
     " (*Xiphonectes*) *longispinosus* (Dana).  
     " (*Xiphonectes*) *macrophthalmus* Rathbun.  
*Callinectes alexandri* Rathbun.  
*Charybdis erythrodactyla* (Lamarck).  
     " *paucidentata* (A. Milne Edwards).  
     " *hoplites* (Wood-Mason).  
     " sp.  
*Thalamita crenata* Latreille.  
     " *danae* Stimpson.  
     " *prymna* (Herbst).  
     " *poissonii* (Audouin).  
     " *admète* (Herbst).  
     " *margaritimana*, sp. nov.  
     " *quadrilobata* Miers.  
     " *integra* Dana.  
     " *investigatoris* Alcock.
- Thalamita exetastica macrospinifera*, subsp. nov.  
     " *gardineri* Borradaile.  
     " *sexlobata* Miers.  
     " *cooperi* Borradaile.  
     " *bouvieri* Nobili.  
     " *oculea* Alcock.  
*Lupocyclus rotundatus* Adams & White.  
     " *quinquedentatus* Rathbun.  
*Carupa laeviuscula* Heller.  
*Kraussia integra* (de Haan).  
     " *nitida* Stimpson.  
*Carpilius convexus* (Forskål).  
*Carpilodes tristis* Dana.  
     " *sayademalensis*, sp. nov.  
     " *stimpsonii* A. Milne Edwards.  
     " *pediger* Alcock.  
     " *vaillantianus* A. Milne Edwards.  
     " *cariosus* Alcock.  
     " *virgatus* Rathbun.  
     " *monticulosus* A. Milne Edwards.  
     " *pallidus* Borradaile.  
*Liomera cinctimana* (White).  
     " *granosimana* A. Milne Edwards.  
*Lioxantho latifrons*, sp. nov.  
*Atergatopsis signata* (Adams & White).  
*Platypodia cristata* (A. Milne Edwards).  
     " *semigranosa* (Heller).  
     " *anaglypta* (Heller).  
*Zosimus æneus* (Linnaeus).  
*Lophozozymus dodone* (Herbst).  
     " *pulchellus* A. Milne Edwards.  
*Euxanthus rugosus* Miers.  
     " *herdmani* Laurie.  
*Hypocolpus diverticulatus* (Strahl).  
*Xantho impressus* (Lamarck).  
*Leptodius exaratus* (Milne Edwards), var.  
     " *sanguineus* (Milne Edwards).  
     " *molokaiensis* Rathbun.  
     " *nudipes* (Dana).  
     " *gracilis* (Dana).  
     " *cavipes* (Dana).  
     " *cristatus* Borradaile.  
*Medæus simplex* A. Milne Edwards.  
     " *ornatus* Dana.  
*Cycloxanthops angustus* Rathbun.  
*Etisus dentatus* (Herbst).  
     " *laevimanus* Randall.  
*Etisodes electra* (Herbst).  
*Actæa tomentosa* (Milne Edwards).  
     " *remota* Rathbun.  
     " *tessellata* Pocock.  
     " *hirsutissima* (Rüppell).



- Actæa rufopunctata* Milne Edwards.  
 „ *garretti* Rathbun.  
 „ *obesa* A. Milne Edwards.  
 „ *affinis* (Dana).  
 „ *speciosa* (Dana).  
 „ *ruppellii* (Krauss).  
 „ *acies*, sp. nov.  
 „ *suffuscula*, sp. nov.  
 „ *variolosa* Borradaile.  
 „ *hellerii* A. Milne Edwards.  
 „ *savignyi* (Milne Edwards).  
 „ *boletaria*, sp. nov.  
 „ *nodulosa* White.  
 „ *flosculata* Alcock.  
 „ *polyacantha* (Heller).  
 „ *spinosissima* Borradaile.  
 „ *perspinosa* Borradaile.  
 „ *cavipes* (Dana).  
 „ *banareias*, sp. nov.  
*Daira perlata* (Herbst).  
*Xanthias lamarckii* (Milne Edwards).  
 „ *alcocki* Rathbun.  
 „ sp.  
 „ *tuberculidens*, sp. nov.  
 „ *minutus* (Rathbun).  
*Chlorodiella niger* (Forskål).  
 „ *lævissima* (Dana).  
 „ *barbata* (Borradaile).  
*Phymodius unguatus* (Milne Edwards).  
 „ *nitidus* (Dana).  
 „ *sculptus* (A. Milne Edwards).  
 „ *laysani* Rathbun.  
*Chlorodopsis spinipes* (Heller).  
 „ *woodmasoni* Alcock.  
 „ *scabricula* (Dana).  
 „ *venusta* Rathbun.  
 „ *melanospinis*, sp. nov.  
*Pilodius paumotensis* Rathbun.  
*Cymo andreossyi* (Audouin).  
 „ *melanodactylus* de Haan.  
 „ *quadrilobatus* Miers.  
*Pseudozoeus caystrus* (Adams & White).  
*Epixanthus corrosus* A. Milne Edwards.  
*Lydia tenax* (Rüppell).  
*Dacryopilumnus eremita* Nobili.  
*Pilumnus longicornis* Hilgendorf.  
 „ *andersoni* de Man.  
 „ *hirsutus* Stimpson.  
 „ *orbitospinis*, sp. nov.  
 „ *tahitensis* de Man.  
 „ *teniola* Rathbun.  
 „ *turgidulus*, sp. nov.  
 „ *trichophoroides* de Man.  
 „ *alcocki* Borradaile.  
*Actumnus setifer* (de Haan), var.  
*Actumnus setifer amirantensis*, subsp. nov.  
 „ *bonnieri* Nobili.  
 „ *globulus* Heller.  
 „ *obesus* Dana.  
 „ *simplex*, sp. nov.  
 „ *lævigatus*, sp. nov.  
*Eriphia sebana* (Shaw).  
 „ *scabricula* Dana.  
*Maldivia gardineri*, sp. nov.  
*Trapezia cymodoce* (Herbst).  
 „ „ *ferruginea* Latreille.  
 „ „ *intermedia* Miers.  
 „ „ *maculata* (MacLeay).  
 „ *rufopunctata* (Herbst).  
 „ *digitalis* (Latreille).  
*Tetralia glaberrima* (Herbst).  
*Quadrella coronata* Dana.  
 „ *maculosa* Alcock.  
*Polydectus cupulifer* (Latreille).  
*Domecia hispida* Eydoux and Souleyet.  
*Lybia tessellata* (Latreille).  
 „ *pugil* (Alcock).  
*Gardineria canora*, gen. et sp. nov.  
*Eucrate crenata* de Haan.  
*Pilumnoplax acanthomerus*, sp. nov.  
*Catoptrus nitidus* A. Milne Edwards.  
 „ *inæqualis* (Rathbun).  
*Typhlocarcinops piroculata*, sp. nov.  
*Palicus jukesii* (White).  
 „ *whitei* (Miers).  
*Manella gardineri*, sp. nov.  
*Grapsus longitarsis* Dana.  
*Pachygrapsus plicatus* (Milne Edwards).  
 „ *minutus* A. Milne Edwards.  
 „ *longipes* Rathbun.  
*Plagusia depressa tuberculata* Lamarck.  
*Percnon planissimum* (Herbst).  
 „ *abbreviatum* (Dana).  
*Hapalocarcinus marsupialis* Stimpson.  
*Elamena gracilis* Borradaile.  
*Macropodia formosa*, sp. nov.  
*Lambrachæus ramifer* Alcock.  
*Acheus lorina* (Adams & White).  
 „ *brevifalcatus*, sp. nov.  
 „ *inimicus*, sp. nov.  
 „ *cadelli* Alcock.  
*Achaopsis thompsoni* (Norman), var.  
*Oncinopus aranea* de Haan.  
*Æpinus indicus* (Alcock).  
*Pseudocollodes complectens*, gen. et sp. nov.  
*Xenocarcinus tuberculatus* White.  
*Sphenocarcinus cuneus* (Wood-Mason).  
*Huenia proteus* (de Haan).  
*Simocarcinus simplex* (Dana).  
*Menæthius monoceros* (Latreille).



<i>Scyramathia pulchra</i> (Miers).	<i>Macrocaloma nummifer</i> Alcock.
<i>Halimus inermis</i> , sp. nov.	<i>Micippoides angustifrons</i> A. Milne Edwards.
„ <i>elongatus</i> Ortmann.	<i>Parthenope</i> ( <i>Parthenope</i> ) <i>longimanus</i> (Linnæus).
„ <i>borradailei</i> Rathbun.	„ ( <i>Rhinolambrus</i> ) <i>longispinis</i> (Miers).
„ <i>uncifer</i> (Calman).	„ „ <i>turriger</i> (Adams & White).
„ <i>tenuicornis</i> (Pocock).	„ ( <i>Aulacolambrus</i> ) <i>hoplonotus</i> (Adams & White).
<i>Naxioides mammillata</i> (Ortmann).	„ ( <i>Pseudolambrus</i> ) <i>calappoides</i> (Adams & White).
„ <i>hirta</i> A. Milne Edwards.	„ ( <i>Pseudolambrus</i> ) <i>harpax</i> (Adams & White).
„ <i>spinigera</i> Borradaile.	„ „ <i>plana</i> , sp. nov.
<i>Hoplophrys oatesii</i> Henderson.	„ „ <i>erosa</i> (Miers).
<i>Tylocarcinus styx</i> (Herbst).	<i>Daldorfia horrida</i> (Linnæus).
<i>Chlorinoides longispinus</i> (de Haan).	„ <i>investigatoris</i> (Alcock).
<i>Schizophrys aspera</i> (Milne Edwards).	<i>Cryptopodia pan</i> Laurie.
<i>Cyclax suborbicularis</i> (Stimpson).	<i>Eumedonus granulosus</i> MacGilchrist.
<i>Ophthalmias cervicornis</i> (Herbst).	
<i>Micippa margaritifera</i> Henderson.	
<i>Cyphocarcinus minutus</i> A. Milne Edwards.	

## ANNOTATED LIST.

## Dromiidae.

1. *Dromidia cranioides* de Man.

*Dromia cranioides* Alcock (5)\*, p. 138.

Cargados Carajos, 24 fms., Sta. B 4†; 1 ♀ juv. without chelipeds; C. l. ‡ 7 mm., C. b. 6·8 mm.

Amirante, 28 fms., Sta. E 6; 2 ♂; C. l. 13·6 mm., C. b. 13·4 mm.

2. *Cryptodromia canaliculata* Stimpson.

*Dromia* (*Cryptodromia*) *canaliculata* Alcock (5), p. 142.

Salomon; 1 ♀. Praslin, reef; 1 ♀.

3. *Cryptodromia pentagonalis* Hilgendorf.

*Dromia* (*Cryptodromia*) *pentagonalis* Hilgendorf, Monatsb. Akad. Wiss. Berlin, Nov. 1878 (1879), p. 815, pl. 2, figs. 1—2.

Peros, Coin; 1 juv. Cargados Carajos, 30 fms., Sta. B 17; 1 ♀ ovig. Amirante, 29 fms., Sta. E 1; 1 ♀: 20—25 fms., Sta. E 13; 1 ♂. Seychelles, 39 fms., Sta. F 3; 1 ♀ ovig.: 34 fms., Sta. F 7; 1 ♂, under sponge.

\* This and similar citations refer to the issues of the following work:

A. Alcock, Materials for a Carcinological Fauna of India. No. 1, "The Brachyura Oxyrhyncha," Jour. Asiat. Soc. Bengal, lxiv. pt. II, No. 2, 1895; No. 2, "The Brachyura Oxystoma," *op. cit.*, lxv. pt. II, No. 2, 1896; No. 3, "The Brachyura Cyclometopa," pt. I, "The Family Xanthidae," *op. cit.*, lxvii. pt. II, No. 1, 1898; No. 4, "The Brachyura Cyclometopa," pt. II, "The Families Portunidae, Cancridae and Corystidae," *op. cit.*, lxviii. pt. II, No. 1, 1899; No. 5, "The Brachyura Primigenia or Dromiacea," *op. cit.*, lxviii. pt. II, No. 3, 1899; No. 6, "The Brachyura Catometopa or Grapsodea," *op. cit.*, lxix. pt. II, No. 3, 1900.

† A list of the stations will be found in vol. xii. of these Transactions, p. 163 *et seq.* They are indicated throughout by capital letters as above.

‡ The abbreviations indicating measurements are those employed by Laurie, in Herdman, Ceylon Pearl Fisheries, pt. v, Suppl. Rept. xl. Brachyura, 1906, p. 350.



The largest of these specimens (Sta. E 1) measures, C. l. 6.8 mm., C. b. 7.2 mm.

In most respects they agree with Hilgendorf's figures; the distance between the supraorbital and postorbital angles is greater than is represented by him, being nearly as great as the distance from the supraorbital angle to the lateral tooth of the front. The tooth behind the branchial groove is not developed. The "Sealark" specimens are all smaller than the type. The carapace is so convex as to be hemispherical.

4. *Cryptodromia ornata*, sp. nov. (Plate 15, fig. 1).

Saya de Malha, 125 fms., Sta. C 5; 1 ♂ type. Seychelles, 34 fms., Sta. F 7; 1 ♀.

♂, C. l. 21.6 mm., C. b. 26.8 mm., antennal peduncle about 12 mm.

Carapace and appendages covered with a very short vesicular tomentum which does not conceal the coarse, crisp granulation. A few longer, fine hairs. Regions plainly marked; protogastric regions convex; 2 convex bosses on the branchial region. Front and upper orbit with a laminar margin; front tridentate, teeth thin, lateral teeth the larger. A small inconspicuous preorbital tooth. Outer angle of the orbit non-dentiform. Lateral margin winged, continued anteriorly downward to the level of the front margin of the buccal cavity, then upward to the lower tooth of the orbit; it is cut into 3 large denticulate teeth in front of the cervical suture, and 3 or 4 smaller teeth behind that suture. A tooth at the buccal angle. Efferent ridge strong; epistome with a deep triangular cut on either side of the ridge.

Chelipeds equal, rough with granulated tubercles, tomentose inside; palm very thick, especially in the upper half, and twice as long as fingers, measured in the middle line, prehensile teeth fitting close together; only the extremities of the fingers are smooth and naked, white and polished.

First and second legs rough like the chelipeds; third and fourth pairs subequal in length and chelate, but the third is broader and rougher and in its general appearance resembles the preceding legs.

Sternal grooves of female far apart, ending opposite the first ambulatory legs.

This species resembles *Petalomera* except in having non-cristate legs. Of the species of *Cryptodromia*, it approaches *C. gilesii* Alcock\*, but it is readily distinguished by the alate lateral border extending nearly its full length, and the chelate subdorsal legs.

5. *Homalodromia coppingeri* Miers.

*Lasiodromia coppingeri* Alcock, Cat. Indian Dec. Crust., pt. 1, fasc. 1, 1901, p. 57, pl. III, figs. 15, 15 a.

Amirante, 29 fms., Sta. E 2; 1 ♀: 25—80 fms., Sta. E 11; 1 ♂, soft shell: 30 fms., Sta. E 21; 2 ♂. Seychelles, 34 fms., Sta. F 8; 1 ♀.

♀, Sta. F 8, C. l. 9.5 mm., C. b. 9.2 mm.

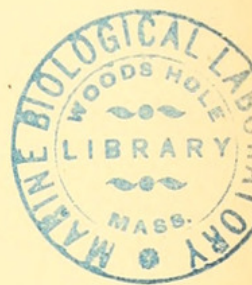
### Dynomenidæ.

6. *Dynomene hispida* Desmarest.

*Dynomene hispida* de Man, Archiv. für Naturg., liii. pt. 1, 1888, p. 408.

Salomon; 1 ♀. Coetivy; 1 ♂.

\* Catal. Indian Dec. Crust., pt. 1, fasc. 1, 1901, p. 54, pl. 3, fig. 13.





7. *Dynomene prædator* A. Milne Edwards.*Dynomene prædator* de Man, Archiv. für Naturg., liii. pt. 1, 1888, p. 409.

Coetivy; 1 ♂.

8. *Dynomene pugnatrix brevimana*, subsp. nov.

Providence, 50—78 fms., Sta. D 4; 2 ♀ ovig.

Type, C. l. 4.8 mm., C. b. 6.3 mm.

These specimens are a little smaller than de Man's type of *D. pugnatrix*\* and show some differences. They are a little wider, the palm is shorter in relation to the fingers, has a few spinules on its upper edge, while the wrist and the chela are both provided with a few hairs.

9. *Dynomene spinosa*, sp. nov. (Plate 17, fig. 1).

Coetivy; 3 ♂.

Type ♂, C. l. 19.6 mm., C. b. 24.7 mm.

Carapace and appendages covered with a thick tomentum of club-shaped setæ; and at regular intervals with bunches of long slender hairs, arising from elevations which are granular or bear a single spine, as on the antero-lateral region and on the dorsal surface of chelipeds and legs. Carapace subcircular, regions plainly marked; 5 antero-lateral teeth, each tipped with a strong spine, of which the fourth is most produced. Front broadly triangular, deeply grooved. Upper margin of orbit with two notches, outer angle not dentiform, lower margin armed with 3 or 4 spines or teeth. Chelipeds subequal, stouter and longer than the legs; lower margin of propodus and distal half of fingers bare; fingers deeply spooned, edges dentate, gaping when closed, the tips also dentate, their teeth fitting neatly together, 2 teeth of the dactylus into 3 of the immovable finger. Dactyli of first 3 legs armed with long slender spines on the posterior margin; last leg less than one-third as long as the preceding.

In the largest specimen, type, the claws have the appearance of being normal and the tips of the dactyli of the legs are light brown. In a smaller specimen, 17.5 × 21.9 mm., the claws are relatively much smaller and unequal, and the whole surface of the dactyli, excepting the hairs, is black. In the smallest specimen, 8.8 × 11.3, the chelipeds are equal, resembling those of the type, the dactyli of the legs are dark brown for their distal half.

This species can be distinguished from all others by its numerous spines.

**Latreilliidæ.**10. *Latreillia pennifera* Alcock.*Latreillia pennifera* Alcock (5), p. 168; Cat. Indian Dec. Crust., pt. 1, fasc. 1, 1901, p. 71, pl. 7, fig. 27—27 b.

Saya de Malha, 125 fms., Sta. C 4; 1 ♀ ovig. Seychelles, 39 fms., Sta. F 3; 1 ♀ ovig.: 34 fms., Sta. F 8; 2 ♂.

Largest specimen, Sta. F 3, C. l. 14.5 mm., C. b. 8 mm.

There are 3 cardiac tubercles forming a triangle, the median tubercle behind the pair.

\* Zool. Jahrb. Syst., iv. 1889, p. 444, pl. 10, fig. 13.



**Dorippidæ.**

11. *Dorippe dorsipes* (Linnæus).

*Dorippe dorsipes* Alcock (2), p. 277.

Cargados Carajos, 30 fms., Sta. B 15; 1 ♂: 29—30 fms., Sta. B 7; 1 ♂ juv.

**Calappidæ.**

12. *Calappa calappa* (Linnæus).

*Calappa fornicata* Alcock (2), p. 142.

Praslin, reef; 1 young ♀, 33 mm. long.

In specimens of this size the anterior half of the carapace is covered with flattened tubercles.

13. *Calappa hepatica* (Linnæus).

*Calappa hepatica* Alcock (2), p. 142.

Farquhar, atoll lagoon; 3 ♂ small. Seychelles, 31 fms., Sta. F 2; 1 ♂ small.

14. *Calappa gallus* (Herbst).

*Calappa gallus* Alcock (2), p. 146; Laurie, in Herdman, Ceylon Pearl Fisheries, pt. v, Suppl. Rept. xl. Brachyura, 1906, p. 354.

Salomon; 1 ♀, of the (A) type described by Laurie.

15. *Calappa bicornis* Miers (Plate 17, fig. 8).

*Calappa gallus* var. *bicornis* Miers, Rept. Zool. Coll. "Alert," Crust., 1884, p. 550, Providence Island, 19 fms.

*Calappa wood-masoni* Alcock (2), p. 148, pl. 6, fig. 2, south of Ceylon, 34 fms.; Illus. Investigator, Crust., pt. v, 1897, pl. 28, figs. 2, 2 a.

Seychelles, 34 fms.; Sta. F 8; 2 ♂ (1 adult, 1 juv.).

*Dimensions*.—♂, C. l. extreme 41.8 mm., C. b. just before the expansion 41.4 mm., C. b. extreme 50.5 mm.

The adult has the same form as *C. gallus*, from which species it is probably derived. Compared with a male *gallus* of equal size, extreme length greater than width at sinus in front of clypeiform expansion; in *gallus*, length distinctly less than width. Tubercles of carapace and chelipeds high and conical. Clypeiform expansions narrower and their posterior teeth shorter (along their posterior margins). Hepatic cavity shallower. Front deeply divided, the median sinus reaching back to level of lateral teeth of the front. Antennæ  $\frac{2}{3}$  as long as carapace. Upper and lower margins of orbit denticulate. The sixth segment of the abdomen is as wide at its distal as at its proximal end, which is not the case in *gallus*, and the terminal segment is considerably longer than in that species, being  $1\frac{2}{3}$  times longer than the sixth segment. In both species the sixth segment is the longest of the seven, the last segment excepted. I think that the abdomen described and figured by Alcock is that of a young ♀ rather than ♂.

A young male 15 mm. long is more quadrangular than the adult, and its tubercles sharper; antenna  $\frac{2}{3}$  as long as carapace.



16. *Calappa alata*, sp. nov. (Plate 15, fig. 2).

Amirante, 34 fms., Sta. E 9; 2 ♂.

*Dimensions*.—♂, apparently adult, C. l. extreme 17.9 mm., C. b. between sinuses just in front of clypeiform expansions 18.4 mm., C. b. extreme 21.8 mm.

A narrow species; width, exclusive of expansions, a little greater than length. Surface depressed; anterior  $\frac{2}{3}$  covered with granulated tubercles arranged somewhat in longitudinal lines and separated by granules; posterior  $\frac{2}{3}$  crossed by transverse granulated lines, sparsely edged with fine hairs, and separated by almost smooth spaces. Front,  $1\frac{1}{2}$  times as wide as either orbit, formed of two oblique lobes deeply separated by a notch rounded at the base. Intersutural lobes of the orbital margin shallow. Antero-lateral margin slightly arched, separated from the clypeiform expansion by a distinct re-entering angle, and cut into 11 shallow but well defined teeth. Greatest transverse width of clypeiform expansion  $\frac{2}{3}$  as great as the extreme dimension in an inwardly oblique antero-posterior direction, and cut into 9 teeth, there being three notches on posterior margin. Antennæ twice as long as width of orbit. Endostomial septum extending vertically from the level of the front to the mouth, thickening posteriorly, anterior edge convex.

Crest at distal end of arm faintly four-lobed; upper surface of wrist and outer surface of palm granulate, and with a few tubercles, an oblique line of regular granules on lower part of outer surface of palm. Sixth segment of abdomen of male a little wider than long; seventh segment as long as sixth is wide.

This species is very near *C. depressa* Miers\* from the south Australian coast, 2 to 10 fathoms, which differs in its relatively narrower and more triangular carapace, the wings following the antero-lateral outline; obscure antero-lateral teeth; nearly transverse frontal lobes; in having two regular lines of granules on lower half of outer surface of palm.

17. *Mursia spinimanus* Rathbun (Plate 15, fig. 5).

*Mursia spinimanus* Rathbun, Bull. U. S. Fish Comm. for 1903, pt. III, 1906†, p. 888, pl. 16, fig. 1, text-fig. 41.

Saya de Malha, 125 fms., Sta. C 2; 1 ♀ juv.

*Dimensions*.—C. l. extreme 17.2 mm., C. b. at anterior base of spines 19.7 mm., l. of spine on anterior margin 4.7 mm.

This specimen is rougher, as to granules and tubercles, than typical *spinimanus*; the 3 posterior teeth are about as prominent as in the very much larger type specimen, but they are more prominent than in young Hawaiian *spinimanus* of somewhat larger and smaller sizes.

\* Challenger Rept., Zool., xvii. 1886, p. 287, pl. 23, fig. 2.

† For the sake of brevity, this report will be referred to further on as "Rathbun, 1906."



**Leucosiidæ.**

18. *Oreophorus reticulatus* Adams and White (Plate 15, fig. 4).

*Oreophorus reticulatus* Alcock (2), p. 174.

Cargados Carajos, 30 fms., Sta. B 17; 1 ♀ ovig. Amirante, 34 fms., Sta. E 9; 1 ♀ ovig. Saya de Malha, 55 fms., Sta. C 15; 1 ♀ ovig. Seychelles, 34 fms., Sta. F 8; 1 ♀ ovig.

*Dimensions*.—♀, Amirante: C. l. (entire) 11.4 mm., C. b. 15.6 mm. ♀, Saya de Malha: C. l. (entire) 12.3 mm., C. b. 17.1 mm.

The first two specimens agree in most respects with Alcock's description. The granules are flat-topped, in the intestinal-cardiac channel they are mostly stalked. The edge of the front is truncate. The pterygostomian prominence is very protuberant, large and blunt. The two lobes just above the posterior margin are well marked. The sternum on either side of the penultimate segment of the abdomen is very prominent. The palms are a little longer than wide (contrary to Alcock's description), and the fingers are not twice as long as palm. The lower margin of the immovable finger and the upper margin of the dactylus, have throughout their whole length a thin laminate margin with a crenulated edge.

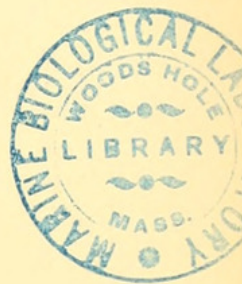
The last two specimens are a little larger than the preceding and of so different an aspect that one might easily consider them a distinct form. They are probably older, better developed specimens of the same species, though all are ovigerous females. The specimen from the Seychelles is coated everywhere except on the legs with a whitish (in alcohol) nullipore, but so far as the characters are in evidence they agree with those of the Saya de Malha specimen. In both, the granules are rounded off, confluent, and the pitting and reticulation is more obscure. The median groove of the front is continued to the edge, bilobing it. The pterygostomian prominence is small, tuberculiform. The two lobes above the posterior margin are small and inconspicuous. The sternum is not protuberant above the abdomen. The palms are more swollen and a little wider than long, the fingers about twice as long as palm; the outer edges of the fingers are less thin.

19. *Heteronucia ingens*, sp. nov. (Plate 17, fig. 2).

Amirante, 35 fms., Sta. E 14; 1 ♀ adult.

*Dimensions*.—♀, C. l. to tip of frontal teeth, 10 mm., C. b. 10.8 mm.

♀.—Entire surface except of fingers and dactyli of legs covered with close-set vesiculous granules, which are coarser on the abdomen and arms. On each lateral margin are 7 tubercles or teeth; 1 below the orbit, at angle of buccal cavity and projecting forward beyond the front, 1 less advanced, on the pterygostomian region, 4 on the branchial region, the second of which marks the widest point of the carapace, and 1 faintly indicated at the extremity of the posterior margin. About 5 smaller lower tubercles either side of the dorsal surface besides one on the hepatic region. Intestinal region a little elevated above the surrounding area; a shallow groove each side of mesogastric region. Front broadly bidentate, neither the maxillipeds nor the margin of the buccal





cavity (except the tubercles at the outer corners) projecting beyond it in a strictly dorsal view.

Cheliped (only the right is present) very little longer than the carapace; merus swollen at distal end; palm narrowing distally, slightly longer than fingers; fingers similar, longitudinally grooved, intervening ridges granulate; a narrow slit between fingers when closed. The first (and longest) leg is a little shorter than carapace.

This species is considerably larger than any yet described. In the quality of the granulation, it resembles *H. vesiculosa* Alcock\*, but in that species the marginal spines are strong, the chelipeds and fingers much longer. *H. venusta* Nobili† has a tooth on the inner border of each lobe of the front, and the arm has a conical tubercle on its posterior and its anterior border. *H. mesanensis* Rathbun‡ has a much more uneven surface, and no tubercle at the angle of the buccal cavity.

#### PRÆEBALIA, gen. nov.

(*Præbeo*, to reach out; *Ebalia*.)

Distinguished from *Ebalia* chiefly by its very long chelipeds, more than three times as long as carapace, with slender, prismatic palms, twice as long as fingers.

Carapace wider than long, exclusive of the two posterior spines, less uneven than in *Ebalia*; hepatic and intestinal regions well marked. Extremity of maxillipeds and buccal frame projecting beyond front, and pterygostomian region beyond hepatic region. Orbits very open; two open fissures above, a broad U-shaped fissure below. Merus of maxilliped  $\frac{2}{3}$  as long as ischium, measured on inner margin. Legs unusually long and slender. Sutures in coalesced abdominal segment (3rd, 4th and 5th) of ♂ visible.

Type, *Præebalia extensiva*, sp. nov.

20. *Præebalia extensiva*, sp. nov. (Plate 15, fig. 5).

Saya de Malha, 125 fms., Sta. C 4; 4 ♂. Providence, 125 fms., Sta. D 8; 1 ♂ type. Seychelles, 34 fms., Sta. F 7; 1 ♂, 1 ♀.

*Dimensions*.—♂, C. l. entire 12·7 mm., C. l. middle 11·3 mm., width 13 mm., Ch. l. about 46 mm.

Type ♂.—Extreme length of carapace nearly equal to extreme width; shape sub-circular, antero-lateral and postero-lateral distances subequal; frontal region separated by a depression from rest of carapace; surface finely and closely granulate with coarser granules behind and below the front; intestinal and hepatic regions conical, tipped by a tubercle; an interrupted furrow either side of cardiac region; 2 posterior spines sub-conical, acuminate; a tooth at lateral angle of carapace. Front bilobed by a deep furrow, edge truncate in dorsal view, with small U-shaped median emargination. Of the two upper orbital fissures, the inner is wider and deeper than the outer; lower sinus deeply U-shaped, with a tuberculiform tooth at inner angle; inner gap of orbit not completely

\* Journ. Asiat. Soc. Bengal, lxxv. 1896, p. 177, pl. 8, fig. 1.

† Bull. Mus. hist. nat., 1906, No. 5, p. 260.

‡ Proc. Biol. Soc. Wash., xxii. 1909, p. 107.



filled by the antenna which reaches sideways to the outer angle of the orbit. The basal segment of the antennule is furnished with a hard plate with spinulose edges and a brush of hairs underneath, which does not close the antennular aperture.

Margin of pterygostomian region coarsely granulated and obtusely angled. The roof of the efferent branchial channels ends in a broad smooth lamina with finely granulated edge; distal half of maxillipeds spinulose; a spinule tips the merus of the endognath, while the largest spinules are at the proximal third of the merus and near the distal end of the ischium. Abdomen more finely granulate than sternum; 6th segment slightly wider than long.

Chelipeds four times as long as carapace exclusive of spines; slender, finely frosted; merus cylindrical, swollen at articulation with carpus; carpus and hand prismatic, the latter widening a little distally, and more than twice as long as fingers, which are equal, grooved, and meet along their denticulated edges except for a narrow gape at the base. The legs diminish noticeably in length from first to fourth; the first reaches nearly to end of arm, the last is about  $\frac{2}{3}$  as long as first; a fringe of soft hair on upper margin of dactyli.

In smaller specimens the granulation is more visible to the naked eye, and the pterygostomian region is bordered by slender club-shaped spinules; the posterior and lateral spines are longer, the tip of the intestinal region is prolonged in a spine; the chelipeds are shorter,  $3\frac{1}{3}$  times as long as carapace (in ♀ about  $2\frac{2}{3}$  times), the palm not twice as long as fingers.

21. *Persephona fugax* (Fabricius).

*Myra fugax* Alcock (2), p. 202.

Cargados Carajos, 30 fms., Sta. B 8, B 15, B 16, B 17; 1 ♀ immature, 10 juv.

These 11 specimens are similar, and vary from 18.3 mm. wide (hinder part broken) to 9.3 mm. wide. The fine granulation is rather evenly distributed over the carapace; there is no tooth or denticle on the postero-lateral margin or on the antero-lateral margin behind the branchio-hepatic sinus; the teeth at the ends of the posterior margin are rectangular, blunt; the median is short, stout, acute.

22. *Persephona brevimana* (Alcock).

*Myra brevimana* Alcock (2), p. 206.

*Persephona brevimana* Rathbun, 1906, p. 891.

Seychelles, 44 fms., Sta. F 6; 1 ovigerous ♀.

The median carina is scarcely evident.

23. *Persephona darnleyensis* (Haswell).

*Myra darnleyensis* Alcock (2), p. 207.

Seychelles, 39 fms., Sta. F 3; 1 ♂ without chelipeds: 34 fms., Sta. F 8; 1 ♂.

In the smaller of the specimens, 10.8 mm. wide (from F 8) the "cruciform constellation" of granules is plainly visible; in the larger one, 11.8 mm. wide, it is very faintly indicated.



24. *Leucosides jecusculum*, sp. nov. (Plate 15, fig. 7).

Amirante, 34 fms., Sta. E 9; 1 ♀ ovigerous.

*Dimensions*.—♀, C. l. 10.2 mm., C. b. 9.7 mm.

A smooth, shining species. Carapace very little longer than broad, with a short, projecting front, separated by a hollow from the slightly convex hepatic region. Margin of front trilobed, middle lobe truncate with oblique sides; outer lobes truncate in front, oblique on outer side. Antero-lateral margin, up to the branchio-hepatic sinus, nearly straight, ornamented with 6 sharpish spaced granules; lateral rounded angle of carapace with a rim of smaller, close-set bead granules. The thoracic sinus has no definite anterior border, is covered with a mat of short hair which conceals a short line of granules along the lower margin. The whole of the epimeral edge is visible in dorsal view; it is bordered with a raised line of very fine granules continued on the posterior margin; surface below the latter smooth.

Arm bordered by large bead granules; two converging lines of the same on proximal half of upper surface; two lines of similar but smaller granules along inner edge of lower surface and a few large granules at base of inner surface; a patch of spongy hair at base of upper and inner surface. Width of hand equal to outer length; a line of fine granules above, just within inner margin and coarser on basal lobule. Fingers slender, longer than palm, with a narrow gape which diminishes regularly to the crossed tips, the dactylus considerably overreaching the immovable finger.

The merus joints of the legs are flattened, have two rows of fine granules below and one row above except in the first leg where there are two; propodal joints with sharp crests above and below, dactyli long and slender.

*Colour*.—The anterior  $\frac{2}{3}$  of the carapace is reticulated with light brown (in alcohol), a spot of same colour either side of intestinal region, and another near postero-lateral margin above first ambulatory leg; a band of yellow across middle of fingers and across merus of legs.

This species belongs to the same group as *L. cumingi*, *L. hilaris* and *L. sima*, the distinctive characters of which are given by Nobili in Bull. Sci. France et Belgique, xl. 1906, p. 102. In order to compare our species with those three, I give below a summary of the above description to correspond with his table:

1. Front rather prominent, trilobate.
2. Hepatic region slightly inflated.
3. Postero-lateral borders granulate as far as the first pair of feet.
4. Thoracic sinus not defined anteriorly.
5. Posterior border not prominent in the ♀, rather wide.
6. Hand with a line of granulations; fingers longer than palm.
7. Meropodites of ambulatory feet granulate above and below.

25. *Leucosides angulata*, sp. nov. (Plate 15, fig. 8).

Seychelles, 31 fms., Sta. F 2; 1 ♂ type.

*Dimensions*.—♂, C. l. extreme 12.4 mm., C. b. 11.8 mm.



Carapace high in the middle, smooth; a little longer than broad; front prominent, flattened above, anterior margin 4-lobed, lateral margin forming an obtuse re-entering angle with hepatic margin, which is obscurely granulate; a pronounced hepatic angle; hepatic region not dorsally swollen; postero-lateral margin with a fringe of short hair and a slight concavity behind the lateral angle; thickened epimeral edge visible in dorsal view throughout its extent and continuous with the prominent posterior margin, both granulated; oblique surface below the latter smooth.

Thoracic cavity deep; defined anteriorly by the smooth, convex, overhanging margin of the pterygostomian region; covered with a mat of short spongy hair except on a large suboval tubercle or lamina which projects outward from the base of the cavity. The sternum bears a strong curved tooth directed outward, downward and forward at the outer angle of the ischium of the endognath.

Merus of chelipeds widens distally, its margins armed with large pearly tubercles, three of which on the inner margin are larger and dentiform; at the base there are one or two large tubercles and some spongy hair above and inside, and a few granules below. The palms are a little longer than wide, outer margin cristate, inner margin swollen, a few obscure granules on basal lobe. Dactyl slightly longer than palm; both fingers grooved, separated to a point where they cross some distance from the tips, a small tooth near base of immovable finger.

The legs have two granulated crests below, the first leg two rows of granulations above, the third and fourth legs one row above; second leg absent. Propodi cristate on both edges.

*Colour*.—A spot of orange-brown on postero-lateral margin above first leg, a small spot near posterior angle, two tiny spots near middle of posterior margin. Underside of body and chelipeds sparingly speckled with same colour; touches of same on articulations of legs, on top of merus-joints and about the middle of dactyli.

This species comes in Alcock's key to the Indian species of *Leucosia* (*op. cit.*, p. 211) next to *L. elata* (p. 214), but is strikingly differentiated by the angular hepatic margin, four-lobed or toothed front, and large tubercle in the thoracic sinus.

26. *Pseudophilyra melita* de Man.

*Pseudophilyra melita* Alcock (2), p. 253.

Cargados Carajos, 30 fms., Sta. B 13; 1 juv. 4 mm. long, 3.6 mm. wide.

The general features are those of the adult, but the outer lobe of the orbit is more independent, and there is a slight nick in the buccal wall just below the orbit.

27. *Nursilia dentata* Bell (Plate 15, fig. 6).

*Nursilia dentata* Alcock (2), p. 260.

Cargados Carajos, 30 fms., Sta. B 15; 2 ♀ (1 ovig.): B 16; 1 ♀ ovig.: B 17; 2 ♀ (1 ovig.). Seychelles, 44 fms., Sta. F 6; 1 ♀ juv.: 34 fms., Sta. F 7; 1 ♂.

In these specimens there is a fourth median spine just above the posterior margin; the ends of the latter are as distinctly dentiform in the ♀ as in the ♂. The abdomen of the male appears to have the first and second segments free, the first being partially hidden by the carapace.



## Portunidæ.

28. *Parathranites orientalis* Miers.

*Parathranites orientalis* Alcock (4), p. 17.

Salomon Bank, 60—120 fms.; 1 ♀. C. l. 13 mm., C. b. 18·7 mm.

29. *Caphyra rotundifrons* (A. Milne Edwards).

*Caphyra rotundifrons* Rathbun, Mem. Mus. Comp. Zool., xxxv. 1907, p. 60, pl. 1, fig. 4.

Praslin, reef; 1 ♀ ovig.

30. *Caphyra hemisphærica*, sp. nov. (Plate 15, fig. 9).

Coetivy, 32 feet, by diver; 1 ♂.

C. l. 3·5 mm., C. b. 3·7 mm., thickness 2 mm.

Carapace hemispherical, smooth to the naked eye, microscopically granulous on anterior third; 2 fine transverse ridges, one at the middle running across the carapace, with two interruptions, and curving forward, to the last lateral tooth; the other further forward on the gastric region. Front truncate, a minute median notch, and indications of a shallow lobe on each side of it; outer angles rounded off and separated by a large triangular notch from the subacute but less advanced preorbital angle. Four small antero-lateral teeth, including the post-orbital angle, and diminishing in size from first to fourth.

One cheliped and 2 legs only are present; inner, lower margin of ischium and proximal half of merus armed with slender spines; hand with a blunt superior marginal line; the dactyli of the legs are strongly curved and taper rapidly to a long, slender spine which occupies nearly half their length.

Allied to *C. lævis* A. Milne Edwards (Nouv. Arch. Mus. Hist. Nat., ix. 1873, p. 173, pl. 4, fig. 2) and to *C. natatrix* Zehntner (Rev. Suisse Zool., ii. 1894, p. 162, pl. 7, fig. 10) but differs in the greater convexity, in the front being less cut up into teeth, in the fewer and smaller antero-lateral teeth, in the unarmed wrist and palm.

31. *Lissocarcinus polybioides* Adams and White.

*Lissocarcinus polybioides* Alcock (4), p. 19.

Seychelles, 31 fms., Sta. F 2; 1 small ♂.

32. *Lissocarcinus orbicularis* Dana.

*Lissocarcinus orbicularis* Alcock (4), p. 20.

Salomon; 1 ♂, 1 ♀ ovig. Cargados Carajos, 30 fms., Sta. B 23; 1 ♀. Saya de Malha, 55 fms., Sta. C 15; 1 ♀.

33. *Portunus (Achelous) petreus* (Alcock).

*Neptunus (Amphitrite) petreus* Alcock (4), p. 37; Illus. Zool. Investigator, Crust., pt. VIII, 1900, pl. 46, fig. 2.

Cargados Carajos, 30 fms., Sta. B 3; 1 ♂: 30 fms., Sta. B 17; 1 ♀. Providence, 39 fms., Sta. D 1; 1 ♂.

♂, Sta. D 1, C. l. 17·6 mm., C. b. (incl. spines) 27·3 mm.



The sinuses between the frontal teeth are deeper than in the figure cited; the last lateral spine is about twice as long as the preceding. In a smaller specimen (C. l. 12.8 mm.), the lateral spine is  $2\frac{1}{2}$  times as long as the preceding.

34. *Portunus (Achelous) granulatus* (Milne Edwards) (Plate 15, fig. 10).

*Lupea granulata* Milne Edwards, Hist. Nat. Crust., i. 1834, p. 454.

*Neptunus (Achelous) granulatus* Alcock (4), p. 45 (part); not *Amphitrite gladiator*, var., de Haan, 1837, pl. 18, fig. 1.

*Portunus (Achelous) granulatus* Rathbun, 1906, p. 871, pl. 12, fig. 2.

Cargados Carajos, 30 fms., Sta. B 3; 1 ♂, 1 ♀.

Two closely allied forms have been combined by myself and others under the specific name "*granulatus*." The true "*granulatus*," I believe, is that figured in my Hawaiian bulletin (*loc. cit.*), while the other species is that figured by de Haan, Fauna Japonica, Crust., pl. 18, fig. 1, as a variety of *Amphitrite gladiator*. The shape of the chelipeds, maxillipeds and legs is the same in both, and that of the carapace nearly the same.

The chief differences are as follows:

(1) In *granulatus*, the granules cover nearly the whole of the carapace, the smooth sulci between the areoles being narrow; in *orbitosinus* the granules are in patches separated by broad smooth areas.

(2) In *granulatus*, the sinus between the first antero-lateral tooth (the orbital tooth) and the next tooth is as wide as the succeeding sinus; in *orbitosinus* the first sinus is much smaller than (usually half as wide as) the second sinus. This is well shown in de Haan's figure.

(3) In *granulatus*, the suborbital sinus is narrow and very deep, much deeper than its greatest width; in *orbitosinus* the sinus is shallower, approximating an equilateral triangle.

(4) In *granulatus*, the abdomen of the ♂ is triangular, after the 3rd segment\*; in *orbitosinus* the margins of the abdomen after the third segment are strongly sinuous and the 6th segment is widest at its middle†.

35. *Portunus (Achelous) orbitosinus*, sp. nov. (Plate 15, fig. 11).

*Amphitrite gladiator*, var., de Haan, Fauna Japon., Crust., 1837, p. 65, pl. 18, fig. 1.

Cargados Carajos, 30 fms., Sta. B 15; 1 ♂, 1 ♀: 30 fms., Sta. B 17; 1 ♂, 1 ♀: 30 fms., Sta. B 23; 2 ♂, 2 ♀. Amirante, 32 fms., Sta. E 5; 1 ♀: 33 fms., Sta. E 8; 1 ♀: 34 fms., Sta. E 9; 2 juv. Seychelles, 31 fms., Sta. F 2; 1 juv.: 44 fms., Sta. F 6; 1 ♀: 34 fms., Sta. F 8; 1 ♂: 37 fms., Sta. F 9; 1 ♀.

For description, see under preceding species.

This appears to be a larger species than *P. granulatus*, and also a commoner one in the western Indian Ocean. ♂ Sta. B 23, C. l. 22.6 mm., C. b. 33.3 mm. The largest *P. granulatus* handled is an ovigerous ♀ from the Caroline Islands, measuring 17 × 24 mm. (A. Milne Edwards, *loc. cit.*, gives 19 × 28 mm.).

\* As stated by A. Milne Edwards, Arch. Mus. Hist. Nat., x. 1861, p. 344.

† The abdomen accompanying de Haan's fig. 1, pl. 18, though labelled "♂," is that of a ♀.



36. *Portunus (Achelous) orbicularis* (Richters).

*Neptunus (Achelous) orbicularis* Alcock (4), p. 47.

Cargados Carajos, 30 fms., Sta. B 3; 1 ♂, 2 juv.

♂, C. l. 27 mm., C. b. 34.2 mm.

37. *Portunus (Xiphonectes) longispinosus* (Dana).

*Neptunus (Hellenus) longispinosus* Alcock (4), p. 40.

Salomon, 1 ♂, with the appearance of having been in a fish stomach. Providence, 39 fms., Sta. D 1; 1 ♂, 2 ♀. Seychelles, 31 fms., Sta. F 2; 2 ♂: 34 fms., Sta. F 8; 2 ♂.

38. *Portunus (Xiphonectes) macrophthalmus* Rathbun.

*Portunus (Xiphonectes) macrophthalmus* Rathbun, 1906, p. 871, text-fig. 31, pl. 12, fig. 5.

Cargados Carajos, 30 fms.\*, Sta. B 9; 1 ♀. Seychelles, 31 fms., Sta. F 2; 2 ♂.

39. *Callinectes alexandri* Rathbun (Plate 17, fig. 4).

*Callinectes alexandri* Rathbun, Mem. Mus. Comp. Zool., xxxv. 1907, p. 61, pl. 2, fig. 1, pl. 9, figs. 3, 3 a, 3 b.

Cargados Carajos, 30 fms., Sta. B 23; 1 ♂ small, but mature. C. l. 25.3 mm. (approx.), C. b. 53.3 mm.

This species was based on two young specimens from Tahiti and Fiji; the specimen from the Indian Ocean is considerably larger, without being full grown, and, when taken, was about to moult. It presents some differences from the type, differences which it seems best to regard as due to age until more material is available.

(1) The carapace is narrower and the lateral spine shorter. (Compare pl. II, fig. 1, *loc. cit.*, with the figure given here.)

(2) The granulation on the carapace is denser.

(3) The lateral teeth are blunter and less like saw-teeth. Teeth 2 to 6, inclusive, are similar, their posterior margins about  $1\frac{1}{2}$  times as long as their anterior margins, tips blunt; tooth 7 has the posterior margin about  $1\frac{1}{3}$  times as long as the anterior, tip blunt; tooth 8 is narrower, sharp, anterior margin deeply concave, and having the same length (across the chord) as the posterior margin; lateral spine  $3\frac{1}{4}$  times as long as the preceding tooth, its axis transverse.

(4) The last two segments of the abdomen are a little more elongate than in pl. IX, fig. 3 a, *loc. cit.* The appendages of the first segment (which were undeveloped in the type) have straight extremities and reach to the terminal fourth of the sixth segment.

40. *Charybdis erythroductyla* (Lamarck).

*Charybdis erythroductyla* Rathbun, 1906, p. 872, pl. 4.

Salomon; 1 ♂. Amirante; 1 ♂.

41. *Charybdis paucidentata* (A. Milne Edwards).

*Goniosoma paucidentatum* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, x. 1861, p. 381, pl. 35, fig. 3.

\* May have been swimming at the surface.



Coetivy; 1 ♂ immature.

C. l. 28.6 mm., C. b. 37.7 mm. The chelipeds and the first leg on the right side are represented only by thin soft appendages of small size. The specimen has a much more *Thalamita*-like aspect than a larger ♂, 47.6 × 63.2 mm., taken at Aldabra by Dr. W. L. Abbott.

42. *Charybdis hoplites* (Wood-Mason).

*Charybdis* (*Goniohellenus*) *hoplites* Alcock (4), p. 66.

Saya de Malha, 47 fms., Sta. C 11; 1 ♂. C. l. to tip of teeth, 27.5 mm., C. b. 43.6 mm.

Not typical, because the posterior lateral spine is very little longer than the teeth which precede it. The specimen is larger than that noted by Alcock. Compared with a specimen still smaller, received from the Indian Museum, the angles of the posterior margin are scarcely eared, though prominent; the short ridges on the anterior gastric region are single lines of granules. I am not able to say whether these are age variations, or represent a subspecies.

43. *Charybdis*, sp.

Amirante, 25 fms., Sta. E 3; 1 ♂ juv., without chelipeds. C. l. 4.8 mm., C. b. 6.5 mm., f. orb. b. 5.4 mm.

Belongs to the "*Gonioneptunus*" division of the genus, in which the lobular external process of the basal joint of the antenna is not in contact with the front.

Front advanced, arcuate, 8-toothed, submedian pair of teeth a little wider than median pair, two outer pairs subequal and a little smaller than median pair; teeth subtruncate. The two orbits together are nearly as wide as front.

Postero-lateral corners rounded.

Antero-lateral margin making a very slight angle with the axis of the crab; 6 teeth subequal, the 2nd and 5th slightly reduced; 3rd to 6th inclusive sharp.

Granular ridges of dorsal surface prominent and arranged as in *C. subornata* (Ortmann)\*, that is a ridge between the teeth of the last pair, three ridges in front of it, the two foremost of which are broken in two, a ridge on the cardiac region, three short ridges, one behind the other, on the branchial region.

Merus of last foot more than twice as long as broad and armed with a strong spine; posterior margin of propodus spinulose.

44. *Thalamita crenata* Latreille.

*Thalamita crenata* Alcock (4), p. 76.

Praslin, reef; 3 ♂.

45. *Thalamita danae* Stimpson.

*Thalamita danae* (4), p. 77.

Egmont, reef; 1 ♂, 1 ♀.

\* Zool. Jahrb. Syst., vii. 1893, p. 79, pl. 3, fig. 9.



46. *Thalamita prymna* (Herbst).*Thalamita prymna* Alcock (4), p. 78.

Egmont, reef; 1 ♂ juv. Cargados Carajos, reef; 2 ♂, 1 ♀ juv. Coetivy; 1 ♂, 1 ♀.

47. *Thalamita poissonii* (Audouin).*Thalamita poissonii* Alcock (4), p. 81.

Peros, Coin; 2 ♂, 2 ♀ immature. Saya de Malha, 150 fms., Sta. C. 1; 1 ♀ immature.

Largest specimen (♂), C. l. 10.8 mm., C. b. 16 mm.

The tip of the 5th lateral tooth forms a regular curve with a line connecting the 1st, 2nd, and 3rd teeth; all the teeth, except in some cases the 1st, are spiniform. The posterior border of the propodite of the last pair of legs is armed with 4 to 6 spinules. The teeth on the anterior border of the arm are acute.

48. *Thalamita admete* (Herbst).*Thalamita admete* Rathbun, 1906, p. 874.

Salomon; 2 ♂. Egmont, reef; 1 ♂, 2 ♀. Amirante, 29 fms., Sta. E 1; 1 ♀ juv.: 29 fms., Sta. E 2; 2 ♀ (1 ovig.). Seychelles, 31 fms., Sta. F 2; 3 juv.: 34 fms., Sta. F 8; 1 ♂ juv., 1 ♀ juv. Coetivy; 1 ♂.

49. *Thalamita margaritimana*, sp. nov. (Plate 15, fig. 12).

Cargados Carajos, 30 fms., Sta. B 2; 2 ♂ (1 is type), 2 ♀ ovig. Seychelles, 34 fms., Sta. F 7; 1 juv.: 34 fms., Sta. F 8; 1 ♂.

Type ♂, C. l. 15.8 mm., C. b. 26 mm.

Differs from *T. quauensis* Rathbun (Bull. U. S. Fish Comm. for 1903, part III, 1906, p. 874, pl. 12, fig. 1) (1) in having the fifth lateral spine longer, being produced as far as the third tooth; (2) in the great roughness of the whole surface of the hand; it is covered with flattened bead granules, and the ridges are strong and formed by a row of bead granules.

Near *T. granosimana* Borradaile (Fauna Maldives, i. 1902, p. 202) in which the fourth side tooth is small but not vestigial as in this new form.

50. *Thalamita quadrilobata* Miers.*Thalamita quadrilobata* Alcock (4), p. 84.

Cargados Carajos, 20—25 fms., Sta. B 17; 1 ♂ juv.

The basal joint of the antenna bears four slender sharp spines.

51. *Thalamita integra* Dana.*Thalamita integra* Alcock (4), p. 85.

Diego Garcia, lagoon; 1 ♂: barachois; 3 ♂ (1 soft shell), 1 ♀, 3 juv.

52. *Thalamita investigatoris* Alcock.

*Thalamita investigatoris* Alcock (4), p. 85; Illus. Zool. Investigator, Crust., pt. VIII, 1900, pl. 47, figs. 1, 1 a.



Providence, 29 fms., Sta. D 3; 1 ♀ juv.: 50—78 fms., Sta. D 4; 1 ♂. Amirante, 34 fms., Sta. E 9; 1 ♀ juv.: 20—25 fms., Sta. E 13; 1 ♂ soft shell: 35 fms., Sta. E 14; 1 ♀ ovig.: 39 fms., Sta. E 16; 2 ♀ soft shell: 30 fms., Sta. E 21; 2 ♂, 1 ♀. Seychelles, 34 fms., Sta. F 8; 4 ♂, 6 ♀ (2 ovig.), 4 juv.: 37 fms., Sta. F 9; 1 ♂.

Largest specimen, ♂, Sta. E 21, C. l. 9 mm., C. b. 13.3 mm.

In large specimens the fifth lateral tooth is larger, in proportion to the first three teeth, than in smaller specimens. There are 3, 4 or 5 spines on the palm: in adults 3 or 4; in young specimens 4 or 5.

53. *Thalamita exetastica macrospinifera*, subsp. nov.

Providence, 50 fms., Sta. D 11; 1 juv. Amirante, 39 fms., Sta. E 16; 1 ♂ type.

♂, C. l. 10.2 mm., C. b. 14.3 mm.

Combines the characters of *T. exetastica spinifera* Borradaile and *T. exetastica macrodonta* Borradaile\*, that is:

1. There are spines along the hinder edge of the propodite of the last leg.
2. The last side-tooth is nearly as large as the third and projects somewhat more than the rest. Fourth tooth rudimentary.
3. The median frontal lobes are only a trifle narrower than the submedian (as 8 : 9).

In No. 1 it resembles *spinifera*, in No. 2 it resembles *macrodonta*, in No. 3 it is typical *exetastica*.

Our subspecies resembles Borradaile's specimens in having the granulation of the cheliped more dominant than the squamiform markings.

54. *Thalamita gardineri* Borradaile.

*Thalamita gardineri* Borradaile, in Gardiner, Fauna Maldivé and Laccadive Arch., i. 1902, p. 205, text-fig. 36.

Coetivy; 2 ♂, 3 ♀ (2 ovig.).

Largest specimen (♂), C. l. 14.8 mm., C. b. 23 mm.

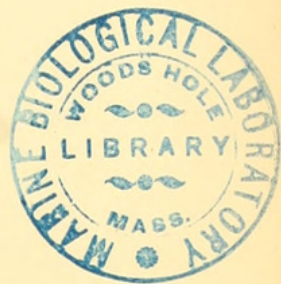
Agrees with points i to iv of Borradaile's description. The chelipeds of the adult ♂ (larger than his type) are distinctly unequal; the upper surface of the arm beyond the carapace is covered with squamiform markings, as is also, but faintly, the lower part of inner surface of palm. There are from five to seven spines on the hinder edge of the last propodite.

55. *Thalamita sexlobata* Miers.

*Thalamita sexlobata* Alcock (4), p. 87.

Amirante, 28 fms., Sta. E 6; 1 ♂: 34 fms., Sta. E 9; 1 ♂: 25—80 fms., Sta. E 11; 1 ♂: 20—25 fms., Sta. E 13; 1 ♀. Seychelles, 34 fms., Sta. F 8; 1 ♂. Praslin, from weed; 1 juv.

\* Gardiner, Fauna Maldivé Arch., i. 1902, p. 203.





The largest specimen (♀) is only 4.7 × 7 mm. In all the specimens the median and submedian frontal teeth are incompletely separated from each other; the 4th or rudimentary lateral tooth is sometimes indistinguishable. In the smallest specimen (Praslin) the 3rd and 4th teeth are nearly obsolete.

56. *Thalamita cooperi* Borradaile.

*Thalamita cooperi* Borradaile, Fauna Maldive and Laccadive Arch., i. 1902, p. 206, text-fig. 37.

Amirante, 29 fms., Sta. E 2; 1 ♂, 1 ♀ ovig.: 25—80 fms., Sta. E 11; 5 ♂, 4 ♀: 30 fms., Sta. E 21; 6 ♂ (1 with Rhizocephalid parasite), 4 ♀.

The edge of the front is less convex than in the figure cited.

57. *Thalamita bouvieri* Nobili.

*Thalamita bouvieri* Nobili, Bull. Mus. Hist. Nat., Paris, 1906, p. 7.

Cargados Carajos, 30 fms., Sta. B 13; 2 ♀. Amirante, 34 fms., Sta. E 9; 1 juv.

Mature ♀, C. l. 7.5 mm., C. b. 11.2 mm.

The antero-lateral lines are nearly parallel to each other; the postero-lateral margins strongly convergent. The posterior margin of the propodus of the last leg is spinulose.

58. *Thalamita oculea* Alcock.

*Thalamita oculea* Alcock (4), p. 91; Illus. Zool. Investigator, Crust., pt. VIII, 1900, pl. 48, figs. 3, 3 a.

Saya de Malha, 26 fms., Sta. C 16; 1 ♀ ovig. Amirante, 34 fms., Sta. E 9; 1 ♀ juv. Seychelles, 34 fms., Sta. F 8; 4 ♂, 8 ♀ (6 ovig.).

Largest specimen, Sta. C 16, ♀; C. l. 13 mm., C. b. 20 mm.

In this series the frontal notch, though small, is visible to the naked eye; the 5th lateral tooth, while very small, is a little larger than the 4th; there are four teeth on the palm, the tooth at the middle of the outer crest of the upper surface being usually, but not always, well developed.

59. *Lupocyclus rotundatus* Adams and White.

*Lupocyclus rotundatus* Alcock (4), p. 23.

Saya de Malha, 47 fms., Sta. C 12; 1 ♀. Seychelles, 39 fms., Sta. F 3; 1 ♂ immature.

The ♀ is of unusual size, C. l. 17.2 mm., C. b. 23 mm.

60. *Lupocyclus quinquedentatus* Rathbun.

*Lupocyclus quinquedentatus* Rathbun, 1906, p. 869, text-fig. 28, pl. 12, fig. 7.

Cargados Carajos, 30 fms., Sta. B 9; 1 ♀. Amirante, 25—80 fms., Sta. E 11; 1 ♀ juv. Seychelles, 34 fms., Sta. F 8; 1 ♂.

61. *Carupa laeviuscula* Heller.

*Carupa laeviuscula* Alcock (4), p. 26.

Salomon; 2 ♂. Coetivy; 5 ♂, 2 ♀; one of the females, immature, has the 6th and 7th lateral teeth much longer than usual, and actually spiniform: 32 feet, by diver; 1 ♀ juv.



**Atelecyclidæ.**

62. *Kraussia integra* (de Haan).

*Kraussia integra* Alcock (4), p. 97.

Salomon; 1 ♀ and half of another.

63. *Kraussia nitida* Stimpson.

*Kraussia nitida* Rathbun, Bull. Mus. Comp. Zool., xxxix. 1902, p. 132, plate, fig. 13.

Amirante, 20—25 fms., Sta. E 13; 1 ♂ juv.

**Xanthidæ.**

64. *Carpilius convexus* (Forskål).

*Carpilius convexus* Alcock (3), p. 80.

Amirante, 25—80 fms., Sta. E 11; 1 ♀ juv.: 20—25 fms., Sta. E 13; 1 ♀ juv. Coetivy; 4 ♂, 3 ♀, all small.

65. *Carpilodes tristis* Dana.

*Carpilodes tristis* Alcock (3), p. 82.

Salomon; 2 ♂, 5 ♀. Peros, Coin; 1 ♂. Egmont, reef; 3 ♀. Coetivy; 3 ♂.

In most of the specimens the chelipeds (in alcohol) are a light reddish colour, and the legs have a few broad bands of the same.

66. *Carpilodes sayademalhensis*, sp. nov. (Plate 17, fig. 5).

Saya de Malha, 26 fms., Sta. C 16; 1 ♀.

C. l. 9.5 mm., C. b. 15 mm.

Carapace granulate, granules very fine except on the anterior and antero-lateral portions, where they are coarsest in the depressions between the lobules. Posterior third not lobulate; besides the narrow groove next the hind margin there is another broad shallow furrow between that margin and 3 M; 4 M narrow and ill-defined; 2 M partly divided by a shallow groove anteriorly; 1 M well marked, nearly as long as wide; of the marginal lobes, D is scarcely developed, E and N are shallow lobes, fused with 1 L and 3 L respectively; 2 L anteriorly emarginate; grooves in front of T and S continued inward halfway to the gastric region. Edge of front convex, faintly emarginate, a sharp groove leading back to 3 M; O divided into three lobules by two supraorbital grooves.

Chelipeds and legs granulate; arm denticulate above, wrist nodulous; hand with a longitudinal groove below upper margin; fingers grooved, toothed, moderately gaping. Legs with a groove on the dorsal surface of carpus and propodus. Body a mixture of pink and green, in alcohol, legs banded with pink and white.

In form, resembles *C. laevis* A. Milne Edwards\*, but is rougher and has more numerous furrows.

\* Nouv. Arch. Mus. Hist. Nat., ix. 1873, p. 179, pl. 5, fig. 3.



67. *Carpilodes stimpsonii* A. Milne Edwards.*Carpilodes stimpsoni* Alcock (3), p. 82.

Amirante, 25—80 fms., Sta. E 11; 1 juv.: 30 fms., Sta. E 21; 1 ♂, 1 ♀ immature. Coetivy; 1 ♀ ovig.

This species has a very deep transverse furrow on the hepatic region, not extending quite to the gastric region.

68. *Carpilodes pediger* Alcock.

*Carpilodes pediger* Alcock (3), p. 83; Illus. Zool. Invest., Crust., part VII, 1899, pl. 36, fig. 4.

Amirante, 29 fms., Sta. E 2; 1 ♀: 25—80 fms., Sta. E 11; 8 ♂ (1 with Rhizocephalid parasite), 8 ♀ (2 ovig.): 30 fms., Sta. E 21; 2 ♀ (1 deformed). Seychelles, 34 fms., Sta. F 8; 1 ♂, 2 ♀.

Largest specimen, ♂, C. l. 7.5 mm., C. b. 11.3 mm.

Most of the specimens are light red, except for the fingers, and a touch of light at the articulations of the legs and just above the horny tip of the dactyls.

69. *Carpilodes vaillantianus* A. Milne Edwards.*Carpilodes vaillantianus* Alcock (3), p. 85.

Salomon; 1 ♂. Coetivy; 1 ♂, 2 ♀, 4 juv.

Species variable as to coarseness and amount of granulation.

70. *Carpilodes cariosus* Alcock.*Carpilodes cariosus* Alcock (3), p. 86.

Salomon; 2 ♀. Saya de Malha, 29 fms., Sta. C 19; 1 ♂ juv. Providence, 29 fms., Sta. D 3; 2 ♂, 1 ♀ juv. Amirante, 34 fms., Sta. E 9; 2 ♀ juv. (1 with Rhizocephalid parasite): 25—80 fms., Sta. E 11; 1 ♂: 30 fms., Sta. E 21; 1 ♂. Coetivy; 2 ♂.

Largest specimen (Coetivy) C. l. 6.6 mm., C. b. 10.8 mm.

71. *Carpilodes virgatus* Rathbun.*Carpilodes virgatus* Rathbun, 1906, p. 843, pl. 8, fig. 3.

Saya de Malha, 55 fms., Sta. C 15; 1 ♂. Amirante, 25—80 fms., Sta. E 11; 7 ♂, 3 ♀ (1 with Rhizocephalid parasite): 30 fms., Sta. E 21; 1 ♂.

72. *Carpilodes monticulosus* A. Milne Edwards.*Carpilodes monticulosus* Alcock (3), p. 86.

Salomon; 1 ♂, 1 ♀. Peros, Coin; 1 ♂, 1 ♀.

73. *Carpilodes pallidus* Borradaile.

*Carpilodes pallidus* Borradaile, Proc. Zool. Soc. London, 1900, p. 586, pl. 40, fig. 1.

Egmont, reef; 1 ♀ juv. C. l. 4 mm., C. b. 6.7 mm.

74. *Liomera cinctimana* (White).*Liomera cinctimana* Alcock (3), p. 88.

Salomon; 1 ♂, 2 ♀. Coetivy; 2 ♂, 3 ♀.



The carapace in alcohol is either red, reddish-white, or red with a white band at the extremity of each side; chelipeds and legs red, with distal portion of dactylus (above the horny tip) of each leg white. An exception is a small dark coloured specimen, carapace dull greyish-green, under side still darker, chelipeds and legs yellowish-brown.

75. *Liomera granosimana* A. Milne Edwards (Plate 17, fig. 6).

*Liomera granosimana* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, i. 1866, p. 222, pl. 11, figs. 5, 5 a.

Coetivy; 1 ♂. C. l. 10 mm., C. b. 15.3 mm.

The carapace, while appearing smooth and polished to the naked eye, under the lens shows distant punctæ, and a fine pavement of flattened granulation. Certain of the furrows are well marked; that between first and second lateral lobes is continued transversely to gastric region; that between second and third lobes bends forward to join the preceding furrow; anterior part of mesogastric region well defined; proto-gastric lobes anteriorly with a longitudinal groove; it joins the submarginal groove which follows the line of the front, orbits and first lateral lobe; this lobe shows a faint trace of subdivision into two.

Legs thick, flattened; merus-joints with anterior edges roughened with fine, blunt denticulations.

76. *Lioxantho latifrons*, sp. nov. (Plate 16, figs. 1, 2).

Salomon; 1 ♀.

Not a typical *Lioxantho*, because the fronto-orbital breadth is more than half as great as width of carapace. Carapace flat in posterior half, convex anteriorly, smooth, punctate. Regions (save the hepatic) faintly indicated, fronto-orbital region marked off by a groove; a groove passes inward from the notch between second and third lobes of antero-lateral margin, two-thirds of the distance to the gastric region. Antero-lateral margin divided into four lobes, the first two slightly marked and almost coalescent, the third and fourth projecting a little as small, blunt teeth.

Front bilobed, lobes separated by a broad emargination, and fused with the supra-orbital angles. Width of front a little more than one-third width of carapace.

Chelipeds nearly equal in female, obscurely and finely granulate; an obtuse sub-terminal tooth on arm; wrist bluntly angled within; a shallow longitudinal groove on hand just below upper margin; fingers furrowed and pointed, as long as upper margin of palm. Legs smooth; dactylus and distal half of propodus furrowed.

Abdomen of female from third to seventh segments triangular.

*Dimensions* of ♀ in mm.: C. l. 4.8, C. b. 7.9, F. orb. b. 4.8, F. b. 2.7, R. Ch. l. 9.5, L. Ch. l. 9.9.

This species is very much like *L. punctata* (Milne Edwards)\*, from which it is distinguished at a glance by the greater width across front and orbits; the carapace is also smoother and more shining.

\* Alcock (3), p. 91.



77. *Atergatopsis signata* (Adams and White) (Plate 17, fig. 7).

*Atergatopsis signatus* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, i. 1866, p. 253.

Coetivy; 1 ♂, 1 ♀, 2 juv. (1 soft shell, the other much broken).

Male, C. l. 31.3 mm., C. b. 46.3 mm., F. b. 10.8 mm.

The male resembles in all essentials the figure of a much larger specimen given by the original describers (Adams and White, Zool. Voy. Samarang, Crust., pl. 10, fig. 1). In the specimen in hand, the third, fourth and fifth abdominal segments are only partially fused, the proximal of the two sutures being best marked. Frontal lobes oblique, well separated by a V-shaped notch. On the outer surface of the palm, a smooth longitudinal ridge just below the middle divides the upper rugose portion from the lower, nearly smooth portion. Three large teeth on immovable finger; three or four smaller teeth on the movable finger.

78. *Platypodia cristata* (A. Milne Edwards).

*Lophactæa cristata* Alcock (3), p. 100.

Diego Garcia, lagoon; 1 ♂: barachois; 1 ♀ ovig.

79. *Platypodia semigranosa* (Heller).

*Lophactæa semigranosa* Alcock (3), p. 101.

Salomon; 1 juv. Cargados Carajos, 28 fms., Sta. B 20; 1 ♀, 1 juv. Amirante, 25—80 fms., Sta. E 11; 1 ♂.

The young specimens (5 mm. wide and less) have the dorsal surface of the carapace almost smooth; there are only a few low granules near the antero-lateral teeth.

80. *Platypodia anaglypta* (Heller) (Plate 17, fig. 3).

*Lophactæa anaglypta* Alcock (3), p. 102.

Peros, Coin; 1 ♂. Salomon; 1 ♀. Coetivy; 7 ♂, 2 ♀.

81. *Zosimus æneus* (Linnæus).

*Zozymus æneus* Alcock (3), p. 104.

Peros, Coin; 1 ♀. Salomon; 1 ♂, 1 ♀. Egmont, reef; 1 ♀. Coetivy; 1 ♂, 3 ♀.

82. *Lophozozymus dodone* (Herbst).

*Lophozozymus dodone* Alcock (3), p. 108.

Cargados Carajos, 28 fms., Sta. B 20; 1 ♀. Amirante, 34 fms., Sta. E 9; 4 ♂, 3 ♀: 30 fms., Sta. E 21; 1 ♀. Seychelles, 34 fms., Sta. F 8; 1 ♀ juv. Coetivy; 2 ♂.

83. *Lophozozymus pulchellus* A. Milne Edwards.

*Lophozozymus pulchellus* A. Milne Edwards, Ann. Soc. Entom. France (4), vii. 1867, p. 273; Nouv. Arch. Mus. Hist. Nat., Paris, ix. 1873, p. 205, pl. 7, fig. 3.

Egmont, reef; 1 ♀. Seychelles, 34 fms., Sta. F 8; 2 ♀.

Anterior of the three lateral teeth obsolescent, indicated merely as the anterior end of the marginal crest. Network of lines embracing the whole of the dorsal surface except in the immediate neighbourhood of the lateral teeth; network much finer on the Seychelles individuals than on that from Egmont Reef.



84. *Euxanthus rugosus* Miers (Plate 18, fig. 1).

*Euxanthus exsculptus* var. *rugosus* Miers, Zool. Alert, Crust., 1884, p. 527.

Salomon; 2 ♀ (1 ovig.). Peros, Coin; 1 ♂. Coetivy; 2 ♂, 3 ♀, mostly small.

Carapace, chelipeds and sternum rugose and granulate; ventral surface of carapace and maxillipeds granulate; lobules rougher and more convex in the adult than in the young. Antero-lateral borders cut into five tuberculiform teeth; interspaces increasing in width from front to back.

A large nodule on the outer surface of the wrist; 3 longitudinal rows of granules on the lower half of outer surface of palm. Fingers coarsely granulate, fitting close together; brown colour of immovable finger running well back on the palm, especially on lower margin and inner surface.

This species, for such I believe it to be, is distinguished easily by its roughness from *E. exsculptus* (Herbst), which also has the second and third teeth of the lateral margin not tuberculiform.

85. *Euxanthus herdmani* Laurie.

*Euxanthus herdmani* Laurie, in Herdman, Ceylon Pearl Fisheries, pt. v, Suppl. Rept. xl. 1906, p. 400, pl. I, figs. 9, 9 a—c.

Amirante, 25—80 fms., Sta. E 11; 1 ♀ juv.

C. l. 8.3 mm., C. b. 11 mm.

Surface of carapace not only pitted, but covered with very fine flattened granules.

86. *Hypocolpus divarticulatus* (Strahl).

*Cancer sculptus* Milne Edwards, Hist. Nat. Crust., i. 1834, p. 376. Not *C. sculptus* Herbst, 1794.

*Melissa divarticulata* Strahl, Arch. f. Naturg., xxvii. Bd. 1, 1861, p. 103.

*Hypocælus sculptus* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, i. 1866, p. 295.

Cargados Carajos, reef; 2 ♂.

87. *Xantho impressus* (Lamarck).

*Xantho impressus* Alcock (3), p. 115.

Coetivy; 1 ♀. Praslin; 1 ♂.

88. *Leptodius exaratus* (Milne Edwards), var.

*Xantho (Leptodius) exaratus* Alcock (3), p. 118.

Praslin, reef; 1 ♂ juv. Saya de Malha, 55 fms., Sta. C 15; 1 ♂ juv., 1 ♀ juv.

These specimens are not typical *exaratus*. The specimen from Praslin, 8.5 mm. long and 11.7 mm. wide, has the lateral teeth narrow, prominent, the last 2 tipped with a sharp spine; the front shows no sign of subdivision into 4 lobes. The specimens from Saya de Malha show even greater divergence in the same directions from typical *exaratus*; carapace still narrower, ♂, 8.8 mm. by 12.2 mm., teeth narrower, the last 3 tipped with a sharp spine, front the same. This form approaches *L. molokaiensis*.



89. *Leptodius sanguineus* (Milne Edwards).*Xantho* (*Leptodius*) *sanguineus* Alcock (3), p. 119.

Peros, Coin; 1 ♂, 3 ♀. Salomon; 1 ♂, 2 ♀. Coetivy; 1 ♂, 5 ♀. Praslin; 1 ♂, 1 juv.

90. *Leptodius molokaiensis* Rathbun.*Leptodius molokaiensis* Rathbun, 1906, p. 847, pl. 9, fig. 1, text-fig. 10.

Salomon; 2 ♂. Amirante, 30 fms., Sta. E 21; 1 ♂, 1 ♀.

A male from Salomon is much larger than type; C. l. 13 mm., C. b. 19.5 mm. The areolets of the carapace are more plainly marked; the four lobes of front more deeply separated; two stout spines at inner angle of wrist.

91. *Leptodius nudipes* (Dana).*Leptodius nudipes* Rathbun, 1906, p. 848, pl. 9, fig. 3.

Peros, Coin; 1 ♂, 1 ♀. Praslin, reef; 1 ♂.

Length of ♂, Praslin, 14.6 mm., breadth 22.8 mm.

92. *Leptodius gracilis* (Dana).*Leptodius gracilis* Rathbun, 1906, p. 848, pl. 9, fig. 2.

Salomon; 1 ♀ ovigerous.

93. *Leptodius cavipes* (Dana) (Plate 18, fig. 10).*Xantho* (*Leptodius*) *cavipes* Alcock (3), p. 122.

Peros, Coin; 2 ♂, 5 ♀.

94. *Leptodius cristatus* Borradaile (Plate 17, fig. 9).

*Leptodius* (*Xanthodius*) *cristatus* Borradaile, in Gardiner, Fauna Maldives, i. pt. III, p. 252, text-fig. 51.

Peros, Coin; 2 ♂, 4 ♀. Coetivy; 1 ♂.

♀ (Coin) C. l. 5 mm., C. b. 7.6 mm.

There is considerable variability in the depth and definition of the troughs on the legs and chelipeds. The ♂ from Coetivy has these cavities very deep and their borders very thin and sharp.

95. *Medæus simplex* A. Milne Edwards.*Medæus simplex* de Man, Abh. Senckenb. naturf. Ges., xxv. Heft III, 1902, p. 603.

Coetivy; 1 ♂ juv.

C. l. 4.7 mm., C. b. 6.2 mm. Compared with ♂, from Hilo, Hawaii, 13.4 × 20.2 mm., the tooth next to the outer orbital tooth does not lie so distinctly below the antero-lateral margin, the accessory denticles are proportionately smaller, the upper surface of hands and wrists are more deeply pitted.

96. *Medæus ornatus* Dana.*Medæus ornatus* Rathbun, 1906, p. 849, pl. 9, fig. 5.

Saya de Malha, 55 fms., Sta. C 15; 1 ♂. Amirante, 25—80 fms., Sta. E 11; 11 ♂, 7 ♀: 30 fms., Sta. E 21; 2 ♀, 1 juv. Seychelles, 34 fms., Sta. F 8; 2 ♂, 3 ♀.



97. *Cycloxanthops angustus* Rathbun.

*Cycloxanthops angustus* Rathbun, 1906, p. 849, pl. 9, fig. 6, text-fig. 13.

Amirante, 25—80 fms., Sta. E 11; 1 ♂, 2 ♀: 16 fms., Sta. E 23; 1 ♀.

Lighter in colour than Hawaiian specimens, being ecru in alcohol, with the fingers a little darker. The antero-lateral teeth are more distinctly separated from one another, the outer surface of the large palm is clearly granulate quite to the lower edge, there are few sharp granules on the upper margin of the carpal joints of the legs.

98. *Etisus dentatus* (Herbst).

*Etisus dentatus* Alcock (3), p. 129.

Coetivy; 1 ♂ small, 1 ♀ adult.

♀, C. l. 59.6 mm., C. b. (approx.) 88.5 mm.

In both specimens there is a longitudinal row of 5 or 6 granules on the upper half of the outer surface of the palm; also a transverse row of smaller granules at the distal end of the palm at the origin of the dactylus, one or two granules reaching over on to the immovable finger.

99. *Etisus laevimanus* Randall.

*Etisus laevimanus* Alcock (3), p. 131.

Diego Garcia, barachois; 1 ♀ juv.

100. *Etisodes electra* (Herbst).

*Etisodes electra* Alcock (3), p. 133.

Egmont, reef; 1 ♀. Praslin, reef; 1 ♂.

101. *Actæa tomentosa* (Milne Edwards).

*Actæa tomentosa* Alcock (3), p. 140.

Praslin, reef; 4 ♂, 1 ♀. Coetivy; 1 ♂, 1 ♀.

102. *Actæa remota* Rathbun.

*Actæa remota* Rathbun, *op. cit.*, 1907, p. 43, pl. 1, fig. 9, pl. 7, fig. 1.

Salomon; 1 ♀ juv. Coetivy; 1 ♀; C. l. 5.8 mm., C. b. 8.4 mm.

The mesogastric region shows a tendency to divide into 3 lobules; cardiac region heart-shaped. Middle part of margin of front nearly straight, not emarginate in the larger specimen, minutely so in the smaller specimen. Chelipeds equal and similar; fingers brown with white tips, the brown of the immovable finger not spreading on the palm, but ending in an oblique line.

103. *Actæa tessellata* Pocock (Plate 16, fig. 3).

*Actæa tessellata* Pocock, Ann. Mag. Nat. Hist. (6), v. 1890, p. 74.

Coetivy; 1 ♀. C. l. 7.8 mm., C. b. 11.5 mm.

The mesogastric region is composed of 5 lobules; instead of a single transverse posterior lobule as in Pocock's type, there are two, one behind the other and very small, composed of 10 granules. The cardiac region is divided longitudinally into 2 separate lobules; in



the space between the cardiac and intestinal regions there is a small group of 4 granules in the form of a curve, arched forward. Upper surface of wrist indistinctly nodulous, lacking the strong nodule at articulation with hand, which is present in *A. rufopunctata*; outer surface cut by transverse grooves into 3 long transverse lobes, exclusive of a granular area at the proximal end. The fingers cross at tips and do not gape, although they do not fit evenly together; the colour is white in the specimen preserved in alcohol.

104. *Actæa hirsutissima* (Rüppell).

*Actæa hirsutissima* Alcock (3), p. 141.

Salomon; 1 ♂. Egmont, reef; 1 ♀. Coetivy; 4 ♂, 4 ♀.

105. *Actæa rufopunctata* Milne Edwards.

*Actæa rufopunctata* Alcock (3), p. 142.

Egmont, reef; 1 ♂ (*a*) 1 ♀ (*b*). Amirante, 25—80 fms., Sta. E 11; 2 ♂ (*c*, *d*) small.

In *c* and *d* (the larger, *c*, C. l. 7.5 mm., C. b. 10.8 mm.) the middle of the 3 mesogastric lobules is much more extensive than in *a* and *b*, and lies partly between the 2 lateral mesogastric lobules; in *a*, 16.3 × 24.5 mm., and *b*, 13.2 × 19.3 mm., the very small median islet is entirely in advance of the postero-lateral lobules of the mesogastric region. In *c* the immovable finger is more arched and the gape correspondingly wider than in *a*; colour of the lobules in *c* red, interspaces dark; *a* and *b* light-coloured, with a few definitely placed red spots, which do not correspond in the two specimens; they are more numerous and relatively smaller in *b*. In *d*, 5 × 7.2 mm., the colour is patchy and the fingers do not gape. The species is most variable and a large assemblage of specimens might indicate distinct varieties.

106. *Actæa garretti* Rathbun.

*Actæa garretti* Rathbun, 1906, p. 852, pl. 9, fig. 8.

*Actæa rufopunctata* var. *retusa* Nobili, Ann. Sci. Nat. Zool. (9), iv. 1906, p. 253.

Salomon; 1 ♀. Praslin; 1 ♀.

107. *Actæa obesa* A. Milne Edwards (Plate 16, figs. 4, 5).

*Actæa obesa* de Man, Abh. Senckenb. naturf. Ges., xxv. 1902, p. 612.

Amirante, 30 fms., Sta. E 21; 1 ♂ young.

C. l. 4.3 mm., C. b. 7 mm.

Carapace very broad, covered, as also chelipeds and legs, with sharp granules. Grooves narrow. Hairs scanty, not noticeable without a lens, of varying length. Lobules few and low; mesogastric region not subdivided; protogastric regions partially and faintly divided longitudinally. Lateral margin divided by 3 furrows into 4 lobes of which the 3 posterior are prominent, rounded, their lobules continued inward to the large area known as 5 L. The areolets 1 M and 2 F are marked off from the orbital region, but incompletely separated from 2 M and from each other.

Front vertical, the main lobes separated by a V-shaped sinus, and separated from the outer lobes by an acute angle. Three orbital grooves faint. Lower surface of carapace granulate, crossed by grooves proceeding from the lateral margin as above.



The outer angle of the basal antennal joint is less advanced than the lobe at the inner angle of the orbit.

Wrists faintly divided into 3 or 4 flat lobules. The granules of the hand show a tendency to a longitudinal arrangement. Fingers broad with sharp edges, grooved, not gaping; dactylus with spinules on basal half of upper margin, a large shining tooth at base of cutting edge, succeeded by 2 denticles; 2 denticles on basal half of immovable finger; tips crossing, that of the dactylus within the other and curving inward. Granules on the legs sharper than on the carapace; hairs more numerous; carpopodites longitudinally grooved. According to previous descriptions, antero-lateral lobes are less strongly marked in large specimens.

108. *Actæa affinis* (Dana).

*Actæa affinis* Rathbun, 1906, p. 852.

Peros, Coin; 1 ♂, 1 ♀. Salomon; 5 ♂, 2 ♀. Egmont, reef; 3 ♂, 3 ♀. Coetivy; 8 ♂, 7 ♀.

109. *Actæa speciosa* (Dana).

*Actæa speciosa* Laurie, in Herdman, Ceylon Pearl Fisheries, pt. v, 1906, p. 402.

Peros, Coin; 1 ♂, 2 ♀ (1 mature, 1 immature), all small. Salomon; 1 ♀ large. Egmont, reef; 1 ♀ large. Coetivy; 1 ♂, 1 ♀ ovig., both small.

These specimens agree with Laurie's description.

110. *Actæa ruppellii* (Krauss).

*Actæa ruppellii* Alcock (3), p. 144.

Cargados Carajos, 28 fms., Sta. B 20; 1 ♂, 1 ♀ ovig. Amirante, 30 fms., Sta. E 21; 1 ♀. Coetivy; 1 ♂.

111. *Actæa acies*, sp. nov. (Plate 16, figs. 8, 9).

Saya de Malha, 26 fms., Sta. C 16; 1 ♀ juv. Salomon; 1 ♀ ovig. Egmont, lagoon, 6—7 fms.; 1 ♂ type.

♂ type, C. l. 11.8 mm., C. b. 17.1 mm.

Carapace moderately convex, posterior third flat; antero-lateral margin much longer than postero-lateral, which is concave. Surface broken into many small granulated lobules separated by smooth, naked interspaces; from each granule arise several long, soft, yellow hairs forming a coat which only partially conceals the areolation. Mesogastric region divided into 6 lobules, the largest is the anterior, which is wider than customary in *Actæa* and somewhat diamond-shaped; on each side of its posterior end there is a small lobule; behind each of these, another; and behind these a transverse lobule. Protogastric region divided by a longitudinal curved furrow into a large inner lobule twice as long as the small outer one. Cardiac region divided longitudinally in two. Intestinal region covered with many small islets, the limits of which are not always well defined. Antero-lateral margin divided into 4 lobes besides the orbital angle; first two small, third longer than the sum of first and second, fourth small. Two transverse grooves in front of the posterior margin. Middle lobes of front narrow, rounded, separated from each other by a



large V-notch and from the acute outer lobes by rectangular sinuses. Two closed fissures above the orbit, none below.

Chelipeds and legs long, hairy and granulous; the granules save on the wrist are more scanty than on the carapace. Wrist divided into 3 areas. On the hand the granules are somewhat large and arranged mainly in lines, especially on the middle third; on the lower third the granules become squamiform and the hairs are short. Fingers very broad, smooth and shining, brown except for the white tips, the brown running back a little on the palm, especially in the male; tips acute when crossed, leaving a minute gape at base of fingers; fingers finely dentate in the proximal part of their sharp cutting edges, with a large truncate tooth at the basal third of the immovable finger; proximal half of upper surface of dactylus granulous and hairy; immovable finger with 2 longitudinal grooves; the lower one on the proximal half only, the upper one at the level of the truncate tooth. The carpal joints of the legs have a deep groove on the outer surface.

Near *A. ruppellii*, but distinguished by its longer antero-lateral margin, finer areolation of carapace, broad, flat fingers.

112. *Actæa suffuscula*, sp. nov. (Plate 17, figs. 10, 11).

Salomon; 1 ♀. Coetivy; 1 ♂ (type), 1 soft-shell and shapeless, which seems to belong here.

Type ♂, C. l. 6.5 mm., C. b. 9.5 mm.

Of the form of *A. ruppellii*; lobules of carapace low, covered with a short fur which partially obscures the granules; a few scattered, longer hairs. Mesogastric region with a transverse lobule posteriorly, remainder showing a tendency to divide in three. Proto-gastric region divided longitudinally, but not clearly so, the outer portion longer and wider than the inner; in front of the outer portion there is a tiny islet of 2 or 3 granules. 2 F, 1 M, 1 L, 2 L, 3 L, 4 L, 5 L and 6 L are distinct; 5 L is little larger than 6 L, and has an emargination in its anterior border. Posteriorly the areolation is more obscure. Of the 4 lateral lobes the first is fused with the orbital angle and is inconspicuous, the rest are prominent and bluntly dentiform. Two supra-orbital fissures obscure, suborbital one V-shaped. Frontal lobes obliquely truncate, separated from each other by a large V-notch and from the orbital angle by the downward prolongation which joins the inner angle of the basal antennal joint.

Wrists nodulous, hands scarcely so. Chelipeds and legs covered with felt like the carapace but long hairs more numerous. Fingers long, pointed, meeting along their dentate (4 or 5 teeth) edges, light brown, this colour spreading in the ♂ from the immovable finger over a great part of the palm. Carpal joints of legs grooved. Abdomen of ♂ unusually slender.

Can be told at once from *A. ruppellii* by the lack of many long hairs on the carapace, by the truncate lobes of the front and the slender fingers which are a light brown, whence the specific name.

113. *Actæa variolosa* Borradaile.

*Actæa variolosa* Rathbun, 1906, p. 853.

Amirante, 29 fms., Sta. E 2; 1 juv., 2.8 × 4.2 mm.



114. *Actæa hellerii* A. Milne Edwards (Plate 18, fig. 2).

*Actæa hellerii* Nobili, Ann. Sci. Nat., Zool. (9) iv. 1906, p. 256.

Amirante, 30 fms., Sta. E 21; 1 ♂. Coetivy, 32 feet, brought up by diver; 1 ♂, 1 juv.: reef; 2 ♂ 4 juv.

♂ (diver), C. l. 10.4 mm., C. b. 15.3 mm. The other 3 males are nearly the same size; the young are very small, the largest 2.8 mm. long, 4.2 mm. wide. In all the specimens there is a transverse groove extending inward from the antero-lateral margin at about  $\frac{2}{3}$  the distance from the orbit to the widest part of the carapace. The grooves limiting the gastric region and its divisions are well marked; the groove subdividing each protogastric lobe does not extend quite to its posterior border; a groove limits the intestinal region anteriorly. The smaller granules of the carapace are very many; the larger ones much less numerous, and absent from the cardiac region and the posterior fourth of the carapace.

115. *Actæa savignyi* (Milne Edwards).

*Actæa granulata* Alcock (3), p. 151.

Cargados Carajos, 30 fms., Sta. B 3; 1 ♀ with isopod parasite in the branchial cavity: 30 fms., Sta. B 8; 1 ♂: 30 fms., Sta. B 9; 1 juv.: 30 fms., Sta. B 10; 1 ♀: 28 fms., Sta. B 19; 1 ♂: 28 fms., Sta. B 20; 1 ♂ juv. Saya de Malha, 55 fms., Sta. C 15; 1 ♀ Amirante, 29 fms., Sta. E 1; 1 ♂, 2 ♀; 29 fms., Sta. E 2; 1 ♂, 2 ♀. Seychelles, 31 fms., Sta. F 2; 1 ♂ with Rhizocephalid parasite, 1 juv.: 34 fms., Sta. F 7; 1 ♀ juv.: 34 fms., Sta. F 8; 1 ♀.

116. *Actæa boletaria*, sp. nov. (Plate 18, figs. 3, 4).

Saya de Malha, 29 fms., Sta. C 19; 1 ♂ type. Amirante, 29 fms., Sta. E 2; 1 ♂, 2 juv.: 25—80 fms., Sta. E 11; 3 ♀ juv., one with Rhizocephalid parasite. Seychelles, 31 fms., Sta. F 2; 1 ♂: 34 fms., Sta. F 8; 1 ♀ juv.

Type ♂, C. l. (total) 12.2 mm., C. b. 18 mm.

Carapace  $\frac{2}{3}$  as long as broad, posterior half flat; antero-lateral margin much longer than postero-lateral, which is concave. Surface nearly naked and closely covered with tubercles formed of crowded granules largely fungiform, the interstices giving the whole surface an eroded or pitted appearance. Furrows deep; either side of the median furrow there is a longitudinal furrow leading from the margin of the front to the anterior angle of the mesogastric region; antero-lateral margin 4-lobed behind the orbit, lobes ill defined and sub-divided. Front 4-lobed, outer lobes small.

Ornamentation of chelipeds similar to that of carapace but lower and more fungiform, fingers elongate, deflexed, grooved, rough at base, not gaping, prehensile teeth fitting neatly together, tips crossing, colour running back on palm inside and out in male. The ambulatory legs are sparsely fringed with hair; their tubercles along the anterior margin are sharp.

Near *A. nodulosa* but antero-lateral margin longer, tubercles more depressed, fingers longer, black colour on palm of male less extensive.



117. *Actæa nodulosa* White.*Actæa nodulosa* Alcock (3), p. 148.

Providence, 50—78 fms., Sta. D 4; 1 ♂, 1 ♀.

In these specimens all the tubercles are formed of confluent granules. In the ♂ the brown colour of the immovable finger is extended over the greater part of the palm within and without, only one row of tubercles distant from the wrist. The sternum and abdomen, save the first segment, are not granulate but eroded.

♂, C. l. 11·8 mm., C. b. 18·8 mm.

♀, C. l. 12·2 mm., C. b. 20 mm.

118. *Actæa flosculata* Alcock.*Actæa flosculata* Alcock (3), p. 151; Illus. Zool. Invest., Crust., vii. 1899, pl. 37, fig. 4.

Amirante, 25—80 fms., Sta. E 11; 1 ♀: 20—25 fms., Sta. E 13; 1 ♂, 1 ♀: 39 fms., Sta. E 16; 1 ♂.

119. *Actæa polyacantha* (Heller) (Plate 18, figs. 5, 6).*Chlorodius polyacanthus* Heller, S. B. math.-naturw. Cl. Akad. Wiss., Wien, xliii. 1 Abth., 1861, p. 339, pl. 3, fig. 21.*Actæa polyacantha* Nobili, Ann. Sci. Nat., Zool. (9), iv. 1906, p. 259.

Salomon; 1 ♀ with Bopyrid parasite. Coetivy; 1 ♂, 1 ♀.

This species is intermediate between *A. peronii* Milne Edwards, Alcock (3), p. 150, and *A. spinosissima* Borradaile (*infra*). From the former it differs in having the marginal and submarginal projections of the carapace, and all the projections of the chelipeds, stout, pointed spines, instead of rounded, flat-topped tubercles; the armature of the legs consists entirely of true spines; the median sinus of the front is narrower and the divisions of the frontal margin are well marked little lobules instead of crenulations. In *A. spinosissima*, all the spines are slenderer, the front is edged with spines. From both the allied species *A. polyacantha* is at once distinguished by the short mesogastric region which is not continued forward between the protogastric regions, and is therefore broader than long.

120. *Actæa spinosissima* Borradaile.*Actæa spinosissima* Borradaile, in Gardiner, Fauna Maldive Arch., i. part 3, 1902, p. 256, text-fig. 55.

Cargados Carajos, 28 fms., Sta. B 20; 1 juv. ♀. C. l. 4·9 mm.; C. b. 6·8 mm.

On the narrow part of the mesogastric region are 4 petaloid tubercles, instead of two in Borradaile's specimen.

121. *Actæa perspinosa* Borradaile.*Actæa perspinosa* Borradaile, in Gardiner, Fauna Maldive Arch., i. part 3, 1902, p. 257, text-fig. 56.

Seychelles, 39 fms., Sta. F 3, 1 juv. C. l. 2·2 mm., C. b. 2·8 mm.



122. *Actæa cavipes* (Dana).*Actæa cavipes* Alcock (3), p. 147.

Salomon, lagoon, 12 fms.; 1 ♂. Egmont, reef; 1 ♂. Amirante, 30 fms., Sta. E 21; 1 ♀.

123. *Actæa banareias*, sp. nov. (Plate 18, figs. 7, 8).

Salomon, 10—14 fms.; 1 ♀ ovig. Egmont, lagoon, 6—7 fms.; 1 ♂ (type).

♂, C. l. 6.3 mm., C. b. 9.7 mm.

Entire surface, excepting lobes of front, fingers and horny tips of dactyls of legs, concealed by a thick, shaggy coat; on the greater part of the carapace and the dorsal surface of the chelipeds, the coat consists of fine, rather long, dark hairs; but on hinder and lower parts of the crab and in regular tufts on the carapace it is composed of longer light-coloured tubular hairs. When the hair is removed, the carapace is seen to be moderately convex, the posterior half flat, regions distinctly marked, but not lobulate; irregularly placed, conical granules scattered over the surface. Antero-lateral margin divided into 4 ill marked teeth, besides the orbital angle, all of which are granulate. Orbital margin granulate, a larger granule above near outer angle; no emarginations; a distinct gap below outer angle; a thick subacute tooth at inner angle. Front narrow, a little more than  $\frac{1}{4}$  as wide as carapace, lobes deflexed, separated from each other and from the narrow, prominent blunt outer tooth, by a broad V. Chelipeds equal; arm with a small, subdistal tooth above; wrist and palm granulate; the granules cover the outer surfaces of the palm and the larger ones are arranged somewhat in rows; the granules as well as the hair are continued a short way on the fingers; the latter are flat and brown, the colour extending back half the length of the palm; a longitudinal groove near upper margin of dactylus. Legs short and broad, dactyli long and very slender.

This species is distinguished by its shaggy coat, quite different from that of any other *Actæa* and resembling that of *Banareia*; it also differs from typical *Actæa* in lacking lobules or subdivisions of regions. In many respects it resembles *B. armata* A. Milne Edwards (Ann. Soc. Entom. France (4), ix. 1869, p. 168, pl. 8), but lacks the deep excavations in the edge of the buccal cavity (which is said to be an unstable character in *B. armata*), the areolations of the carapace, and the bare space in the palms.

124. *Daira perlata* (Herbst).

Alcock (3), p. 155.

Salomon; 1 ♂. Coetivy; 1 ♀, 1 juv.

125. *Xanthias lamarckii* (Milne Edwards).*Xanthodes lamarckii* Alcock (3), p. 157.

Peros, Coin; 2 ♀. Salomon; 7 ♂, 6 ♀. Egmont, reef; 1 ♂, 3 ♀. Coetivy; 2 ♂, 2 ♀. Praslin, reef; 1 ♂.

126. *Xanthias alcocki* Rathbun.*Xanthias alcocki* Rathbun, Bull. Mus. Comp. Zool., xxxix. 1902, p. 128, plate, figs. 9—10.



Saya de Malha, 29 fms., Sta. C 19; 1 ♀. Providence, 39 fms., Sta. D 1; 1 ♀ ovig.: 29 fms., Sta. D 3; 2 ♀: 50 fms., Sta. D 11; 1 ♀ not typical. Amirante, 34 fms., Sta. E 9; 1 ♂, 2 ♀: 25—80 fms., Sta. E 11; 3 ♂: 20—25 fms., Sta. E 13; 1 ♂: 30 fms., Sta. E 21; 1 ♀: 20—44 fms., Sta. E 25; 1 ♀. Seychelles, 31 fms., Sta. F 2; 1 ♂: 34 fms., Sta. F 8; 2 ♂, 3 ♀ (1 ovig.).

♂, Sta. E 11, C. l. 4.4 mm., C. b. 6.7 mm.

In the largest specimen, considerably larger than the type, the carapace is not so rough as in small specimens. Chelipeds of ♂ very unequal; fingers of large chela broad, pollex not deflexed; prehensile teeth large; tips crossing and no gape when fingers are closed. Abdomen of ♂ constricted at the suture between 5th and 6th segments; last 2 segments each broader than long; last segment subtriangular.

The ♂ from Sta. D 11 varies from the type in having the 1st and 4th teeth of the lateral margin larger and yet not nearly so large as the 2nd and 3rd.

127. *Xanthias* sp.

Cargados Carajos, 30 fms., Sta. B 10; 1 ♀. C. l. 4.1 mm., C. b. 6.2 mm.

This specimen (the carapace of which is broken) is allied to *X. cumatodes* (MacGilchrist) (Illus. Zool. Investigator, Crust., xii. pl. 79, fig. 1). The carpal joints of the legs, instead of having 2 humps on the dorsal margin, are simply spinulous. The first of the 4 antero-lateral teeth is nearer the orbit and slightly in advance of the subhepatic spinule.

128. *Xanthias tuberculidens*, sp. nov. (Plate 18, fig. 9).

Saya de Malha, 125 fms., Sta. C 5; 1 ♂.

A *Xanthias* with rough surface, subtruncate front, and prominent, tuberculiform side teeth.

Carapace distinctly hexagonal,  $\frac{2}{3}$  as long as broad, deeply areolated, rough with sharp granules; 4 prominent antero-lateral teeth, with narrow rounded tips, besides the small tooth at the outer angle of the orbit; first tooth smallest, third most prominent; a subhepatic tubercle between first tooth and orbit; postero-lateral margins nearly straight. Front little convex, a tooth at outer angle, a narrow median notch, edge crenulate. Inner angle of orbit dentiform; two equal, separated teeth below, the outer one separated from the supra-orbital tooth by a large V-shaped notch. Flagella of antennæ  $2\frac{1}{2}$  times as long as width of orbit.

Lower surface of crab granulate. Merus of maxillipeds with outer angle strongly produced laterally. Male abdomen short, broad at base; last two segments broader than long.

Chelipeds unequal in ♂, very rough with granules which form irregular bunches on the wrist and some longitudinal lines on the hand. Arm with a few spinules above; an obtuse tooth at inner angle of wrist, with a very small one at its base. Fingers granulate, deeply grooved, brown, edges irregularly toothed and meeting.

Legs granulate, upper margin spinulous, last 2 segments hairy, a strong distal tooth on merus, carpus cristate, with a truncate, proximal tooth.



*Dimensions* of ♂ type in mm.: C. l. 12, C. b. 18.2, Exorb. b. 9.7, F. b. 5.7, R. Ch. l. 24, H. l. (above) 7, H. h. 7.1, Prop. l. 13.6, Dact. l. 7.1, W. L. 1 21.2, W. L. 2 (tip broken), W. L. 3. 21.3, W. L. 4. 17.8.

Allied to *X. cumatodes* (MacGilchrist), Ann. Mag. Nat. Hist. (7), xv. 1905, p. 258; Illus. Invest., Crust., xii. pl. 79, figs. 1, 1 *a*, from which it differs in the shorter antero-lateral margin with more projecting teeth; presence of a tooth at outer angle of front, more highly ornamented legs, and very different form of merus of maxilliped.

129. *Xanthias minutus* (Rathbun).

*Xanthias minutus* Rathbun, 1906, p. 855, pl. 9, fig. 14, text-fig. 16.

Salomon; 2 ♂. Amirante, 34 fms., Sta. E 9; 2 ♂, 2 ♀: 25—30 fms., Sta. E 11; 6 ♂, 3 ♀. Seychelles, 37 fms., Sta. F 9; 1 ♂.

The largest specimen (♂, Salomon) measures, C. l. 10.9 mm., C. b. 17.3 mm.

130. *Chlorodiella niger* (Forskål).

*Chlorodius niger* Alcock (3), p. 160.

Salomon; 5 ♂, 2 ♀. Diego Garcia, lagoon; 5 ♂, 7 ♀ (2 ovig.). Praslin, reef; 1 ♀. Coetivy; 1 ♂, 2 ♀.

131. *Chlorodiella lævissima* (Dana).

*Chlorodius lævissimus* Alcock (3), p. 161.

Salomon; 1 ♂, 1 ♀. Cargados Carajos, 28 fms., Sta. B 19; 1 juv. Saya de Malha, 55 fms., Sta. C 15; 1 ♀: 29 fms., Sta. C 19; 5 ♂, 4 ♀. Amirante, 29 fms., Sta. E 2; 1 ♂: 25—80 fms., Sta. E 11; 9 ♂, 11 ♀: 30 fms., Sta. E 21; 8 ♂, 12 ♀. Coetivy, 3 ♂, 7 ♀: Coetivy, by diver, 32 feet; 1 ♀.

132. *Chlorodiella barbata* (Borradaile).

*Chlorodius barbatus* Borradaile, Proc. Zool. Soc. London, 1900, part III, p. 587, pl. 41, figs. 4—4 c.

Salomon, lagoon, 12 fms.; 2 ♂: 10—14 fms.; 1 ♂, 1 ♀: reef; 1 ♂, 1 ♀. Egmont, reef; 2 ♂, 3 ♀: lagoon, 6—7 fms.; 1 ♀.

133. *Phymodius ungulatus* (Milne Edwards).

*Phymodius ungulatus* Alcock (3), p. 162.

Salomon; 1 ♀. Egmont, reef; 1 ♂, 2 juv. Diego Garcia, lagoon, 10 fms., 1 ♀: 12 fms.; 1 ♂. Cargados Carajos, reef; 1 juv.: 28 fms., Sta. B 19; 1 juv. Coetivy; 14 ♂, 13 ♀.

134. *Phymodius nitidus* (Dana).

*Pilodius nitidus* Dana, Crust. U. S. Expl. Exped., pt. I, 1852, p. 218; atlas, 1855, pl. 12, fig. 7.

Praslin, from weed; 1 juv. Coetivy; 1 ♂, 1 ♀.

135. *Phymodius sculptus* (A. Milne Edwards).

*Phymodius sculptus* Alcock (3), p. 164.

Salomon; 1 ♀. Praslin, reef; 2 ♂, 2 ♀.



136. *Phymodius laysani* Rathbun.*Phymodius laysani* Rathbun, 1906, p. 858, pl. 12, fig. 8, text-fig. 19.

Salomon; 1 ♂.

C. l. 8 mm., C. b. 11.3 mm.

This specimen is larger than the type, the interlobular furrows are deeper and the areolæ are more subdivided. There are two grooves between the posterior margin and the gastric region; the posterior lobule thus formed projects forward at the middle; the lobule in front of it is broken in two at the middle; the cardiac lobule has a small lobule separated from it at either end; the inner branchial lobule is subdivided into three tubercles. The median sinus of the front is broadly U-shaped and the lobes either side are correspondingly narrower than in the type.

137. *Chlorodopsis spinipes* (Heller).*Chlorodopsis spinipes* Alcock (3), p. 169.

Salomon; 2 ♀. Egmont, reef; 2 ♀. Diego Garcia, lagoon; 1 ♂, 1 ♀. Coetivy; 1 ♂.

138. *Chlorodopsis woodmasoni* Alcock.*Chlorodopsis woodmasoni* Alcock (3), p. 170; Illus. Zool. Investigator, Crust., pt. VII, 1899, pl. 37, fig. 7.

Salomon; 3 ♂, 2 ♀: lagoon, 12 fms.; 2 ♂. Egmont, reef; 1 ♀, C. l. 11.3 mm., C. b. 18.4 mm. Praslin, reef; 1 ♀ ovig. Coetivy; 2 ♂, 1 ♀. Peros, Diamant, with swabs, 16 fms.; 1 ♀.

139. *Chlorodopsis scabricula* (Dana).*Chlorodopsis scabricula* Rathbun, 1906, p. 859.

Coetivy; 2 ♂ immature.

140. *Chlorodopsis venusta* Rathbun.*Chlorodopsis venusta* Rathbun, Mem. Mus. Comp. Zool., xxxv. 1907, p. 49, pl. 1, fig. 5.

Salomon; 1 ♂, 3 ♀ (1 ovig.). Peros, Coin; 1 ♂. Egmont, reef; 1 ♂, 1 ♀. Coetivy; 4 ♂, 4 ♀ (largest ♂, C. l. 7.5 mm., C. b. 12.6 mm.).

141. *Chlorodopsis melanospinis*, sp. nov. (Plate 18, fig. 11).

Saya de Malha, 26 fms., Sta. C 16; 2 ♂: 29 fms., Sta. C 19; 1 ♂ type, 3 ♀, 11 juv. Amirante, 29 fms., Sta. E 2; 1 ♂.

♂ type, C. l. 11.2 mm., C. b. 17 mm.

Carapace, chelipeds and legs covered with long fine, yellow hairs, which do not conceal the areolation. Entire dorsal surface of carapace lobulate; the three lobules, 3 L, 4 L, 1 R, are each armed with a spine. All the spines of body and appendages are stout and of a dark brown colour. Antero-lateral spines 5, including the one at the orbit; tooth N has a supplementary spine, nearly as long, behind it; while N, T, S may have 1 or 2 small neighbouring spines on the same lobule. Front with a U-shaped median notch; outer tooth triangular; edge granulate. Orbit with 3 distinct notches, upper edge spinous,



lower edge granulate. Chelipeds of ♂ very unequal, spinous; upper and inner edges of merus spinous; outer surface of wrist and palm spinous, spines of palm very unequal, lower fourth of palm smooth; fingers light brown with white tips, widely gaping, those of large claw each with a single tooth; dactyli spinous outside for half their length; one row of spines runs from the palm on to the immovable finger; dark colour extending very little on the palm; tips of fingers broad and deeply hollowed. Upper margin of merus joints of legs armed with a row of spines; upper surface of carpal and propodal joints with 3 rows of spines.

In the females the chelipeds are nearly equal; fingers black with light tips.

This species is more strongly spinous than any other *Chlorodopsis*. In form and general appearance, it resembles *Pilodius flavus* Rathbun (1906, p. 860, text-fig. 21), which is less deeply areolated and devoid of spines on the dorsum and on the upper margin of the orbit.

142. *Pilodius paumotensis* Rathbun.

*Pilodius paumotensis* Rathbun, Mem. Mus. Comp. Zool., xxxv. 1907, p. 52, pl. 8, figs. 2, 2 a, 2 b.

Salomon; 1 ♀. Peros, Coin; 1 ♂.

The ♂ resembles closely the type; the ♀ has a dark green colour, and is slightly wider than the ♀ cotype, approaching *Chlorodopsis melanochira* A. Milne Edwards; in *P. paumotensis*, there is no narrow lobule cut off from the posterior end of the mesogastric region.

143. *Cymo andreossyi* (Audouin).

*Cymo andreossyi* Alcock (3), p. 173.

Coetivy, 32 feet, taken by diver; 1 ♀ ovig.

144. *Cymo melanodactylus* de Haan.

*Cymo melanodactylus* Alcock (3), p. 174.

Coetivy; 2 ♀.

145. *Cymo quadrilobatus* Miers.

*Cymo quadrilobatus* Alcock (3), p. 175.

Salomon; 2 ♂, 2 ♀. Egmont, reef; 1 ♀. Praslin; 1 ♂.

Length of largest specimen (♂, Salomon) 17.3, breadth 19 mm.

146. *Pseudozius caystrus* (Adams & White).

*Pseudozius caystrus* Alcock (3), p. 181.

Diego Garcia, lagoon; 1 ♀. Coetivy; 13 ♂, 11 ♀.

147. *Epixanthus corrosus* A. Milne Edwards.

*Epixanthus corrosus* A. Milne Edwards, Nouv. Arch. Mus. Hist., Paris, ix. 1873, p. 241, pl. 9, figs. 1, 1 a. De Man, Arch. f. Naturg., liii. 1888, p. 292, pl. 11, fig. 3.

Peros, Coin; 1 ♂, 1 ♀.

♂, C. l. 12 mm., C. b. 19.8 mm.



148. *Lydia tenax* (Rüppell).

*Ozius* (*Euruppellia*) *tenax* Alcock (3), p. 187.

Coetivy; 1 ♀ juv.

149. *Dacryopilumnus eremita* Nobili (Plate 16, figs. 6, 7).

*Dacryopilumnus eremita* Nobili, Bull. Mus. Hist. Nat., Paris, 1906, p. 264.

Peros, Coin; 1 adult ♀.

C. l. 4.2 mm., C. b. 6.4 mm.

The ♀ is a little wider than the ♂ described by Nobili. Orbits wholly dorsal. The convergent lateral margins are interrupted by the granulate marginal line of the anterior half turning inward on the carapace. Supra-frontal lobes not strongly marked. Area between orbit and frontal margin flat, crossed by a closed fissure.

Epistomial openings of the efferent branchial channels circular.

Chelipeds nearly equal, covered with a short, dense pubescence; the black colour of the dactyl covers only the distal  $\frac{2}{3}$ , the black of the thumb ends with an oblique line where it joins the palm. Ambulatory legs nearly naked, upper and lower surfaces finely denticulate, the largest denticles near the proximal end of the lower margin of the merus of the last pair.

150. *Pilumnus longicornis* Hilgendorf.

*Pilumnus longicornis* Alcock (3), p. 193.

Diego Garcia, 14 fms.; 1 ♀, 1 juv. Cargados Carajos, 30 fms., Sta. B 9; 1 ♂, 3 juv.: 30 fms., Sta. B 13; 2 ♂, 1 ♀, 2 juv.: 28 fms., Sta. B 19; 2 ♂, 1 ♀, 2 juv.: 28 fms., Sta. B 20; 1 juv. Saya de Malha, 55 fms., Sta. C 15; 1 ♀: 29 fms., Sta. C 19; 1 ♂. Amirante, 20—25 fms., Sta. E 13; 1 ♀ juv. Seychelles, 34 fms., Sta. F 7; 1 ♂, 2 ♀, 4 juv.

Largest specimen (Sta. F 7) ♀, C. l. 14 mm., C. b. 20 mm.

This species has normally a small spine at the outer angle of the orbit, but it is often broken off. Usually not more than half the outer surface of the larger palm is granulate and hairy. In the young ♀ from station E 13, the granules and hairs cover the outer surface of the large palm, and the claw is smaller than is customary, approaching the lesser claw in size as well as ornamentation.

151. *Pilumnus andersoni* de Man.

*Pilumnus andersoni* Alcock (3), p. 194.

Cargados Carajos, 30 fms., Sta. B 8; 1 ♀ ovig.: 30 fms., Sta. B 13; 1 ♂, 4 juv.: 30 fms., Sta. B 14; 1 ♂: 30 fms., Sta. B 15; 4 juv.: 28 fms., Sta. B 19; 2 ♀. Saya de Malha, 47 fms., Sta. C 12; 1 juv.: 55 fms., Sta. C 15; 2 ♂, 2 ♀; one ♀ of large size, 15.7 mm. wide, has the anterior third of the carapace overgrown with a long worm tube and an encrusting bryozoan. Amirante, 29 fms., Sta. E 1; 6 ♂, 10 ♀: 29 fms., Sta. E 2; 1 juv.: 25 fms., Sta. E 3; 4 ♂, 7 ♀, 6 juv.: 32 fms., Sta. E 5; 1 ♂, 1 ♀: 28 fms., Sta. E 6; 30 ♂, 38 ♀; an adult ♀ has the larger claw deformed; from the base of the thumb, a short, stout spine projects downward; although almost entirely beyond the line of brown colour on the thumb, this spine is also brown; its tip is broken off: 34 fms., Sta. E 9; 7 ♂, 4 ♀. Seychelles, 34 fms., Sta. F 7; 1 ♂: 34 fms., Sta. F 8; 1 ♂, 3 ♀. Praslin, reef; 1 ♀ ovig.



152. *Pilumnus hirsutus* Stimpson.

*Pilumnus hirsutus* Stimpson, Smithson. Misc. Coll., xlix. 1907, p. 69, pl. 9, fig. 1.

Providence, 29 fms., Sta. D 3; 1 ♀: 50—78 fms., Sta. D 4; 15 specimens, 1 with Rhizocephalid parasite. Amirante, 39 fms., Sta. E 16; 1 ♂: 20—44 fms., Sta. E 25; 1 ♂.

The species to which I give the name *P. hirsutus* has a strong resemblance to *P. andersoni*. In *P. andersoni*, the front is almost bare in front of the transverse fringe of long hair, so that the outline of its oblique lobes is plainly visible; in *P. hirsutus*, the long fine hairs which cover the greater part of the dorsal front obscure the margin, the lobes of which are less oblique. The immovable finger of the large chela is longer in *hirsutus*.

The ♂ from station E 25 is possibly not conspecific with the others; it is only 2.9 mm. long and has a breadth of 4.4 mm., being much distorted from a Bopyrid parasite in each branchial chamber.

153. *Pilumnus orbitospinis*, sp. nov. (Plate 16, figs. 14, 15).

Salomon Bank, 60—120 fms.; 2 ♀ (1 ovig.).

♀ ovigerous, C. l. 8.1 mm., C. b. 10.7 mm.

Carapace subrotund, covered, as are chelipeds and legs, with short pubescence, and long, soft yellow hairs; surface smooth, regions scarcely indicated. Antero-lateral margins armed with 3 long and slightly curved spines, besides a shorter spine at the orbital angle. Postero-lateral margins markedly convergent. Front with a V-shaped emargination of good size, lobes slightly convex, outer angle a small triangular tooth. Orbital notches indistinct; upper margin granulous, lower margin spinulous; at the inner angle but separated from the antenna, a long slender spine pointing forward and slightly inward.

Chelipeds unequal, covered with spines and spinules; 2 long curved spines near end of upper margin of arm; strong spines on wrists, smaller palm and upper half of larger palm; on the lower half of the latter the spines are reduced to sharp granules and disappear near the lower and distal margins. The spinules extend at least half way down the fingers of the small claw and about  $\frac{1}{2}$  the upper surface of the large dactylus. Fingers brown, the colour not reaching the proximal end. Legs long and slender.

This species has much the appearance of *P. maldivensis* Borradaile (Fauna Maldiva Arch., i. 1902, p. 247, text-fig. 47) but the hairs are longer, the lateral spines not lobiform at base, the larger hand stouter than in fig. 47 b, the smaller hand with thumb deflexed. Characteristic of this species is the long spine of the inner orbit visible from above and the pair of long spines on the upper arm.

154. *Pilumnus tahitensis* de Man.

*Pilumnus tahitensis* de Man, Notes Leyden Mus., xii. 1890, p. 61, pl. 3, figs. 4, 4 a, 4 b.

Saya de Malha, 29 fms., Sta. C 19; 1 ♂. C. l. 8.4 mm., C. b. 10.8 mm.

155. *Pilumnus tæniola* Rathbun.

*Pilumnus tæniola* Rathbun, 1906, p. 864, pl. 11, fig. 3, text-fig. 24.



Saya de Malha, 55 fms., Sta. C 15; 1 ♀. Amirante, 25—80 fms., Sta. E 11; 3 ♂: 39 fms., Sta. E 16; 1 ♀.

Smaller than the type. The claws of the ♂ are equal and alike, as in the ♀.

156. *Pilumnus turgidulus*, sp. nov. (Plate 19, figs. 1, 2).

Amirante, 25—80 fms., Sta. E 11; 3 ♂, 3 ♀, (1 ♂ type): 20—25 fms., Sta. E 13; 1 ♂: 30 fms., Sta. E 21; 1 juv.

♂, C. l. 5.2 mm., C. b. 7 mm.

A narrow, subquadrate species, the carapace little broader than long, postero-lateral margins nearly parallel, antero-lateral margins short, with 3 small spiniform teeth diminishing in size from first to third, third minute, first tooth remote from orbital angle, which is neither spiniform nor produced. Front strongly deflexed, lobes moderately convex, outer angle inconspicuous. Surface of carapace short-pubescent, with scanty long hairs of which there is a row above the front. Orbital fissures obscure.

Chelipeds and legs clothed with long soft hairs. Chelipeds unequal in both sexes; in the females and smaller males they are similar, the palm is roughened with low granules. In the well developed males the palm of the large cheliped is almost entirely smooth and naked. Fingers, as a rule, long and slender, narrowly gaping, tips sharp and crossing each other; dark colour confined to the terminal  $\frac{2}{5}$ , except on the prehensile teeth where it extends the whole length of the fingers; in the old males the larger thumb is swollen at the base, having in the type specimen almost the appearance of malformation. Legs long and narrow.

This species is very near *P. taniola* in the form of carapace and legs; the latter is, however, wider, lobes of front more prominent and their outer angles more accented; the fingers are not so regularly tapering, nor the tips so acuminate.

157. *Pilumnus trichophoroides* de Man.

*Pilumnus trichophoroides* de Man, Zool. Jahrb., Syst., viii. 1895, p. 549; ix. 1897, pl. 13, figs. 8 a—8 e.

Egmont, reef; 1 ♀ adult. C. l. 9.8 mm., C. b. 13.5 mm.

Larger than the type specimen; antero-lateral teeth less distinctly marked; the brown colour of the fingers, while restricted to the distal two-fifths on the outer margins of the fingers, runs along the prehensile edge as far as the teeth extend.

158. *Pilumnus alcocki* Borradaile.

*Pilumnus alcocki* Borradaile, in Gardiner, Fauna Maldives Arch., i. 1902, p. 248, text-fig. 48.

Amirante, 29 fms., Sta. E 1; 1 juv.: 29 fms., Sta. E 2; 2 juv.: 39 fms., Sta. E 16; 1 juv.: 30 fms., Sta. E 21; 3 ♂, 1 ♀.

The largest specimen, ♀, measures: C. l. 7.2 mm., C. b. 11 mm. It is more densely covered with long hair than smaller specimens.

159. *Actumnus setifer* (de Haan), var.

*Actumnus setifer* Alcock (3), p. 202.



Seychelles, 34 fms., Sta. F 7; 1 ♂ varying towards the form described below, in having the thumb of the large claw a little longer than is typical and the lower marginal line of granules on the palm very indistinct.

160. *Actumnus setifer amirantensis*, subsp. nov. (Plate 16, figs. 12, 13).

♂, type, C. l. 8.8 mm., C. b. 11.7 mm., fronto-orbital b. 9.4 mm.

The most abundant *Actumnus* in the western Indian Ocean if this collection is an indication.

Carapace moderately convex; tomentum short, thick and smooth; areolations little prominent, well separated, sparingly granulate; front broader than in *A. setifer* (de Haan), outer tooth triangular, distinct, and separated by an obliquely angled sinus from the obtuse upper angle of the orbit; three lateral teeth tipped with a spine. Wrist sparingly granulate, smaller palm sharply granulate.

The upper part (less than half) of the outer surface of both palms is thinly tomentose; the sharp granules disappear on the lower distal portion of the large palm; inner surface smooth and shining; no inferior marginal line except near the wrist. The fingers are rather long and the immovable fingers deflexed, that of the small claw more deflexed than that of the large claw.

In small specimens the larger palm has a larger area of granulation than in adults, and the ridge on the immovable finger has a line of granules on its basal half.

This subspecies, as represented by a lot of 143 specimens from Station E 6, is quite distinct from typical *Actumnus setifer*. There are before me seven specimens of the latter, from three widely separated localities, Japan, Pulo Edam, and Gulf of Siam. They differ from the subspecies *amirantensis*, not only in the greater convexity of the carapace and its areoles, as mentioned by Alcock in comparing it with *A. tomentosus* Dana, but in the more granulated palm, shorter fingers, more horizontal thumb, and the inferior marginal line of granules separating the outer from the inner surface of the palm. Our subspecies is also smaller, the largest specimens averaging about 12 mm. in width.

The subspecies was obtained at 19 different stations, and at some of these there are specimens which incline toward typical *A. setifer*. These variations are indicated below in the list of localities.

Cargados Carajos, 30 fms., Sta. B 8; 2 ♂, 1 juv.; the largest ♂, about 13 mm. wide, approaches the convexity in carapace and areolæ of *A. setifer*; chelipeds lacking: 30 fms., Sta. B 14; 1 ♂, 1 ♀: 30 fms., Sta. B 15; 8 ♂, 6 ♀: 30 fms., Sta. B 16; 1 ♂ juv.: 30 fms., Sta. B 17; 1 ♂, 1 ♀, 1 juv.; the ♂ about 11.5 mm. wide varies toward *A. setifer*, that is, the outer surface of the larger palm is nearly all granulate, the immovable finger is shorter, but not so short as in *A. setifer*, there is an inferior line of granules on the proximal half of the palm. Saya de Malha, 47 fms., Sta. C 12; 1 ♂ without chelipeds: 55 fms., Sta. C 15; 1 ♂, 2 ♀, 1 juv.; ♂, C. b. 14 mm. Providence, 70 fms., Sta. D 7; 1 ♀. Amirante, 29 fms., Sta. E 1; 7 ♂, 11 ♀ (8 ovig.); vary toward *A. setifer*, several specimens having a short thumb, the lower part of palm chiefly bare, but with a few scattered granules and granules on the proximal end of the ridge on the thumb: 29 fms., Sta. E 2;



1 juv. : 25 fms., Sta. E 3 ; 9 ♂, 6 ♀ : 32 fms., Sta. E 5 ; 1 ♀ ovig. : 28 fms., Sta. E 6 ; 143 specimens without noticeable variations (1 ♂ is type) : 34 fms., Sta. E 9 ; 5 ♂, 8 ♀, 2 juv. (1 ♂ with Bopyrid) : 32 fms., Sta. E 12 ; 1 ♀. Seychelles, 39 fms., Sta. F 3 ; 2 juv. : 44 fms., Sta. F 5 ; 3 juv. : 44 fms., Sta. F 6 ; 1 ♂ : 34 fms., Sta. F 8 ; 1 ♂, 2 juv.

161. *Actumnus bonnieri* Nobili.

*Actumnus bonnieri* Nobili, Bull. Sci. France et Belg., xl. 1906, p. 132, pl. 6, fig. 32.

Seychelles, 31 fms., Sta. F 2 ; 1 ♀ juv. C. l. 4.2 mm.

The lobules of the carapace are high and deeply separated from one another. The outline of the lateral teeth is not obscured by tomentum ; the teeth are denticulated. The marginal projections of wrist, palm and movable finger are so sharp as to resemble spines.

162. *Actumnus globulus* Heller.

*Actumnus globulus* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat., Paris, i. 1866, p. 286, pl. 18, fig. 4.

Salomon ; 1 ♀. C. l. 9 mm., C. b. 12 mm.

The antero-lateral margin is cut by three closed fissures, each lobe thus formed overlapping the one anterior to it. The two frontal lobes are oblique and are separated from the orbital angles by a well-marked sinus.

163. *Actumnus obesus* Dana.

*Actumnus obesus* Rathbun, 1906, p. 865, pl. 11, fig. 2.

Amirante, 29 fms., Sta. E 2 ; 1 ♀ : 20—25 fms., Sta. E 13 ; 1 ♂ ; C. l. 7.7 mm., C. b. 10.1 mm. : 30 fms., Sta. E 21 ; 2 ♀.

In the specimen measured, the lateral teeth are better marked than in the larger specimen from the Hawaiian Islands described in the report cited above. In the females, which are all small, about 6.6 mm. wide, the tomentum almost conceals the regional divisions of the carapace.

164. *Actumnus simplex*, sp. nov. (Plate 16, figs. 10, 11).

Amirante, 32 fms., Sta. E 12 ; 1 ♀.

Ovigerous female, C. l. 8.6 mm., C. b. 11 mm.

Carapace covered with a very short, scant pubescence, not visible to the naked eye ; a transverse line of long hairs behind the front ; chelipeds and legs furnished with long, ragged hairs which, on the arms, wrists and legs, are confined chiefly to the margins, but cover the whole outer surface of the palms. Carapace very convex in both directions. The only separation into regions is indicated by shallow branchio-cardiac furrows. Front narrow, a median emargination, lobes oblique, their outer angles connected by a straight line with the orbital angles. Two superior orbital fissures faintly indicated ; external fissure V-shaped. Antero-lateral margin cut by three shallow notches into lobes, the posterior of which is bluntly dentiform. From it a low, finely granulate ridge runs inward on the carapace.



Chelipeds not very unequal; inner angle of wrist spinulose; palm granulous on outer surface, granules concealed beneath long hair. Fingers brown, not gaping, toothed along prehensile edges, immovable fingers as long as wide.

This species, in the smoothness of its carapace, resembles *A. nudus* A. Milne Edwards (*Conf. de Man*, Journ. Linn. Soc. London, Zool., xxii. 1887, p. 49, pl. 2, figs. 2, 3), but the latter is much broader, with strong antero-lateral teeth and smooth palms.

165. *Actumnus laevigatus*, sp. nov. (Plate 19, figs. 3, 4).

Amirante, 25—30 fms., Sta. E 11; 1 ♀ ovig. C. l. 6.8 mm., C. b. 9.3 mm.

Carapace very convex in all directions; scarcely any indication of regions; covered with a short, fine, light-coloured pubescence. Antero-lateral margin with three conical teeth, each tipped with a slender spine; the first of these teeth has a secondary spine on its posterior slope; besides there is a small spine at the outer angle of the orbit. Front composed of two oblique lobes, separated by a broad emargination, and without a distinct tooth at the outer end. Two faint notches in upper margin of orbit, and a broad sinus beneath the outer angle; margin granulate; inner angle armed with a spinule.

The chelipeds and legs have many longer hairs mixed with the short tomentum. Chelipeds unequal; arms with two sharp teeth above; wrists and palms granulate; lower distal half of larger palm smooth and bare; a few granules near the palmar end of the dactyls; fingers of large claw very broad and smooth; those of small claw narrower and with one or two grooves; prehensile edges with low irregular teeth which leave no gape; tips acute, crossing; colour of fingers (in alcohol) light pinkish, this colour not reaching quite to base of immovable finger. Legs rather stout, except for the long slender, yellow, horny tips of the dactyls.

This species, like the preceding, resembles *A. nudus* in the smoothness of the carapace, but differs in form, character of lateral teeth and in its hairy covering.

166. *Eriphia sebana* (Shaw).

*Eriphia laevimana* Alcock (3), p. 214.

Salomon; 1 ♀. Peros, Coin; 1 ♂. Egmont, reef; 1 ♀ juv.

167. *Eriphia scabricula* Dana.

*Eriphia scabricula* Alcock (3), p. 216.

Salomon; 1 ♀. Peros, Coin; 1 ♂. Egmont, lagoon, 6—7 fathoms; 1 ♂. Praslin, reef; 1 ♂, 1 ♀ ovig. Coetivy; 1 ♂.

168. *Maldivia gardineri*, sp. nov. (Plate 19, figs. 5, 6).

Salomon; 1 ♀ ovig.

C. l. 3.3 mm., C. b. 4.4 mm., F. b. 1.8 mm.

Carapace broader than long, slightly convex, smooth to the eye, but microscopically granulate, regions scarcely indicated; sparsely hairy with very fine soft hairs, of which there is a row just behind the margin of the front. Body covered with numerous very small irregular dots of reddish-brown, which have nearly faded out except along the frontal and antero-lateral borders of the carapace and the anterior part of the ventral



surface. Two denticles on the antero-lateral margin. Postero-lateral margins strongly convergent. Front very broad, slightly deflexed, divided into two subtruncate lobes. Orbital margin crenulate, not fissured. Eyes large, peduncles stout. Basal joint of antenna not nearly reaching the front. Epistome short. Efferent ridge strong. Merus of maxillipeds broader than long, outer angle rounded, inner angle notched for the insertion of the palpus.

Chelipeds very unequal, outer surface very rough and pubescent. Arm stout, nearly smooth; wrist granulate, the granules increasing in size toward the palm. Larger palm much swollen, covered with granules which increase in size towards the upper surface where they become tubercles and are arranged in rows. Smaller palm about half as high as the other, similarly roughened, the large granules being sharp. Fingers of large claw roughened to near the tips, not gaping; prehensile edges irregularly toothed, tips sharp pointed, crossing when flexed. Fingers of small claw thin, curved, dactylus rough, immovable finger smooth, punctate; fingers not gaping; prehensile edges sharp, entire, fitting neatly together, tips small, curved and overlapping.

Legs narrow, thin, margins granulate, upper edge of carpal segments terminating in a denticle, margins scantily provided with long hairs.

The general aspect of this species is much like that of *M. symbiotica* Borradaile (Fauna Maldives, i. 1902, p. 270, text-fig. 60), but the unequal chelipeds, the peculiar fingers of the small claw, as well as the wider carapace and front, easily distinguish it.

169. *Trapezia cymodoce* (Herbst).

*Trapezia cymodoce* Alcock (3), p. 219.

Salomon; 10 ♂, 7 ♀: dredged, 10—14 fms.; 1 ♂, 1 ♀. Peros, Coin; 1 ♂, 1 ♀. Egmont, reef; 1 ♂, 2 ♀: lagoon, 6—7 fms.; 4 ♂, 3 ♀. Diego Garcia, lagoon; 1 ♂, 1 ♀: 12 fms.; 2 ♂. Cargados Carajos, 30 fms., Sta. B 2; 3 ♂, 2 ♀. Saya de Malha, 26 fms., Sta. C 16; 1 ♂, 4 ♀. Amirante, 29 fms., Sta. E 2; 1 ♂, 1 ♀: 25—80 fms., Sta. E 11; 2 ♂, 1 ♀: 20—25 fms., Sta. E 13; 7 ♂, 7 ♀: 30 fms., Sta. E 21; 2 ♂, 3 ♀. Seychelles, 34 fms., Sta. F 8; 1 ♂, 2 ♀ (1 with Bopyrid). Praslin, reef; 2 ♂, 2 ♀. Coetivy; 4 ♂, 5 ♀.

The specimens vary considerably in the length and sharpness of the lateral tooth, and to a lesser degree in the form and prominence of the frontal teeth; while the upper border of the palm is sharp and its outer surface hairy. These characters connect the species with the subspecies *ferruginea*.

170. *Trapezia cymodoce ferruginea* Latreille.

*Trapezia ferruginea* Alcock (3), p. 220.

Salomon; 6 ♂, 5 ♀: dredged, 10—14 fms.; 1 ♂, 1 ♀, varying toward *T. guttata* Rüppell. Peros, Coin; 1 ♂, 1 ♀. Egmont, reef; 2 ♂, 2 ♀. Seychelles, 20 fms., Sta. F 8; 2 ♀. Praslin, reef; 2 ♂, 1 ♀. Coetivy; 2 ♂, 1 ♀.

The two specimens dredged at Salomon have the merus and carpus of the legs spotted, the propodus and dactylus striped, the stripes having a tendency to break up.



171. *Trapezia cymodoce intermedia* Miers.

*Trapezia ferruginea* var. *intermedia* Alcock (3), p. 220.

Praslin, reef; 1 ♀ ovig. Coetivy; 1 ♀ ovig.

172. *Trapezia cymodoce maculata* (MacLeay).

*Trapezia maculata* Alcock (3), p. 221.

Salomon; 2 ♂, 1 ♀. Egmont, reef; 1 ♀.

173. *Trapezia rufopunctata* (Herbst).

*Trapezia rufopunctata* Alcock (3), p. 222.

Salomon; 3 ♂, 4 ♀, 4 juv. Egmont, reef; 1 ♂: lagoon, 6—7 fms.; 1 ♂.

174. *Trapezia digitalis* (Latreille).

*Trapezia digitalis* Alcock (3), p. 222.

Salomon; 1 ♂, 1 ♀ ovig. Peros, Coin; 1 ♀. Egmont, reef; 1 ♂, 2 ♀ (1 ovig.). Amirante, 29 fms., Sta. E 1; 1 ♂ juv. Praslin, reef; 1 ♂. Coetivy; 1 ♂, 1 ♀.

175. *Tetralia glaberrima* (Herbst).

*Tetralia glaberrima* Alcock (3), p. 223.

Salomon; 1 ♂, 3 ♀ ovig. Cargados Carajos, 28 fms., Sta. B 19; 1 juv. (identification not certain). Saya de Malha, 26 fms., Sta. C 16; 1 ♂: 29 fms., Sta. C 19; 1 ♂. Coetivy; 3 ♂, 3 ♀: by diver, 32 feet; 1 ♂, 2 ♀ (1 ovig.).

176. *Quadrella coronata* Dana.

*Quadrella coronata* Alcock (3), p. 226.

Providence, 50 fms., Sta. D 11; 6 ♂, 3 ♀ (1 ovig.). Amirante, 22—85 fms., Sta. E 10; 1 ♀ ovig.: 36 fms., Sta. E 14; 1 ♂, 1 ♀ ovig.: 39 fms., Sta. E 16; 4 ♂, 3 ♀. Seychelles, 34 fms., Sta. F 8; 1 ♂: 37 fms., Sta. F 9; 1 ♂, 1 ♀.

177. *Quadrella maculosa* Alcock.

*Quadrella coronata* var. *maculosa* Alcock (3), p. 226.

Cargados Carajos; 45 fms., Sta. B 29; 1 ♀ ovig. Amirante, 32 fms., Sta. E 12; 2 ♂, 1 ♀.

In the well-developed ♀ the palms are not inflated, and their upper and lower margins are subparallel, which is not the case in a ♀ of *Q. coronata* of the same size.

178. *Polydectus cupulifer* (Latreille).

*Polydectus cupulifer* Rathbun, 1906, p. 866.

Coetivy; 1 ♀ holding an actinian in each claw.

179. *Domecia hispida* Eydoux and Souleyet.

*Domecia hispida* Alcock (3), p. 230.

Diego Garcia, 12 fms.; 1 juv. Cargados Carajos, 28 fms., Sta. B 19; 1 juv. Amirante, 16 fms., Sta. E 23; 1 ♂. Coetivy; 1 ♂, 1 ♀ ovig.: by diver, 32 feet; 4 ♂, 2 ♀, all small.



180. *Lybia tessellata* (Latreille).

*Melia tessellata* Borradaile, in Gardiner, Fauna and Geogr. Maldives and Laccadive Arch., i. 1902, p. 250, text-fig. 49.

Salomon; 2 ♂, 5 ♀ (4 ovig.). Saya de Malha, 29 fms., Sta. C 19; 1 ♂. Amirante, 25—30 fms., Sta. E 11; 5 ♂, 5 ♀: 30 fms., Sta. E 21; 1 ♀. Coetivy; 6 ♂, 7 ♀ (3 ovig.), 2 juv.; one of the females, 10 mm. in width, is grasping anemones which measure 5 mm. in diameter across the expanded tentacles.

181. *Lybia pugil* (Alcock).

*Melia pugil* Alcock (3), p. 231. Illus. Zool. Investigator, Crust., pt. vii, 1899, pl. 38, fig. 5.

Saya de Malha, 47 fms., Sta. C 12; 1 ♀ ovig. Amirante, 34 fms., Sta. E 9; 1 ♀.

These specimens have the indentation on the postero-lateral border of the carapace, the dorsal surface is distinctly tuberculous. Both hands of the specimen from Saya de Malha carry an anemone, only the right hand of that from Amirante.

## GARDINERIA, gen. nov.

Carapace transverse; antero-lateral margin directed obliquely downward to the angle of the buccal cavity and furnished with a stridulating mechanism. Orbit subentire, pear-shaped.

Antennules large, nearly transverse. Peduncular segments of antennæ narrow; basal segment falling far short of the front, the following segment just touching the front; flagellum standing in the orbital hiatus. Efferent ridge well developed posteriorly but not reaching the anterior edge of the buccal cavity. Merus of maxillipeds expanded at outer angle.

Chelipeds stout, smooth. Legs slender, flattened. Abdomen of ♂ with all the segments free.

Type, *Gardineria canora*, sp. nov.

This genus is an anomaly among the Xanthidæ; it belongs to the section *Hyperolissa*, the efferent ridges being strong but not continued to the epistome. The character of the lateral margins, the formation of the orbits, the development of the wrists, are peculiar to the genus.

182. *Gardineria canora*, sp. nov. (Plate 19, figs. 7, 8).

Providence, 29 fms., Sta. D 3; 1 ♂.

C. l. 7.7 mm., C. b. 11.2 mm.

Carapace oval, convex; regions, except the cardiac, not defined; surface punctate; antero-lateral margin a thin, granulated rim, ending posteriorly in two tuberculiform denticles at the widest part of the carapace; a ridge on the hindmost tooth is continued inward for a short distance; anteriorly the marginal rim passes a little outside the angle of the orbit and is prolonged to the angle of the buccal cavity; a weaker ridge connects it with the orbital angle; the under side of the marginal rim forms a stridulating ridge



crossed by fine striæ; postero-lateral margin sinuous. The front viewed from above is arcuate, but the true edge is invisible, the surface being bent abruptly down; edge viewed from in front, the shape of a cupid's bow, and not separated from the angle of the orbit; the sides of the front slope gradually into the orbital margin. Orbits pear-shaped; eyes stout. Two faint notches near together in the superior margin of the orbit; inferior margin thickened, showing some irregular crenations. Suborbital area granulate. Basal segment of antennules deeply channeled along its ventral face. The flagellum of the antennæ is shorter than the major diameter of the orbit. Ischium of maxillipeds longer than merus and produced at the antero-internal angle; merus with a lobe of good size at its antero-external angle.

Chelipeds unequal, smooth, punctate; arm with a thin edge above, having a small blunt tooth near the distal end; wrist enlarged, a laminiform expansion along its inner side, whose thin, smooth edge can be scraped along the stridulating ridge on the ventral edge of the carapace; palms swollen; fingers rather long, coloured like the palm, not gaping, tips curved and crossing, prehensile edges armed with a few acute teeth, the largest one near the base of the larger pollex, the dactyli almost unarmed in their distal half; four impressed lines of punctæ on each digit.

Legs narrow, flat, varying little in length, dactyli scantily hairy.

Male abdomen small, suboblong, segments of about equal length, save the first and seventh.

### Gonoplacidæ.

183. *Eucrate crenata* de Haan.

*Eucrate crenata* Alcock (6), p. 300.

Seychelles, 34 fms., Sta. F 8; 1 ♀ juv.

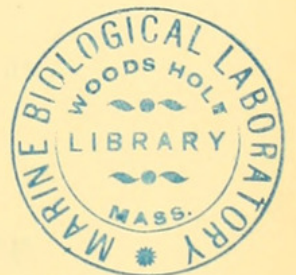
184. *Pilumnoplax acanthomerus*, sp. nov. (Plate 18, fig. 13).

Amirante, 30 fms., Sta. E 21; 1 ♂ type, 1 ♀ ovig.

Carapace slightly convex; surface closely covered with granules which are smaller posteriorly; regions indicated by narrow grooves; front and orbits set off by broad furrows. Front obliquely inclined,  $\frac{2}{5}$  as wide as carapace; edge sinuous, a median V-shaped emargination, a small lobe at outer corners, between which is a raised transverse granulated line. Orbit separated from front by a rectangular notch; upper margin with a single notch, prolonged inward by a fissure. Eyes large, reniform. Antero-lateral margin half as long as postero-lateral, quadridentate, including tooth at outer angle of orbit; first three teeth subequal, first obtuse, second and third acute, third narrower, fourth very small, spiniform, close to third. Postero-lateral margins slightly concave, converging at an acute angle.

Last joint of antennal peduncle reaches end of outer lobe of front; flagellum  $1\frac{1}{3}$  times as long as width of orbit.

Chelipeds unequal in both sexes; arm, wrist and upper part of hand granulate, the large granules acute or spinuliform; four spines on inner edge of arm; two spines, one above the other, at inner angle of wrist; hand with a double row of blunt spines above,





ending at the dark colour on the distal extremity; fingers broad and thick, brown except for white tips; the brown colour covers  $\frac{2}{3}$  of the length of propodus measured on lower margin; dactylus with three low prehensile teeth; pollex with one larger tooth near the tip; a small tuft of yellow hairs on inner and outer sides of each finger on the distal half.

Legs of moderate length, fringed with long hair mostly on the anterior margin; merus, carpus and propodus spined anteriorly, a subdistal spine on posterior border of merus of first two pairs; dactylus bearing a double row of spines posteriorly and a few spines anteriorly near the tip.

Third, fourth and fifth segments of male abdomen fused.

*Dimensions* in mm.:

	♂	♀
C. l.	9.1	10.7
C. b.	13.1	15.3
F. b.	5.1	6.0
Exorb. b.	10.2	11.8
R. Ch. l.	23.9	19.6
L. Ch. l.	22.8	21.5
W. L. 3	20.5	22.8

This species has the carapace broader and rougher, and the palms more elongate than in other species of the genus.

#### *Catoptrus* A. Milne Edwards.

A series of 47 specimens in the collection shows that there are two well-marked species, which occur together but are separable by a number of characters.

##### *C. nitidus.*

Carapace very convex, sloping evenly in all directions.

Outer margin of front sloping gradually into posterior margin of orbit.

Antero-lateral region and sub-orbital region with some coarse granules mixed with the fine ones.

Lateral teeth very uneven: the 2nd, 3rd, 4th and 5th decrease in size in order named.

Lower margin of orbits armed with three denticles or tubercles.

Two spines on arm, one near each end.

Distal half of fingers brown.

Terminal segment of abdomen of ♂ triangular, with straight sides.

Appendages of ♂ abdomen with tips bidentate.

##### *C. inæqualis.*

Carapace moderately convex, transversely flattened for half its width.

Outer margin of front nearly at right angles to posterior margin of orbit.

Antero-lateral region and sub-orbital region with granulation uniformly fine.

Lateral teeth: 2nd, 3rd and 4th nearly the same size.

Lower margin of orbit unarmed.

One spine on arm, near distal end; it may be reduced to a small tooth, especially in larger specimens.

Distal half of fingers pink.

Terminal segment of abdomen of ♂ with sides partly concave.

Appendages of ♂ abdomen with tips slender, acuminate.



185. *Catoptrus nitidus* A. Milne Edwards.

*Catoptrus nitidus* Alcock (6), p. 307 (part). Laurie, in Herdman, Ceylon Pearl Fisheries, pt. v, Suppl. Rept. XL, 1906, p. 422 (part).

*Goniocaphtyra truncatifrons* de Man, Archiv für Naturg., liii. 1887, p. 339, pl. 14, fig. 1.

Amirante, 25—80 fms., Sta. E 11; 11 ♂, 4 ♀ (2 ovig.): 30 fms., Sta. E 21; 2 ♂. Coetivy, 1 ♂.

Largest specimen, ♂ (Sta. E 11), C. l. 6 mm., C. b. 8.7 mm. Smaller ♂, same station, C. l. 3.3 mm., C. b. 5 mm. A. Milne Edwards gives 15 × 23 mm.

In the specimens before me, *C. nitidus* is uniformly narrower than *C. inæqualis*.

186. *Catoptrus inæqualis* (Rathbun).

*Catoptrus nitidus* Alcock (6), p. 307 (part). Laurie, in Herdman, Ceylon Pearl Fisheries, pt. v, Suppl. Rept. XL, 1906, p. 422 (part).

*Goniocaphtyra inæqualis* Rathbun, 1906, p. 870, text-fig. 29, pl. 12, fig. 9.

Saya de Malha, 55 fms., Sta. C 15; 1 ♂, 1 ♀. Providence, 29 fms., Sta. D 3; 1 ♀. Amirante, 22—85 fms., Sta. E 10; 1 ♀: 25—80 fms., Sta. E 11; 6 ♂, 12 ♀ (8 with Bopyrid parasites): 30 fms., Sta. E 21; 1 ♂, 1 ♀. Seychelles, 34 fms., Sta. F 8; 3 ♂.

Largest specimen, ♂ (Sta. E 11), C. l. 5.4 mm., C. b. 8.6 mm. Smaller ♂, same station, C. l. 3.6, C. b. 5.7 mm.

187. *Typhlocarcinops piroculata*, sp. nov. (Plate 20, figs. 1, 2).

Amirante, 34 fms., Sta. E 9; 3 ♀ (1 adult type, 2 juv.).

Surface pubescent; carapace, chelipeds, and legs long-hairy on the margins; median regions faintly indicated. Anterior and antero-lateral margins of carapace regularly arched; postero-lateral margins parallel; posterior margin nearly transverse, sinuous. Upper surface smooth, sides with a raised, granulate rim. Anterior third of carapace strongly deflexed, front not twice as wide as orbit, sides parallel, lower margin obtuse-angled at the middle. Orbits transverse, completely filled by the pear-shaped eyes, with small corneæ.

Peduncle of antenna flattened; flagellum not exceeding it in length.

Chelipeds (of ♀) of moderate size, subequal; inner angle of wrist rounded; palm with length and breadth equal, outer surface covered with longitudinal rows of sharp granules and short hairs; fingers as long as middle of palm, deeply grooved, partly hairy, unevenly dentate and narrowly gaping, tips crossing. Second, third, and fourth legs subequal, rather broad; dactyli styliform.

All the segments of the ♀ abdomen are free; the first covers the sternum and is longest in its middle third; second and third segments a trifle wider than  $\frac{1}{3}$  of the sternal width; seventh segment equilateral.



*Dimensions* of type female in mm. : C. l. 5·6, C. b. 7·2, Exorb. b. 4·4, F. b. 2, Ch. l. 8, W. L. 1. 8·7, W. L. 2. 11, W. L. 3. 11·1, W. L. 4. 11·9.

This species differs from *T. canaliculata* Rathbun\* in the greater hairiness, angular front, more elongated orbits, rougher hands and wider legs.

### Palicidæ.

188. *Palicus jukesii* (White) (Plate 19, fig. 9).

*Palicus jukesii* Alcock (6), p. 451. Calman, Trans. Linn. Soc. London, Ser. 2, Zool. viii. (1900), p. 29, pl. 1, figs. 9—13.

*Palicus jukesii* Laurie, Rept. Pearl Oyster Fish., v. 1906, p. 430, pl. 1, fig. 12.

Saya de Malha, 55 fms., Sta. C 15 ; 2 ♀. Amirante, 25—80 fms., Sta. E 11 ; 1 ♀ ovigerous.

C. l. 13·7 mm., C. b. 14·6 mm.

In this specimen the sides of the carapace are nearly parallel, and the notches in the same very small, the last one scarcely visible. Outer supra-orbital notch subtriangular. Infero-orbital margin as represented in Calman's fig. 10 (*op. cit.*). An arcuate subhepatic ridge which is lost outwardly in a cluster of granules.

189. *Palicus whitei* (Miers) (Plate 19, fig. 10).

*Palicus whitei* Alcock (6), p. 453. Calman, Trans. Linn. Soc. London, Ser. 2, Zool. viii. (1900), p. 31, pl. 2, figs. 14—19.

Seychelles, 34 fms., Sta. F 8 ; 1 ♀ ovigerous.

C. l. to tips of frontal teeth 14·9 mm., C. b. 15·5 mm.

The teeth of the carapace are somewhat different from the descriptions and figures of Miers and Calman. Median sinus of front V-shaped, but with the bottom of the sinus a little rounded. From the frontal teeth to the tip of the innermost orbital tooth the margin is distinctly sinuous ; inner orbital sinus a narrow slit ; next sinus narrow at the base, widening anteriorly ; beyond this there is a third sinus which is triangular. Infra-orbital sinus narrow but open. Lateral teeth defined by narrow, almost horizontal, sinuses ; as in the preceding species, there is a faint indication of a third tooth and sinus.

190. *Manella gardineri*, sp. nov. (Plate 20, fig. 9).

Saya de Malha, 29 fms., Sta. C 19 ; 1 ♀ juv. Amirante, 25—80 fms., Sta. E 11 ; 1 ♀ juv. : 30 fms., Sta. E 21 ; 2 ♂ (1 juv., 1 is type). Seychelles, 37 fms., Sta. F 9 ; 1 ♂ juv.

*Dimensions* of ♂ type in mm. : C. l. 10·2, C. b. 12·2, right Ch. l. 14·5, W. L. 1. 11·2, W. L. 2. 14, W. L. 3. 14, W. L. 4. 8·8.

Carapace about  $\frac{5}{8}$  as long as broad, subhexagonal, regions separated, surface covered with short dark hairs which do not obscure the tubercles or granules arranged regularly either singly or in groups, as follows : 3 on the mesogastric region, 3 on each protogastric region, 4 in a transverse row on the cardiac region, 3 transversely on the intestinal

\* Proc. Biol. Soc. Wash., xxii. 1909, p. 112.



region; about 7 branchial, separable into 2 groups divided by a groove, 4 tubercles on the posterior area, and 2 or 3 on the anterior.

Margin of front (between the antennal flagella) a little more than  $\frac{1}{4}$  as wide as the carapace, quadridentate, the median pair of teeth bilobate, the inner lobe the smaller; median sinus broadly triangular, rounded at the base, other sinuses acute at base.

Upper margin of orbit cut by 2 V-shaped sinuses separated by a truncate tooth, remainder of margin irregularly crenulate. Outer tooth of orbit falciform, followed by 2 acute teeth, the second of which is broad and bidentate and situated at the lateral angle of the carapace. Postero-lateral margins long, convergent, and armed with obtuse teeth or lobes which posteriorly become smaller and more elevated. Posterior margin slightly convex, crenulate, terminating at either end in a small lobe directed laterally.

The ♂ abdomen, as in the type species of the genus, *M. spinipes* (de Man)\*, has 7 distinct segments, the first very wide and crossed transversely by a sharp and finely granulated crest, fringed above with appressed hairs; the lateral margin of the second to the seventh segments, inclusive, is sinuous; surface of abdomen and sternum coarsely punctate.

The right or larger cheliped of the male is about  $1\frac{1}{2}$  times as long as carapace, and bears a heavy propodus; left cheliped somewhat shorter and much slenderer; both are pubescent, and have shaggy hair on the upper surface of the fingers; merus trigonal, dentate on inner margin, granulate above; carpus tuberculate above, a sharp crest on outer margin. Palm widening distally; upper surface granulate; outer edge bimarginate, denticulate; lower surface smooth, punctate; inner edge crenulate, crossed in larger chela by curved stridulating lines, which probably are scraped along the outer surface of the left palm and wrist. Fingers stout, equal in small chela; immovable about half as long as movable finger in large chela.

Meropodites of legs broad, margins coarsely serrated; two rows of spinules above; carpopodites serrated anteriorly, terminating posteriorly in a small spine; propodites and dactyli finely dentate, the former nearly covered with superimposed hairs.

Differs from *M. spinipes* in carapace wider, surface less hairy, projections less spinous, presence of a distinct stridulating mechanism.

### Grapsidæ.

191. *Grapsus longitarsis* Dana.

*Grapsus longitarsis* Rathbun, 1907, p. 28.

Egmont, reef; 1 large ♂.

C. l. 36.6 mm., C. b. 41.8 mm. Carapace squarish and front broad, as in other, but always smaller, specimens previously examined; legs relatively shorter and stouter.

192. *Pachygrapsus plicatus* (Milne Edwards).

*Pachygrapsus plicatus* Rathbun, 1907, p. 29.

Peros, Coin; 1 ♂, 1 ♀. Coetivy; 1 ♂, 1 juv.

\* *Conf.* Rathbun, 1906, p. 837, pl. 7, fig. 6, text-fig. 3.



193. *Pachygrapsus minutus* A. Milne Edwards.

*Pachygrapsus minutus* Alcock (6), p. 399.

Praslin, reef; 1 ♀ ovigerous. Coetivy; 1 ♀ ovigerous.

194. *Pachygrapsus longipes* Rathbun.

*Pachygrapsus longipes* Rathbun, 1907, p. 30.

Coetivy; 1 ♀ ovigerous.

195. *Plagusia depressa tuberculata* Lamarck.

*Plagusia depressa tuberculata* Rathbun, 1906, p. 841.

Egmont, reef; 1 ♂, 1 ♀.

196. *Percnon planissimum* (Herbst).

*Percnon planissimum* Rathbun, 1906, p. 842.

Praslin, reef; 1 ♂. Coetivy; 1 ♂, 2 ♀ juv.

197. *Percnon abbreviatum* (Dana).

*Percnon abbreviatum* Rathbun, 1906, p. 842.

Coetivy; 1 ♂, 1 ♀ ovigerous.

#### Hapalocarcinidæ.

198. *Hapalocarcinus marsupialis* Stimpson.

*Hapalocarcinus marsupialis* Rathbun, 1906, p. 892. Stimpson, Smithsonian Misc. Coll., xlix. No. 1717, 1907, p. 170, pl. 14, fig. 8.

Salomon; 2 ♀ (1 ovigerous).

*Dimensions* in mm.: Ovigerous ♀, C. l. 4·7, C. b. 5·5, Abd. b. 8·8. Adult ♀, C. l. 4, C. b. 3·7, Abd. b. 4.

#### Hymenosomidæ.

199. *Elamena gracilis* Borradaile.

*Elamena gracilis* Borradaile, in Gardiner, Fauna Maldive and Laccadive Arch., ii. pt. 2, 1903, p. 684, text-fig. 122.

Coetivy; 1 ♂, 1 ♀.

In these specimens the eyes do not project beyond the sides of the front; their dark corneæ are however visible in dorsal view through the thin carapace.

#### Inachidæ.

200. *Macropodia formosa*, sp. nov. (Fig. 1).

Cargados Carajos, 30 fms., Sta. B 17; 1 ♂ type.

A *Macropodia* with elongated body, short rostrum, extremely long slender legs, and with such scanty hairs that it appears nearly bare to the naked eye.

Cardiac tubercle largest; 3 gastric tubercles, of which the median is the largest; a strong branchial tubercle in line with the cardiac tubercle; hepatic region terminating in an acute tubercle; a minute tubercle on the antero-lateral margin of the branchial region.



Neck long; orbital arches unarmed; rostrum reaching to middle of second movable joint of antennæ, composed of two narrow, acute, flattened horns close together; median fissure extending back nearly to the distal end of the basal joint of the antennæ, and continued by a groove on the carapace to the posterior end of the orbits. In the single specimen the right horn is a little shorter than the left. Eye-stalks strongly enlarged at the corneal end where they are produced obliquely forward and upward in a tubercle. Pterygostomian region armed with a tubercle which shows in dorsal view behind the hepatic region. The buccal

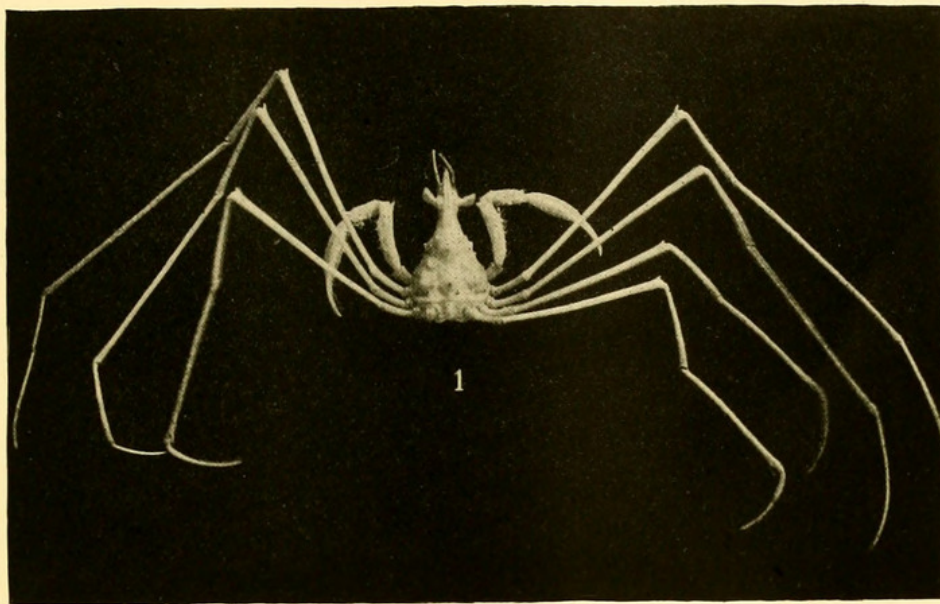


Fig. 1. *Macropodia formosa*, sp. nov.

cavity widens distally, and its anterior angles are so expanded that they too are visible in dorsal view, but in front of the hepatic region. The sternum bears a tubercle on either side just in front of the abdomen of the ♂.

Chelipeds of ♂ moderately stout, and with straight hairs on inner margins, and some curled hairs outside. Arm with a distal spine above, and a row of spinules on the inner and outer margins. Wrist and propodus with similar spinules arming both margins of the inner surface. Fingers about as long as palm, occludent margins denticulate, a slightly enlarged truncate tooth near base of dactylus, a very slight gape for basal third.

Legs extremely long, with a line of curled hairs on the anterior surface except on the dactyls, and a few straight hairs especially on the first two dactyls; merus with a short terminal spine on the anterior edge; first two dactyls nearly straight, last two a little more curved and finely spinulous on their proximal third. The third right leg is abnormally short.

*Dimensions of ♂ in mm.:*

C. l. 8.4.

C. b. 5.2.

R. l. (from front edge of orbit) 1.7.

Antenna, free portion, 4.5.

H. l. 3.5.



H. b. 1·6.

W. L. 1. 48 ; merop. l. 14 ; carp. l. 5·5 ; prop. l. 15 ; dact. l. 11·5.

W. L. 2. 45 ; merop. l. 13·6 ; carp. l. 6 ; prop. l. 13·4 ; dact. l. 9.

W. L. 3. 37·5 ; merop. l. 12 ; carp. l. 6·5 ; prop. l. 10·5 ; dact. l. 6.

W. L. 4. 32·3 ; merop. l. 10·5 ; carp. l. 6 ; prop. l. 8·6 ; dact. l. 5·3.

This species is distinguished from all others of the genus\* by its slenderness, scarcity of hair, and flattened rostral spines.

201. *Lambrachæus ramifer* Alcock.

*Lambrachæus ramifer* Alcock (1), p. 168, pl. 3, fig. 1 ; Illus. Zool. Investigator, Crust., pt. iv, 1896, pl. 18, fig. 3.

Amirante, 30 fms., Sta. E 21 ; 1 ♂.

The rostrum is broken off near its base. The specimen is somewhat larger than the figured type, being 7·6 mm. wide, and 10·4 mm. long from the anterior of the supraorbital spinules to the posterior margin. The carapace appears considerably rougher, and the tubercles of the third abdominal somite more prominent.

202. *Achæus lorina* (Adams and White).

*Achæus lorina* de Man, Abh. Senck. naturf. Ges., xxv. 1902, p. 645.

Amirante, 22—85 fms., Sta. E 10 ; 1 ♀ : 35 fms., Sta. E 14 ; 1 ♀ ovigerous. Seychelles, 39 fms., Sta. F 3 ; 3 ♂, 1 ♀ : 34 fms., Sta. F 8 ; 1 ♂, 1 ♀ ovigerous.

These specimens agree with de Man's description above cited.

203. *Achæus brevifalcatus*, sp. nov.

*Achæus affinis* Rathbun, 1906, p. 877 ; not *A. affinis* Miers, Alcock.

Seychelles, 39 fms., Sta. F 4 ; 1 ♀ : 44 fms., Sta. F 5 ; 1 ♂.

♂.—The body is much like that of *A. lorina*, but more elongate. The rostral horns

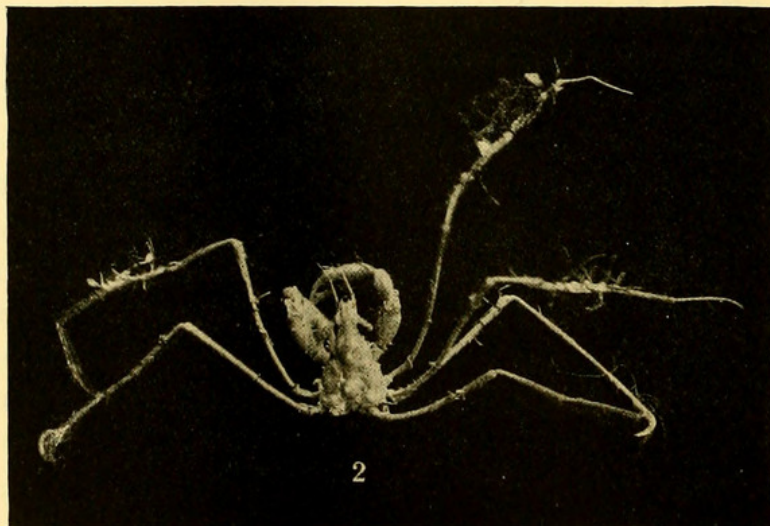


Fig. 2. *Achæus brevifalcatus*, sp. nov.

end in small slender spines ; the angle separating them is less than a right angle, is rounded at the base, and is continued posteriorly by a deep furrow. Upper margin of

\* Type, *M. rostrata* (Linnæus) = *Stenorhynchus rostratus* of authors.



orbit without spine. Median gastric elevation conical and blunt; lateral elevations low and small. The conical hepatic projection terminates in an outward-pointing cylindrical spine and bears a spinule on its anterior border. The margin between the orbits and the hepatic region shows several minute spinules. The cardiac region has 2 large tubercles side by side and a very small one on the posterior slope. There is a large low tubercle on the branchial region just in front of the base of the last leg; also a small sharp spine pointing downward and a little forward, just below the antero-lateral margin of the branchial region. A small pterygostomian spine shows slightly in dorsal view in the sinus between hepatic and branchial regions.

The long slender eye-stalks have a small tubercle on middle of anterior margin and an outward-pointing spinule above near end of eye. Basal joint of antenna spinulose; the next segment reaches a little beyond tips of rostrum; the third is as long as the first; movable portion of antenna half as long as carapace, and fringed on each side with long hair. A spinule on lower surface near angle of buccal cavity.

The last or coalesced segment of the abdomen bears a spinule at its middle.

Chelipeds stout in the full-grown males, fringed with long hair on their inner edge; arm with margins spinulose. Wrist with a row of curled hairs and spinules along the supero-external border, the proximal spinules largest. Hand with a few very small spinules above and some curled hairs on the outer surface. Immobile finger arched downward so that the fingers gape strongly in their basal half, the small truncate tooth at the base of the dactyl fits against, and distal to, an acute tooth on the end of the palm, pointing obliquely upward. Fingers fringed with long hair in the gape; the distal portions where the fingers meet are finely crenulate, and the immobile finger bears a tooth at the distal end of the gape. Dactyli of first two legs long and slightly curved; of last two legs short and very strongly curved. The first 3 of the long segments are furnished with curled hairs, while the propodi and dactyli have some long straight hairs, most numerous about the distal articulation of the propodi of the last two pairs.

*Dimensions of ♂ in mm.:*

C. l. 6.6.

C. b. 4.5.

R. l. (from front edge of orbit) 1.

Antenna, free portion, 3.3.

H. l. 3.7.

H. b. 1.7.

W. L. 1. 32.5; merop. l. 10.3; carp. l. 4; prop. l. 10; dact. l. 6.

W. L. 2. 32; merop. l. 10; carp. l. 4.5; prop. l. 9.4; dact. l. 5.8.

W. L. 3. 25; merop. l. 9.5; carp. l. 5; prop. l. 6.5; dact. l. 2.1.

W. L. 4. 19.5; merop. l. 7.6; carp. l. 4.8; prop. l. 4.6; dact. l. 1.8.

In the ♀, the chelipeds are slender and the fingers meet throughout their length.

Having been able, through the courtesy of Dr. Calman, to examine a cotype of *Achæus affinis* Miers (♂ from Thursday Island) in the British Museum, I find that the present species is quite distinct; the carapace more slender, the horns sharper, the chelipeds stouter with gaping fingers and the legs longer.



Differs from *A. lorina* in lacking a spine above the orbit, in the shorter falcate dactyli of the last 2 pairs, and the partially gaping fingers. In *A. lorina*, the falcate dactyli are half as long as their propodi, and the fingers meet throughout.

204. *Achæus inimicus*, sp. nov. (Plate 20, fig. 3).

Mauritius, 100—200 fms., Sta. A 1; 1 ♀ type.

An *Achæus* without a "neck," armed with slender spines including a supraorbital spine, and with the last two dactyli falcate.

Body short, high, triangular, pubescent, widening directly behind the orbits, 3 gastric spines, the posterior one long, erect, the two lateral much smaller, directed obliquely forward; 2 cardiac spines, side by side, suberect, a little divergent, shorter than the median gastric spine; 2 dorsal branchial spines, one long, above the base of the first leg and pointing strongly outward and a little upward; the other small, in front of the base of the last leg and directed outward, also a spinule near inner angle of region; supraorbital spine directed a little outward and forward; below the lateral margins of the carapace are 5 spines partly visible in dorsal view; 2 are hepatic, the posterior one with a bifid tip; 2 are branchial, while the middle spine is on the pterygostomian region. Rostral teeth ending in short, blunt spines, interspace rounded, median furrow extending back to posterior margin of orbit. A few spinules on anterior surface of eye-stalk, a tubercle above at extremity.

The basal joint of the antenna is spinulous, with the two distal spines larger. The surface of maxillipeds and abdomen is roughened with spinules. Chelipeds rather slender, furnished with straight hairs and spinules along the margins of their inner surface, 2 long spines on inner edge of wrist; fingers as long as palm, edges crenulate, meeting. Legs of moderate length (first one missing); dactyli long in relation to propodi.

*Dimensions* of ♀ in mm.:

C. l. 5.4.

C. b. (exclusive of spines) 3.4.

R. l. (from front edge of orbit) .5.

Antenna, free portion, 2.

H. l. 1.4.

H. b. .8.

W. L. 2. 14; merop. l. 4; carp. l. 2.3; prop. l. 3.8; dact. l. 2.7.

W. L. 3. 12; merop. l. 3.2; carp. l. 2.4; prop. l. 3; dact. l. 2.1.

W. L. 4. 10; merop. l. 3; carp. l. 2.2; prop. l. 2.7; dact. l. 1.7.

This species is quite unlike any hitherto described; its spines distinguish it readily from all but *A. spinosus* Miers, which has an elongated "neck," and no spines on the wrist.

205. *Achæus cadelli* Alcock.

*Achæus cadelli* Alcock (1), p. 171, pl. 5, fig. 1.

Amirante, 28 fms., Sta. E 6; 1 ♂, with the anterior part of the body, including the orbits, absent. Carapace, 2.7 mm. wide.

The species is remarkable for the great slenderness of its legs and the similarity of the four pairs of dactyli. The immovable finger of the chela has a large tooth at its proximal third, while the movable finger has two or three teeth not so large, situated near the palm.



206. *Achæopsis thomsoni* (Norman), var.

*Lispognathus thomsoni* Doflein, Brachyura "Valdivia," 1904, p. 75, and synonymy. Saya de Malha, 300—500 fms., Sta. C 20; 1 ♂, adult.

This specimen has parallel horns about  $\frac{1}{4}$  as long as remainder of carapace. It differs from typical specimens in having the anterior gastric and anterior branchial spines obsolete or reduced to low tubercles.

The species is very close to *A. spinulosus* Stimpson\*, which has shorter legs, described as "minutely spinulose above," but there is no indication, in description or figure, of the terminal spine on the merus joints. *A. spinulosus* is an inhabitant of shallower water (10 fathoms in Simons Bay, Cape of Good Hope).

207. *Oncinopus aranea* de Haan.

*Oncinopus aranea* Alcock (1), p. 183.

Cargados Carajos, 30 fms., Sta. B 14; 1 ♀: 30 fms., Sta. B 23; 1 ♂. Providence, 50—78 fms., Sta. D 4; 1 ♀. Amirante, 34 fms., Sta. E 9; 2 ♂: 25—80 fms., Sta. E 11; 4 ♂, 6 ♀ (2 ovig.): 20—25 fms., Sta. E 13; 1 ♂, 1 ♀: 30 fms., Sta. E 21; 1 ♀. Seychelles, 39 fms., Sta. F 3; 1 ♂, 2 ♀ (1 ovig.): 39 fms., Sta. F 4; 1 ♀: 34 fms., Sta. F 8; 4 ♂, 3 ♀ (1 ovig.): 37 fms., Sta. F 9; 1 ♀, measuring 9.3 mm. long in the carapace.

The unbroken antennæ in one case measure  $\frac{1}{2}$  length of carapace; the slender flagellum is often broken off near the peduncle.

208. *Æpinus indicus* (Alcock).

*Apocremnus indicus* Alcock (1), p. 188, pl. 4, figs. 2, 2 a.

Amirante, 22—85 fms., Sta. E 10; 1 ♀, mature, with the abdomen filled with a Rhizocephalid parasite. Seychelles, 39 fms., Sta. F 3; 1 ♀, immature.

In both these specimens the postocular spine is present; there is no cardiac spine, but a tubercle in its place; a low blunt gastric spinule or tubercle; the 7 segments of the abdomen (♀) are distinct.

#### PSEUDOCOLLODES, gen. nov.

Carapace subtriangular. Rostrum short, bifid. An interantennular spine, visible from above. Eyes retractile against a strong postocular tooth. Basal antennal joint very narrow, spinous, less advanced than rostrum. Maxillipeds fitting loosely in buccal cavity. Merognath elongate-oval, narrower than ischiognath, the latter strongly advanced at its inner angle. Chelipeds of moderate size. First pair of legs extremely long; remaining legs diminishing rapidly in length; dactyli elongate. In both sexes the last 2 segments of abdomen are fused.

Type, *Pseudocollodes complectens*, sp. nov.

This genus differs from *Collodes* Stimpson† in its interantennular spine, form of merognath, greater length of first leg, in the 6 instead of 5 abdominal segments of the ♀; from *Euprognatha* Stimpson‡ in the lesser prominence of the basal antennal segment and the form of the maxilliped.

\* Smithson. Misc. Coll., xlix. 1907, p. 21, pl. 3, figs. 5, 5 a.

† Ann. Lyc. Nat. Hist. N. Y., vii. 1860, p. 193.

‡ Bull. Mus. Comp. Zool., ii. 1871, p. 122.



209. *Pseudocollodes complectens*, sp. nov. (Plate 20, fig. 4).

Seychelles, 34 fms., Sta. F 7; 4 ♂, 3 ♀ ovig. (1 ♂ is type).

The body and appendages are covered with a short pubescence which is inconspicuous and in no way obscures the markings. Length of carapace little greater than width; posterior margin very broad, concave. Dorsal surface with 4 cylindrical spines, 1 gastric, 1 cardiac, 1 on each branchial region; 4 tubercles in a transverse row on gastric region, and one on each branchial region above origin of last leg. The carapace is also roughened with very fine spinules on the higher parts and near the lateral margins. The 2 frontal teeth are acute and curve inward. Interantennular spine less advanced than front. Three longitudinal furrows on front. Basal antennal joint with 2 rows of spinules, the distal inner spine a little longer; distal end visible from above, but less advanced than base of frontal sinus. Antenna longer than width of front. A small emargination separates the orbital arch from the postocular tooth, the end of which curves strongly forward. Hepatic region with 2 lateral prominences, the anterior one angular and well advanced. Eyes with corneæ enlarged, a tubercle at the summit. Orbit partially defined below by a short spinulous crest. Abdomen with a median carina in both sexes, abdomen of ♀ smooth, of ♂ spinulous as is also the sternum.

Chelipeds about  $1\frac{1}{2}$  times as long as carapace, spinulous and on the margins more or less spinous. Fingers and palm subequal in length, palm inflated in ♂, fingers compressed and curved, minutely gaping in ♂. First leg  $3\frac{1}{2}$  times as long as carapace; last 3 legs noticeably slenderer than the first; second reaching to end of propodus of first; third nearly to end of propodus of second; fourth to middle of carpus of second. No one specimen is provided with all its legs.

*Dimensions:*

	♂	♀	♂		♂	♀	♂
C. l.	9.0	11.8	7.1	Dact. 2	5.2*	6.3	4.4
C. b.	8.4	11.1	6.4	W. L. 3			16.0
W. L. 1	36.0	39.5	29.0	Merop. 3			6.2
Merop. 1	11.0	11.7	8.0	Carp. 3			2.0
Carp. 1	4.8	5.0	3.5	Prop. 3			4.1
Prop. 1	9.6	10.5	8.0	Dact. 3			3.0
Dact. 1	9.0	10.3	7.2	W. L. 4	15.5	18.0	
W. L. 2	28.0*	30.3	21.0	Merop. 4	5.5	5.5	
Merop. 2	10.6	10.4	7.5	Carp. 4	2.2	2.3	
Carp. 2	3.2	3.7	2.5	Prop. 4	3.7	4.5	
Prop. 2	6.7	7.0	5.2	Dact. 4	3.0	4.2	

210. *Xenocarcinus tuberculatus* White.*Xenocarcinus tuberculatus* Alcock (1), p. 192.

(a) Cargados Carajos, 30 fms., Sta. B 17; 1 ♀ without legs. (b) Diego Garcia 14 fms.; 1 ♀ ovigerous.

*Dimensions* in mm.: (a) C. l. 9.3, rostrum (to anterior edge of orbit) 2.7. (b) C. l. 9.7, rostrum (to anterior edge of orbit) 3.5.

\* Tip broken off.



The carapace of these specimens is very smooth, there being only an enlargement on the outer margin of the branchial region, while the gastric and cardiac regions are separately tumid. Rostrum strongly tapering (most slender in *b*), but spreading again at the horns. A minute spinule in advance of the eye and two spinules on the basal antennal joint, one at the angle, the other behind it; 3 or 4 spinules on pterygostomial region. The projections on upper border of arm and merus joints of legs are spinules except for 1 or 2 nodules on the last pair.

211. *Sphenocarcinus cuneus* (Wood-Mason).

*Sphenocarcinus cuneus* Alcock (1), p. 193; Illus. Zool. Investigator, Crust., pt. IV, 1896, pl. 21, figs. 1, 1 *a*.

Providence, 70 fms., Sta. D 7; 1 ♀ ovigerous.

*Dimensions* in mm.: C. l. 27.2; rostrum (from anterior margin of orbit) 13.2.

Cardiac islet transverse, more than twice as wide as long; inner margin of branchial islet deeply concave at middle third; these islets have very much the shape of those in *Oxypleurodon stimpsoni* Miers\*. The carinae on the legs ascribed to the species are, in this specimen, evident on the carpal segments as blunt ridges, on the meral and propodal segments they are very obscure; this may be due to the greater size of the specimen.

212. *Huenia proteus* (de Haan).

*Huenia proteus* Alcock (1), p. 195.

Amirante, 25—80 fms., Sta. E 11; 2 ♀ (each with a Rhizocephalid parasite filling the abdomen): 20—25 fms., Sta. E 13; 3 ♂ (one small, with relatively large Rhizocephalid parasite). Seychelles, 34 fms., Sta. F 8; 2 ♂, 1 ♀ (the latter with Rhizocephalid parasite filling the abdomen).

The males resemble most fig. 4, on pl. 4 of Adams and White's "Crust. Samarang," while the females are of the form of fig. 6 of the same plate.

213. *Simocarcinus simplex* (Dana).

*Simocarcinus simplex* Alcock (1), p. 196.

Coetivy; 1 ♂. C. l. 10 mm., rostrum (from anterior border of orbit) 3.7 mm.

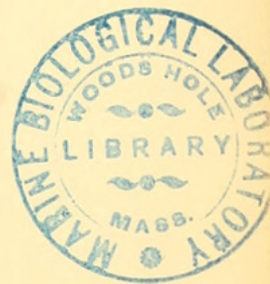
Three tubercles on gastric region; a lobe at either end of posterior margin of carapace. Rostrum straight and horizontal. Chelipeds feeble.

214. *Menæthius monoceros* (Latreille).

*Menæthius monoceros* Alcock (1), p. 197.

Diego Garcia, 14 fms.; 1 ♂. Cargados Carajos, reef; 1 ♀ immature. Saya de Malha, 29 fms., Sta. C 19; 1 ♀ with Rhizocephalid. Peros, Coin; 1 ♀. Salomon; 1 ♀ immature. Egmont, lagoon, 6—7 fms.; 1 ♂. Amirante, 25—80 fms., Sta. E 11; 4 ♂, 3 ♀. Seychelles, 31 fms., Sta. F 2; 1 ♂, 1 ♀ with eggs: 34 fms., Sta. F 8; 1 ♂, 1 ♀ with eggs. Praslin, reef; 3 ♀.

\* *Challenger* Brachyura, 1886, p. 38, pl. 6, figs. 1—1 c.





Of the 8 males 5 are like Dana's pl. 4, fig. 7 *a*; 2 from Amirante and one from station F 2 are like pl. 5, fig. 3. Ten of the 12 females are like pl. 4, fig. 7 *c*; one female from Amirante and one from Saya de Malha have a large anterior lateral branchial lobe and a short rostrum.

215. *Scyramathia pulchra* (Miers).

*Scyramathia pulchra* Alcock (1), p. 202.

*Scyramathia livermorei* Alcock, Illus. Zool. Investigator, Crust., pt. III, pl. 14, fig. 3.

Saya de Malha, 125 fms., Sta. C 5; 2 ♀ ovigerous. Seychelles, 34 fms., Sta. F 7; 1 ♂.

*Dimensions* in mm.: (*a*) ♀, C. l. on median line 18.3, l. entire 27.6, b. entire 19.7, b. without spines 13, b. between tips of horns 8, l. of horns 9.9. (*b*) ♀, C. l. on median line 18.2, l. entire 25.8, b. entire 19.2, b. without spines 13, b. between tips of horns 5, l. of horns 7.7 (tips broken off). (*c*) ♂, C. l. on median line 12.6, l. entire 18.2, b. entire 14, b. without spines 8.1, b. between tips of horns 6, l. of horns 6.8. The horns of *b* are much less divergent than those of *a*.

216. *Halimus inermis*, sp. nov. (Plate 20, fig. 6).

Cargados Carajos, 30 fms., Sta. B 8; 1 ♂, with slender chelipeds: 30 fms., Sta. B 14; 1 ♂, with slender chelipeds: 30 fms., Sta. B 15; 1 ♂, 1 ♀ immature; the ♂ has slender chelipeds, its left branchial region has a large spherical excrescence caused by a Bopyrid parasite: 30 fms., Sta. B 17; 1 ♀ immature, with the horns absent; the bases of the horns are smoothly rounded and polished. Saya de Malha, 47 fms., Sta. C 12; 1 ♂, with slender chelipeds. Amirante, 28 fms., Sta. E 6; 4 ♂, 4 ♀, 1 juv.; 2 ♂ have strong chelipeds, one is the type; 2 ♀ are ovigerous: 32 fms., Sta. E 12; 1 ♂, with chelipeds of intermediate size and gape. Seychelles, 39 fms., Sta. F 3; 3 ♂, 3 ♀, 11 juv.: 2 of the males have slender chelipeds, the other is soft-shelled and has stout chelipeds; one of the females bears eggs, the other two have shed their eggs: 39 fms., Sta. F 4; 1 ♀ ovigerous: 44 fms., Sta. F 5; 3 ♂, one with strong chelipeds: 44 fms., Sta. F 6; 1 ♂, with weak chelipeds, 1 ♀: 34 fms., Sta. F 7; 1 ♀ immature: 34 fms., Sta. F 8; 1 ♀ with eggs, 1 ♀ immature, 1 juv.: Praslin, reef; 1 ♀ ovigerous.

Adult male.—Body and legs tomentose. Carapace subpyriform, rather high; regions well defined, excepting the hepatic from the gastric region. Denuded carapace pitted, pits separated. Dorsal surface without spines or tubercles. Two tubercles on pterygostomial region in line with projecting angle of buccal cavity, and not visible from above. Rostral horns horizontal, divergent,  $\frac{1}{4}$  as long as carapace on median line; space between tips nearly as long as each horn. Supra-ocular cave produced anteriorly in a strong tooth, posterior angle lobiform. Anterior margin of postocular tooth sinuous. Antennæ slightly exceeding rostral spines; the outer anterior angle of the basal segment is produced anteriorly in a stout tooth visible in dorsal view; outer border partly convex; a tubercle just outside the green gland.

Chelipeds rather stout; palm  $1\frac{1}{2}$  times as long as wide; 2 tubercles on wrist, one on outer surface, one on inner edge; two tubercles on hand on proximal portion of outer surface, one just below upper margin, the other just above lower margin. Fingers widely



gaping in the basal half, the immovable finger bowed downward; a tooth near the base of the dactyl; both fingers minutely denticulated. Dactyli of legs entire.

In the ♀ the horns are proportionally shorter, and in the ♀ and undeveloped ♂ the chelipeds slenderer, the fingers nearly meeting at base.

*Dimensions* in mm.:

♂, Sta. E 6, C. l. med. 15.5, C. l. entire 19.3, C. b. 10.4, Horns l. 4.2, Ch. l. 17.8, W. L. 1. l. 28.

♀, Sta. E 6, C. l. med. 13.8, C. l. entire 16, C. b. 9.2, Horns, l. 2.4, Ch. l. 12.2, W. L. 1. l. 18.6.

The species has great resemblance to *H. irami* Laurie\*, which is also unarmed, but has a tooth on the orbital border between the preocular and postocular lobes, and horns half as long as the rest of the carapace.

The "small and young female dredged [by the *Challenger*] at the Philippines in 18 fathoms, lat. 11° 37' 0" N., long. 123° 31' 0" E. (Station 208)" and referred by Miers† to *Hyastenus diacanthus*, is probably *Halimus inermis*. The orbits, antennæ and pterygostomian region are similar to those of *H. diacanthus*, but the latter has subparallel horns, and tubercles and spines on the carapace; moreover it is a large species while *H. inermis* is a small one.

217. *Halimus elongatus* Ortmann.

*Hyastenus diacanthus* Miers, Proc. Zool. Soc. London, 1879, p. 26 (part; immature ♀, near Cape Sima, 18 fathoms).

*Hyastenus diacanthus* var. *elongata* Ortmann, Zool. Jahrb. Syst., vii. 1893, p. 55.

Amirante, 29 fms., Sta. E 1; 1 ♂ (a): 34 fms., Sta. E 9; 1 ♂ (b), 1 ♀ juv.

The largest male (a) is only 9.3 mm. long, 6 mm. wide, has one horn completely broken off and the other broken not far from the base. The carapace is more oblong than in *H. diacanthus*, and is without spines or tubercles except a vestige of one on the summit of the gastric region; setæ awl-shaped. Orbital and antennal region similar to that of *H. diacanthus*. The chelipeds have the appearance of belonging to an adult; palm twice as long as wide, a tubercle at the middle of the upper margin; fingers gaping for half their length, dentate, the proximal tooth of the dactyl being slightly larger. Dactyli of legs armed with spines visible to the naked eye and increasing in size toward the tip of the dactyl.

(b) is 9.1 mm. long, 5.6 wide, horns 4.2 mm.

218. *Halimus borradailei* Rathbun (Plate 20, fig. 5).

*Halimus borradailei* Rathbun, Mem. Mus. Comp. Zool., xxxv. 1907, p. 64.

Cargados Carajos, 28 fms., Sta. B 20; 3 ♂. Amirante, 20—25 fms., Sta. E 13; 1 ♀ ovigerous.

The female is larger than that taken at Funafuti, but considerably smaller than Borradaile's figured specimen from Rotuma.

\* In Herdman, Ceylon Pearl Fisheries, pt. v, Suppl. Rept. XL, Brachyura, 1906, p. 379, pl. 1, figs. 4, 4a.

† *Challenger* Brachyura, 1886, p. 57.



Female.—Tomentose, with a few longer hairs. A tubercle on the branchial margin at the widest part of the carapace; two granules on the anterior part of the branchial region, 1 on the hepatic margin, five on the gastric region. Horns slender, strongly divergent, inclined downward, slightly curved, nearly as long as carapace (in middle line). Supra-ocular eave with a distinct but small anterior spine, outer margin oblique, almost straight. Anterior edge of postocular cup straight. Antennal spine scarcely visible in dorsal view. Antenna reaching about  $\frac{5}{6}$  of length of rostrum. A spine at distal end of arm and of merus joints of legs; dactyli of legs spinulose.

*Dimensions* in mm.: ♀, C. l. med. 8, C. b. 5.2, R. l. 6. ♂, C. l. med. 4.8, C. b. 3.2, R. l. 4.2.

219. *Halimus uncifer* (Calman) (Plate 20, fig. 7).

*Hyastenus uncifer* Calman, Proc. Zool. Soc. London, 1909, p. 712, pl. 72, figs. 8, 9.

Diego Garcia, 12 fms.; 1 ♂.

Thinly tomentose. Carapace subpyriform, regions well defined, areolated. A stout curved intestinal spine, a smaller curved spine on the branchial margin and a small straight spine on the hepatic margin. On the gastric region two median tubercles and in a curved line with the anterior one 4 other tubercles; on the branchial region two tubercles arranged longitudinally, the posterior one in transverse line with the marginal spine, the anterior one has a granule in front of it.

Rostral horns very slender, about  $1\frac{1}{4}$  times as long as carapace, well separated at base, slightly curved, nearly horizontal, their middle third beset with curled hairs. Interorbital space with 3 deep grooves. Supraocular eave oblique, anterior angle spiniform, posterior angle tuberculiform and widely separated from the shallow postocular cup. Basal joint of antenna with an antero-external spine, outer margin sinuous; flagellum not reaching middle of horn. Pterygostomian region trispinose, middle spine smallest.

The chelipeds reach beyond middle of rostrum, are moderately stout; arm and wrist each with a distal spine, three spines on outer surface of wrist; palm increasing distally,  $2\frac{3}{4}$  times as long as wide; fingers gaping in basal half, where there is a large tooth on the dactyl, and the immovable finger is arched. The merus joints of the legs bear a stout tooth at their extremity; and the dactyli are armed with unusually long and very conspicuous spines, which are directed proximally.

Horns marked with 3 or 4 broad bands of colour.

*Dimensions* in mm.: C. l. med. 9.8, C. b. incl. spines 6.5, R. l. 12.

This species in its few protuberances and length of horns resembles *H. brockii* de Man\*, but the carapace is less ovate, the postocular lobe more transverse, while the rake-like dactyli of the legs are unique.

220. *Halimus tenuicornis* (Pocock).

*Hyastenus tenuicornis* Alcock (1), p. 215.

Cargados Carajos, 30 fms., Sta. B 3; 1 ♀ ovig.: 20—25 fms., Sta. B 17; 1 ♂. Salomon; 1 ♂ juv. Egmont, reef; 1 ♂ juv. Amirante, 29 fms., Sta. E 2; 2 ♂, 1 ♀ ovig.:

\* Arch. f. Naturg., liii. 1887, p. 221, pl. 7, fig. 1.



28 fms., Sta. E 6; 1 ♀ ovig.: 34 fms., Sta. E 9; 2 ♂, 4 ♀ (3 ovig.): 22—85 fms., Sta. E 10; 1 ♀ ovig.: 25—80 fms., Sta. E 11; 5 ♂, 11 ♀ (4 immature, 4 ovigerous, 3 with Rhizocephalid in abdomen): 32 fms., Sta. E 12; 3 ♂ (1 juv.), 3 ♀ (2 ovig., one with Rhizocephalid): 20—25 fms., Sta. E 13; 1 ♂, 1 ♀ immature: 35 fms., Sta. E 14; 2 ♂, 2 ♀ (1 ovig.): 35 fms., Sta. E 15; 4 ♀ (2 ovig., 2 with Rhizocephalid): 39 fms., Sta. E 16; 2 ♂, 1 ♀ (with Rhizocephalid): 20—44 fms., Sta. E 25; 2 ♀ ovig. Seychelles, 39 fms., Sta. F 3; 1 ♂ soft shell: 34 fms., Sta. F 8; 5 ♂, 5 ♀ (3 ovig.).

In this series the horns vary in the male from the same length as the carapace to  $\frac{3}{4}$  of the carapace; and in the female from  $\frac{4}{5}$  to  $\frac{3}{5}$  of the length of the carapace. In the very young, the postocular lobe appears like a bifid spine, being much more slender in top view and not so flattened on the side.

Many of the specimens are disguised by a growth of sponges, tunicates, hydroids or alcyonarians.

221. *Naxioides mammillata* (Ortmann).

*Naxia mammillata* Ortmann, Zool. Jahrb. Syst., vii. 1893, p. 56, pl. 3, fig. 7.

Salomon Bank, 60—120 fms.; 1 ♂ juv. C. l. median, 14.7 mm., C. b. 9 mm. (exclusive of spines).

The left horn is broken off at its middle, the right one near the tip. The rostral tooth is situated on the upper surface near the inner margin, and is directed upward, forward and a little inward, but not so as to project beyond the margin.

222. *Naxioides hirta* A. Milne Edwards.

*Naxia hirta* Alcock (1), p. 218.

Seychelles, 34 fms., Sta. F 8; 2 ♂. C. l. median 20.3 mm., C. l. total 27.2 mm., C. b. (without spines) 13.7 mm., W. L. 1. 52 mm.

223. *Naxioides spinigera* Borradaile (Plate 20, fig. 8).

*Naxioides spinigera* Borradaile, in Gardiner, Fauna Maldive and Laccadive Arch., ii. pt. 2, 1903, p. 687, pl. 47, fig. 3.

Amirante, 35 fms., Sta. E 14; 2 ♂: 39 fms., Sta. E 16; 1 ♂, 3 ♀ ovigerous. Seychelles, 39 fms., Sta. F 3; 4 ♂ juv., 7 ♀ (2 ovigerous, 5 juv.): 39 fms., Sta. F 4; 1 ♂: 34 fms., Sta. F 8; 6 ♂ (2 juv.), 3 ♀ (1 ovig., 1 juv.): 37 fms., Sta. F 9; 1 ♂.

Dimensions in mm.:

	♂ (F 8)	♀ (E 16)
C. l. median	17.8	16.2
C. l. entire	25.3	21.6
C. b. (without spines)	12.0	10.9
W. L. 1	52.0	

224. *Hoplophrys oatesii* Henderson.

*Hoplophrys oatesii* Alcock (1), p. 233.



Providence, 50 fms., Sta. D 11; 1 ♂. Amirante, 39 fms., Sta. E 16; 1 ♂.

The largest specimen (Sta. D 11) is 8 mm. long. Neither shows any bifurcation of the lateral branchial spine.

225. *Tylocarcinus styx* (Herbst).

*Tylocarcinus styx* Alcock (1), p. 235.

Salomon; 2 ♂, 5 ♀ (1 adult): Egmont, reef; 1 ♀ ovigerous. Praslin, reef; 1 ♀ ovigerous. Coetivy; 7 ♂, 7 ♀ (1 juv.).

226. *Chlorinoides longispinus* (de Haan).

*Paramithrax* (*Chlorinoides*) *longispinus* Alcock (1), p. 242.

Providence, 29 fms., Sta. D 3; 1 ♂.

C. l. from posterior margin to end of horn 12 mm., C. b. without spines 6.7 mm. The knobs on the spines are very slight.

227. *Schizophrys aspera* (Milne Edwards).

*Schizophrys aspera* Alcock (1), p. 243.

Salomon; 1 ♀ ovigerous. Amirante, 29 fms., Sta. E 2; 1 ♂: 34 fms., Sta. E 9; 1 ♂ juv.: 25—80 fms., Sta. E 11; 2 ♂, 1 ♀ ovig., 4 juv.: 20—25 fms., Sta. E 13; 1 ♂, 3 juv.: 30 fms., Sta. E 21; 1 ♂, 1 ♀ ovig. Seychelles, 37 fms., Sta. F 9; 1 juv.

228. *Cyclax suborbicularis* (Stimpson).

*Cyclax* (*Cyclomaia*) *suborbicularis* Alcock (1), p. 245.

*Mithrax suborbicularis* Stimpson, Smithson. Misc. Coll., xliv. 1907, p. 18, pl. 4, fig. 1.

Peros, Coin; 1 ♀ ovig. Salomon; 1 ♂. Egmont, reef; 1 ♀ ovig. Praslin, reef; 2 ♂, 1 ♀ ovig. Coetivy; 5 ♂ (2 juv. and soft shell), 2 ♀ ovig.

229. *Ophthalmias cervicornis* (Herbst).

*Stenocionops cervicornis* Alcock (1), p. 248.

Amirante, 29 fms., Sta. E 2; 1 ♂. Seychelles, 34 fms., Sta. F 8; 1 ♀ juv.

Carapace behind the orbits suboval, very uneven, tuberculate, tufts of hairs on many of the tubercles and on the horns; a sharp supero-posterior margin forms a prominent overhanging intestinal lobe. Rostral horns slender,  $\frac{2}{5}$  as long as rest of carapace, subparallel, bowed slightly outwards, tips recurved upward. A long slender supra-ocular spine is broken off in our specimens. Basal antennal joint armed with two blunt spines, one at anterior angle, the other on outer margin and directed downward and backward. A strong spine just outside the green gland, another on the pterygostome; subhepatic region tuberculous. Extremities of epistome dilated, overhanging the buccal cavity which is strongly widened anteriorly; exognath longitudinally grooved; first four segments of endognath deeply hollowed; condyle at distal end of ischium a smooth oval lobe, inner margin of ischium denticulate; merus strongly produced at the outer angle, inner margin deeply incised; palpus lamellate.

Chelipeds of male as long as carapace and half the rostrum, moderately stout and tuberculate; fingers  $\frac{3}{4}$  as long as palm, which is twice as long as wide. First leg  $1\frac{2}{5}$  times



as long as carapace with rostrum; legs decreasing rapidly in length, furnished with tufts of curled hair.

*Dimensions* of ♂ in mm.: C. l. median 25, C. l. including horns 34.7, C. b. 16.8, Ch. l. 29.2, W. L. 1. 48, W. L. 2. 35.3, W. L. 3. 30.4, W. L. 4. 23.3.

230. *Micippa margaritifera* Henderson.

*Micippa margaritifera* Alcock (1), p. 253; Illus. Invest., Crust., 1898, pl. 35, figs. 3, 3a.

Cargados Carajos, 20—25 fms., Sta. B 17; 1 ♂. Providence, 39 fms., Sta. D 1; 1 ♀ ovig. Amirante, 28 fms., Sta. E 6; 1 ♀ ovig.: 30 fms., Sta. E 21; 1 ♂. Seychelles, 34 fms., Sta. F 8; 2 ♀ ovig.

In all these specimens the outer of the three posterior "pearls" are very much smaller than the median one and inconspicuous.

In describing *Lophomicippa limbata*\*, its relationship to *M. parca* Alcock was overlooked. The principal difference lies in the absence from the carapace of *M. limbata* of the coarse granulation plainly visible in *M. parca*; instead there are numerous punctæ not visible to the naked eye. It is possible that the single punctate specimen from the reef at Makemo is really *M. parca* with the granules entirely worn off.

231. *Cyphocarcinus minutus* A. Milne Edwards.

? *Cyphocarcinus minutus* Alcock (1), p. 254.

*Cyphocarcinus minutus* Nobili, Bull. Sci. France et Belgique, xl. 1906, p. 109.

Amirante, 25—80 fms., Sta. E 11; 1 ♂. Coetivy; 1 ♀ ovig.

These specimens are very different from each other; the male corresponds to the description by Nobili (*loc. cit.*), but the female has a much more triangular carapace, broader behind; the rostrum is shorter and the horns nearer together, contiguous at their middle, separated behind by a very narrow slit (overlooked in A. Milne Edwards' figures, pl. 19, figs. 8 and 9, Nouv. Arch. Mus. Hist. Nat., Paris, iv. 1868), and at the extremities slightly diverging; the legs are shorter and broader, the merus of the first leg does not reach the base of the spine at the angle of the basal antennal segment, while in the male, the same merus reaches quite to the tip of the spine.

In Edwards' figs. 7 and 10 (*op. cit.*) the gastric region is represented as overhanging the front, which it does not do in either of the "Sealark" specimens.

The male from Amirante has a long cylindrical sponge projecting horizontally from the rostrum, as noted by Nobili (*op. cit.*, p. 111).

*Dimensions* in mm.: C. l. ♂ 7.0, ♀ 7.3, C. b. ♂ 2.7, ♀ 3.8.

232. *Macrocaloma nummifer* Alcock.

*Macrocaloma nummifer* Alcock (1), p. 255, pl. 4, fig. 4.

Saya de Malha, 55 fms., Sta. C 15; 2 ♂, 4 ♀ ovig. Amirante, 29 fms., Sta. E 2; 1 ♂: 25—80 fms., Sta. E 11; 1 ♀ ovig.: 30 fms., Sta. E 21; 2 ♂. Seychelles, 31 fms., Sta. F 2; 1 ♂: 44 fms., Sta. F 6; 1 ♂: 34 fms., Sta. F 8; 1 ♂, 1 ♀.

\* Rathbun, 1907, p. 65.



The immature males, as well as the females, have a more flexed rostrum than the adult males. The protuberances on the outer and lower margins of the arm, and some of those on the outer surface of the wrist, are short, stout spines.

233. *Micippoides angustifrons* A. Milne Edwards (Plate 18, fig. 14).

*Micippoides angustifrons* A. Milne Edwards, Jour. Mus. Godeffroy, iv. 1873, p. 78[2], pl. 1, figs. 2—2 c.

Coetivy; 1 ♂.

Surface, except ends of fingers, covered with coarse tubular setæ, mixed with longer curved hairs of which there are many fine ones on the carapace, especially near the lateral margins, and very coarse ones on the margins of front, antennæ and legs. Carapace sub-triangular, with the lateral angles more rounded than shown in Edwards' figure 2 (*op. cit.*), regions well delimited except the hepatic; a small areolet is situated on the inner side of the branchial region contiguous to the posterior half of the cardiac region. Front less deflexed than in Edwards' figure 2 c. Rostral horns about  $\frac{1}{6}$  length of remainder of carapace, upturned near the extremity, tips incurved. Basal joint of antenna no broader than long, most advanced at inner angle, unarmed; remainder of antenna visible beside rostrum; first movable joint twice as long as second, together they exceed the flagellum. Postocular lobe set off by a deep gap, above and below; supraocular eave entire. The orbit is much less tubular than in *Macrocaloma*.

Chelipeds equal to median length of carapace, stoutish, palms inflated, narrowed distally,  $1\frac{1}{3}$  times as long as fingers, which have denticulated edges and gape in their basal half. The fringes of curled hair on the legs make them appear stouter and more prismatic than they really are; the first pair reaches beyond the cheliped by the length of the dactylus.

There are two or three tubercles on the pterygostome. The merus of the outer maxillipeds is not so strongly produced outward as in Edwards' fig. 2 b (*op. cit.*). The seven segments of the male abdomen are distinct.

*Dimensions* of ♂ in mm.: C. l. median 11, R. l. 2.3, C. b. 8.2, Ch. l. 11, W. L. 1. 15.6, W. L. 2. 11.8, W. L. 3. 10.2, W. L. 4. 9.2.

### Parthenopidæ.

234. *Parthenope* (*Parthenope*) *longimanus* (Linnæus).

*Lambrus longimanus* Alcock (1), p. 260.

Cargados Carajos, 30 fms., Sta. B 13; 1 ♂, 1 ♀: 30 fms., Sta. B 14; 1 ♂ juv., 1 ♀ juv.: 30 fms., Sta. B 15; 3 ♂: 30 fms., Sta. B 16; 1 ♂ juv. Saya de Malha, 47 fms., Sta. C 12; 1 ♂.

In most of these specimens, none of which exceeds 17 mm. in length, there is an acute granule on the posterior margin of the carapace between the outer and the median pair of tubercles.

235. *Parthenope* (*Rhinolambrus*) *longispinis* (Miers).

*Lambrus* (*Rhinolambrus*) *longispinis* Alcock (1), p. 266.



Amirante, 34 fms., Sta. E 9; 1 juv.: 25—80 fms., Sta. E 11; 2 ♂: 20—25 fms., Sta. E 13; 1 ♂: 30 fms., Sta. E 21; 1 ♀ ovig. Seychelles, 31 fms., Sta. F 2; 1 juv.: 39 fms., Sta. F 3; 1 ♀: 34 fms., Sta. F 8; 4 ♂, 1 ♀; in two of these males the left cheliped, and in one case the first and second legs also, were broken off at the basis before shedding and the ischium is represented by a soft-skinned stump.

In all the specimens (except where the rostrum has evidently been broken off) the rostrum narrows suddenly and bears two pairs of spinules on the narrow portion.

236. *Parthenope (Rhinolambrus) turriger* (Adams and White).

*Lambrus (Rhinolambrus) turriger* Alcock (1), p. 269.

Seychelles, 39 fms., Sta. F 3; 2 ♂, 2 ♀: 34 fms., Sta. F 8; 1 ♂: 37 fms., Sta. F 9; 2 ♂.

*Dimensions* of ♂, Sta. F 9, in mm.: C. l. on median line 12.1, C. b. 11.3, Ch. l. 64.6, Arm l. 27.2, H. l. 26.6, W. L. 2. 26.3.

237. *Parthenope (Aulacolambrus) hoplonotus* (Adams and White).

*Lambrus (Aulacolambrus) hoplonotus* Alcock (1), p. 273.

Cargados Carajos, 20—25 fms., Sta. B 17; 1 ♂. C. l. 5.5 mm., C. b. 8.3 mm.

238. *Parthenope (Pseudolambrus) calappoides* (Adams and White) (Plate 18, fig. 12).

*Lambrus (Parthenolambrus) calappoides* Alcock (1), p. 275.

Saya de Malha, 55 fms., Sta. C 15; 2 ♀. Providence, 39 fms., Sta. D 1; 1 ♀. Amirante, 34 fms., Sta. E 9; 1 ♂: 39 fms., Sta. E 16; 2 ♀. Seychelles, 34 fms., Sta. F 8; 1 ♂, 2 ♀.

The series shows some variability, but in the main corresponds to Laurie's "var. *calappoides*\*." The two females from F 8 approach "var. *confragosus*." In all the specimens, however, the tubercles on inner border of arm are well developed and situated near together at middle of margin.

It may be noted that in typical *calappoides*, as figured by Adams and White, the post-hepatic notch is well indicated.

The largest specimen (♀, Sta. E 16), 22.2 mm. long, 27.2 mm. broad, has the principal tubercles of the carapace very prominent and nodular, inconspicuously granulated, the median gastric tubercle bifid in the median line. In the accompanying ♀, 17.8 mm. long, 23.3 mm. broad, the characters are similar but less developed.

239. *Parthenope (Pseudolambrus) harpax* (Adams and White).

*Lambrus (Parthenolambrus) harpax* Alcock (1), p. 278.

Amirante, 30 fms., Sta. E 21; 1 ♀ juv. Seychelles, 34 fms., Sta. F 8; 4 ♂, 1 ♀.

Largest ♂, C. l. 20.4 mm., C. b. 22.1 mm., Ch. l. 50.5 mm.

240. *Parthenope (Pseudolambrus) plana*, sp. nov. (Plate 20, fig. 10).

Amirante, 25—80 fms., Sta. E 11; 1 ♂ adult, 1 ♂ juv., 2 ♀ juv.; the adult male lacks chelipeds: 30 fms., Sta. E 21; 1 ♀ type.

\* In Herdman, Ceylon Pearl Fisheries, pt. v, 1906, Suppl. Rept. XL, p. 390.



This species is as flat as a *Cryptopodia*, but the carapace is shaped much as in *P. harpax*.

Female.—Carapace semi-elliptical, a little broader than long, nearly smooth. Gastric and cardiac regions granulate; an obscure, oblique ridge on the branchial region, which does not reach the postero-lateral angles. Postero-lateral and posterior margins in almost a transverse line.

Margins cristiform; no post-orbital constriction; hepatic and branchial regions separated by a deep notch; branchial margin divided by slits into four denticulate lobes in front of the rounded postero-lateral angle, and one lobe next to the posterior margin; the latter is faintly produced at the middle. Front broadly triangular, moderately deflexed, edge denticulate.

Chelipeds uneven, less than twice as long as carapace. Arm with upper surface broad, bordered by denticulate teeth; under edge denticulate. Wrist with two teeth on outer edge. Right hand heavy; both hands with outer edge bilobed, inner edge of upper surface with a few small teeth, one at the middle most prominent; inner edge of hand denticulate, as also outer edge of dactylus. Legs with a few lobes and spines.

*Dimensions* in mm. of the type (♀): C. l. 12.2, C. b. 13.7, Ch. l. 23.3.

241. *Parthenope (Pseudolambrus) erosa* (Miers) (Plate 20, fig. 11).

*Lambrus (Parthenopoides) erosus* Miers, Ann. Mag. Nat. Hist. (5), iv. 1879, p. 25, pl. 5, fig. 8.

Peros, Coin; 1 ♂. Coetivy; 1 juv.

Carapace not much broader than long, posterior half rectangular, the postero-lateral margins transverse and a little in advance of the transverse posterior margin; postero-lateral angles a little produced sideways; sides of branchial region nearly perpendicular, the margins barely visible in dorsal view; hepatic regions slightly projecting. Front and anterior gastric region deflexed; edge of front subtruncate, sides concave. Surface regularly pitted and eroded, the largest depressions bounding the cardiac and posterior gastric regions. The elevated portions are covered with confluent stellar granules, and similar isolated granules are numerous in the depressions. Under surface of body similarly pitted.

Chelipeds short and very stout, rough with granules like the carapace, but without pits except near the proximal end; a dentiform tubercle on upper surface of arm; inner margin of upper surface of palm crenated, most prominent at middle; immovable finger half as wide again as long. Legs stout, reticulated with pits, except the dactyli, armed with acorn-shaped spines.

*Dimensions* of ♂ in mm.: C. l. 15.2, C. b. 18.7, C. b. between postero-lateral angles 18.4, Ch. l. (right or larger) 19.6, H. l. 8.8, H. b. 8.2.

In the young (C. l. 5.3 mm., C. b. 6.2 mm.) the carapace and chelipeds are everywhere covered with small cavities separated by narrow reticulating lines.



242. *Daldorfia horrida* (Linnæus).

*Parthenope horrida* Alcock (1), p. 279.

Amirante, 25—80 fms., Sta. E 11; 1 ♀: 30 fms., Sta. E 21; 2 ♂, 1 ♀.

The specimens are similar to that figured in pl. 14, fig. 5, Bull. U. S. Fish Comm. for 1903, part III, 1906, p. 886.

243. *Daldorfia investigatoris* (Alcock).

*Parthenope investigatoris* Alcock (2), p. 296; Illus. Investigator, Crust., iv. 1896, pl. 23, figs. 1, 1 a.

Amirante, 34 fms., Sta. E 9; 1 ♂: 20—44 fms., Sta. E 25; 1 ♂ juv.

The sternum of the ♂ has a semi-elliptical cavity between the chelipeds; the ornamentation of the abdomen is similar to that in the ♀.

244. *Cryptopodia pan* Laurie.

*Cryptopodia pan* Laurie, *op. cit.*, p. 392, pl. 1, fig. 6 and text-fig. 4.

Cargados Carajos, 30 fms., Sta. B 14; 1 ♂: 30 fms., Sta. B 15; 1 ♂.

The specimens are nearly of a size, the larger one (B 15) having C. l. 15.2 mm., C. b. 21.2 mm. The meropodites of all the walking legs have their upper and lower borders spiniferous, the lower border having also a secondary or less strongly marked crest.

245. *Eumedonus granulatus* MacGilchrist.

*Eumedonus granulatus* MacGilchrist, Ann. Mag. Nat. Hist. (7), xv. 1905, p. 253; Illus. Investigator, Crust., xii. 1907, pl. 27, figs. 2, 2 a.

Amirante, 28 fms., Sta. E 6; 1 ♀ juv.: 25—80 fms., Sta. E 11; 1 ♂, 2 adult ♀ (1 ovig.).

*Dimensions* in mm.: ♂, C. l. 11.8, C. b. 10.6, Ch. l. 17.8. Ovigerous ♀, C. l. 12, C. b. 11.4, Ch. l. 12.8.

In the two largest specimens, measured above, the rostrum is more deeply cleft than in MacGilchrist's figure, the protogastric lobule is better defined anteriorly, and from it a slight furrow runs obliquely forward to the edge of the orbit.

## EXPLANATION OF PLATES 15—20.

### PLATE 15.

Fig. 1. *Cryptodromia ornata*, sp. nov., ♂ type.  $\times 1\frac{1}{2}$ .

Fig. 2. *Calappa alata*, sp. nov., ♂ type.  $\times 1\frac{1}{2}$ .

Fig. 3. *Mursia spinimanus* Rathbun, var., ♀ juv., Sta. C 2.  $\times 1\frac{1}{2}$ .

Fig. 4. *Oreophorus reticulatus* Adams & White, ♀, Sta. E 9.  $\times 1\frac{1}{2}$ .

Fig. 5. *Præbebalia extensiva*, sp. nov., ♂ type.  $\times 1\frac{1}{2}$ .

Fig. 6. *Nursilia dentata* Bell, ♂, Sta. F 7.  $\times 3$ .

Fig. 7. *Leucosides jecusculum*, sp. nov., ♀ type.  $\times 2$ .

Fig. 8. *Leucosides angulata*, sp. nov., ♂ type.  $\times 2$ .

Fig. 9. *Caphyra hemisphaerica*, sp. nov., ♂ type, Coetivy.  $\times 4$ .

Fig. 10. *Portunus (Achelous) granulatus* (Milne Edwards), ♂, Funafuti, ventral view. Nat. size.

Fig. 11. *Portunus (Achelous) orbitosinus*, sp. nov., ♂, Sta. B 23, ventral view. Nat. size.

Fig. 12. *Thalamita margaritimana*, sp. nov., ♂ type.  $\times 1\frac{1}{2}$ .



## PLATE 16.

- Fig. 1. *Lioxantho latifrons*, sp. nov., ♀ type, dorsal view. × 3.  
 Fig. 2. Same, ventral view. × 3.  
 Fig. 3. *Actæa tessellata* Pocock, ♀, Coetivy. × 2.  
 Fig. 4. *Actæa obesa* A. Milne Edwards, ♂ juv., Sta. E 21, dorsal view. × 3.  
 Fig. 5. Same, ventral view. × 3.  
 Fig. 6. *Dacryopilumnus eremita* Nobili, ♀, Peros, dorsal view. × 3.  
 Fig. 7. Same, front view. × 3.  
 Fig. 8. *Actæa acies*, sp. nov., ♂ type, dorsal view. × 1½.  
 Fig. 9. Same, ventral view. × 1½.  
 Fig. 10. *Actumnus simplex*, sp. nov., ♀ type, dorsal view. × 3.  
 Fig. 11. Same, ventral view. × 3.  
 Fig. 12. *Actumnus setifer amirantensis*, subsp. nov., ♂ type, dorsal view. × 2.  
 Fig. 13. Same, ventral view. × 2.  
 Fig. 14. *Pilumnus orbitospinis*, sp. nov., ♀ type, dorsal view. × 3.  
 Fig. 15. Same, ventral view. × 3.

## PLATE 17.

- Fig. 1. *Dynomene spinosa*, sp. nov., ♂ type. Nat. size.  
 Fig. 2. *Heteronucia ingens*, sp. nov., ♀ type. × 3.  
 Fig. 3. *Platypodia anaglypta* (Heller), ♂, Coetivy. × 1½.  
 Fig. 4. *Callinectes alexandri* Rathbun, ♂ juv., Sta. B 23. × 1½.  
 Fig. 5. *Carpilodes sayademalhensis*, sp. nov., ♀ type. × 2.  
 Fig. 6. *Liomera granosimana* A. Milne Edwards, ♂, Coetivy. × 2.  
 Fig. 7. *Atergatopsis signata* (Adams & White), ♂, Coetivy. Nat. size.  
 Fig. 8. *Calappa bicornis* Miers, ♂, Sta. F 8. Nat. size.  
 Fig. 9. *Leptodius cristatus* Borradaile, ♂, Coetivy. × 3.  
 Fig. 10. *Actæa suffuscula*, sp. nov., ♂ type, dorsal view. × 3.  
 Fig. 11. Same, ventral view. × 3.

## PLATE 18.

- Fig. 1. *Euxanthus rugosus* Miers, ♀, Salomon. Nat. size.  
 Fig. 2. *Actæa hellerii* A. Milne Edwards, ♂ type. × 2.  
 Fig. 3. *Actæa boletaria*, sp. nov., ♂ type, dorsal view. × 1½.  
 Fig. 4. Same, ventral view. × 1½.  
 Fig. 5. *Actæa polyacantha* (Heller), ♂, Coetivy, dorsal view. × 3.  
 Fig. 6. Same, ventral view. × 3.  
 Fig. 7. *Actæa banareias*, sp. nov., ♂ type, dorsal view. × 4.  
 Fig. 8. Same, ventral view. × 4.  
 Fig. 9. *Xanthias tuberculidens*, sp. nov., ♂ type. × 1½.  
 Fig. 10. *Leptodius cavipes* (Dana), ♂, Peros. × 1½.  
 Fig. 11. *Chlorodopsis melanospinis*, sp. nov., ♂ type. × 2.  
 Fig. 12. *Parthenope (Pseudolambrus) calappoides* (Adams & White), ♂, Sta. E 16. Nat. size.  
 Fig. 13. *Pilumnoplax acanthomerus*, sp. nov., ♀ cotype. × 2.  
 Fig. 14. *Micippoides angustifrons* A. Milne Edwards, ♂, Coetivy. × 3.

## PLATE 19.

- Fig. 1. *Pilumnus turgidulus*, sp. nov., ♂ type, dorsal view. × 3.  
 Fig. 2. Same, ventral view. × 3.  
 Fig. 3. *Actumnus lævigatus*, sp. nov., ♀ type, dorsal view. × 3.  
 Fig. 4. Same, ventral view. × 3.

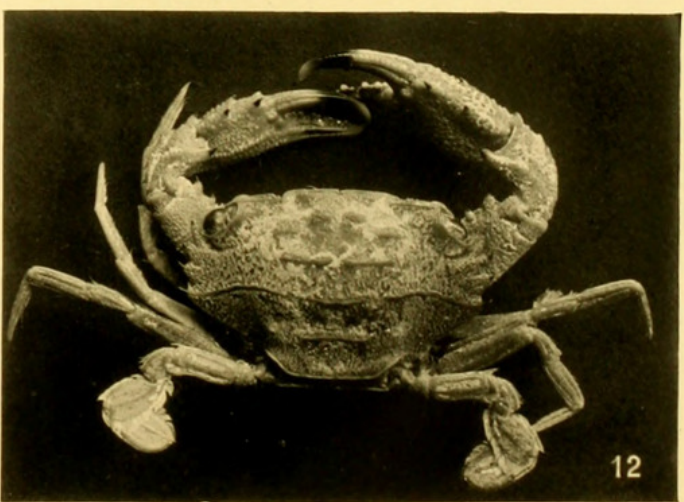
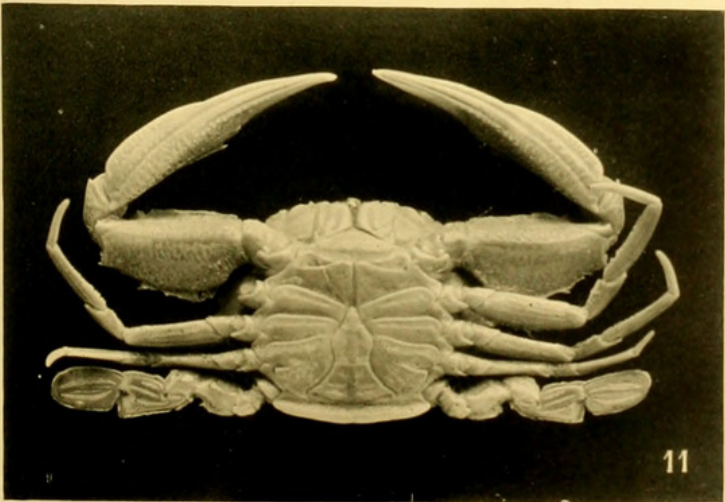
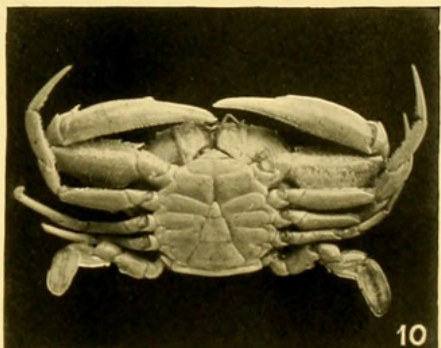
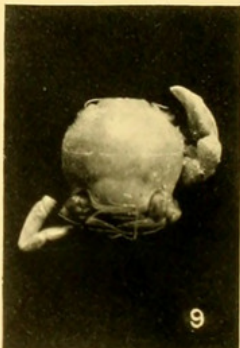
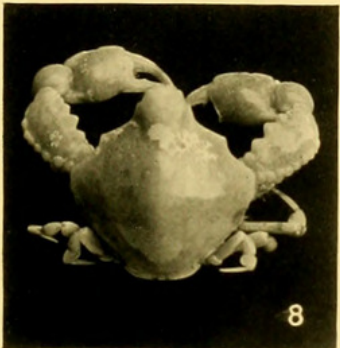
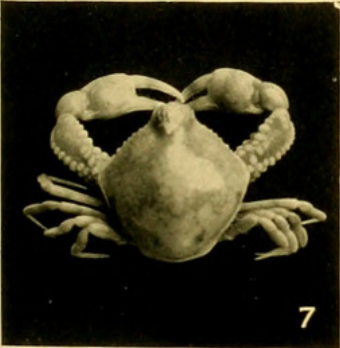
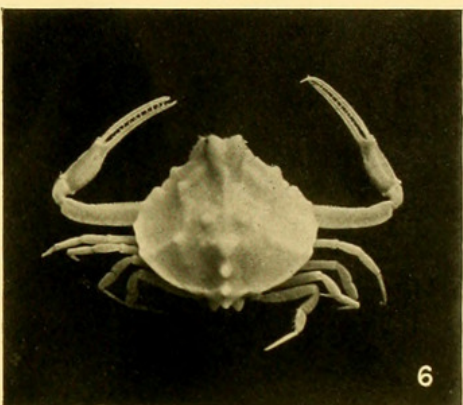
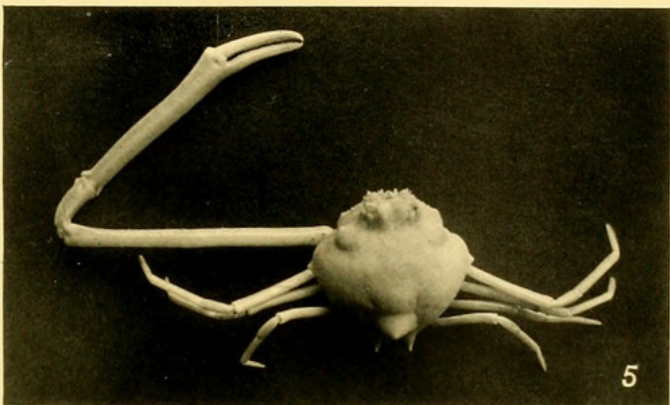
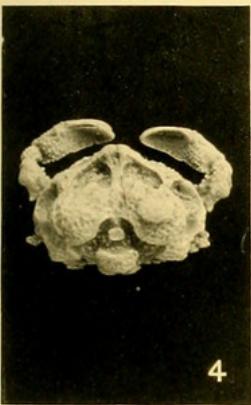
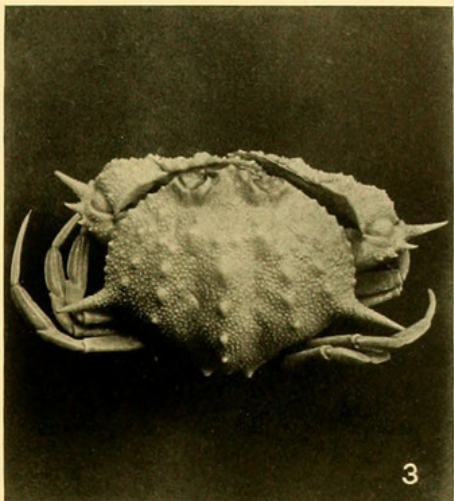
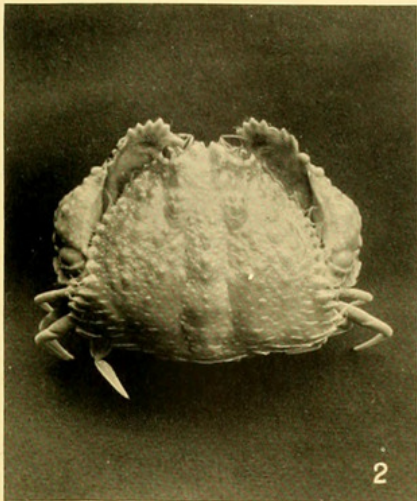
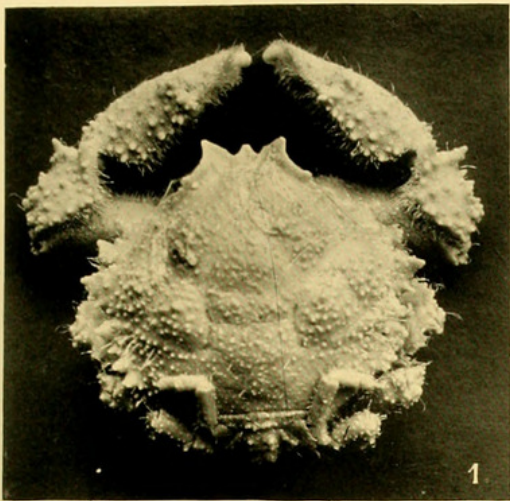


- Fig. 5. *Maldivia gardineri*, sp. nov., ♀ type, dorsal view. × 3.  
Fig. 6. Same, ventral view. × 3.  
Fig. 7. *Gardineria canora*, sp. nov., ♂ type, dorsal view. × 3.  
Fig. 8. Same, ventral view. × 3.  
Fig. 9. *Palicus jukesii* (White), ♀, Sta. E 11. × 2.  
Fig. 10. *Palicus whitei* (Miers), ♀, Sta. F 8. × 2.

## PLATE 20.

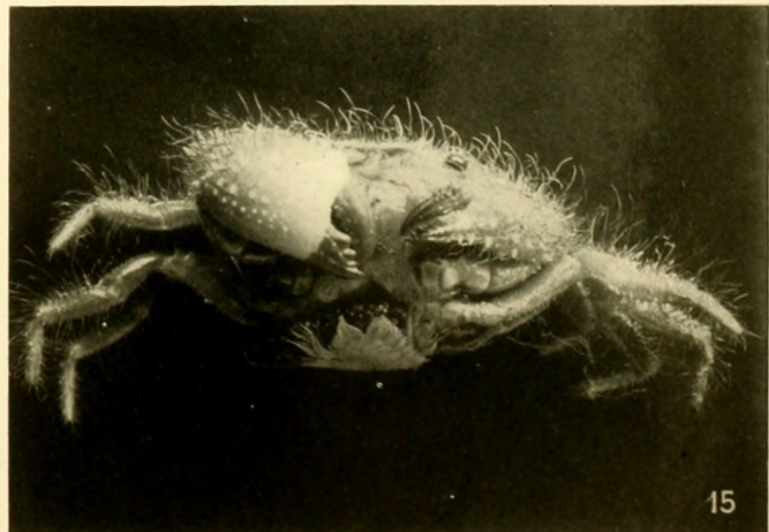
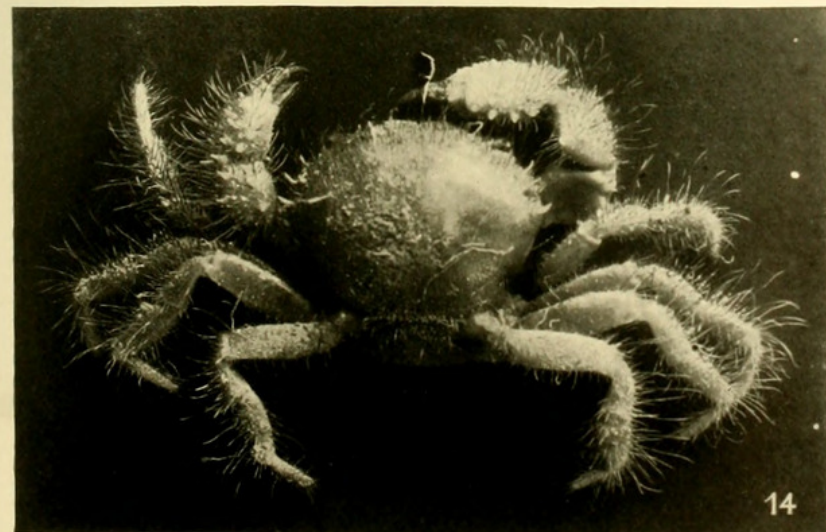
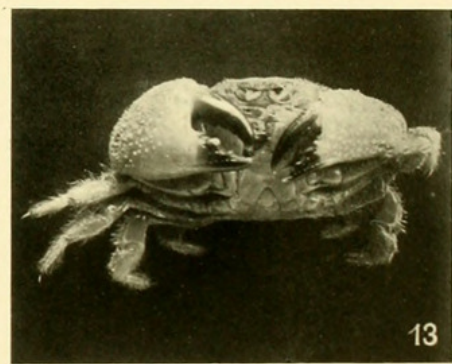
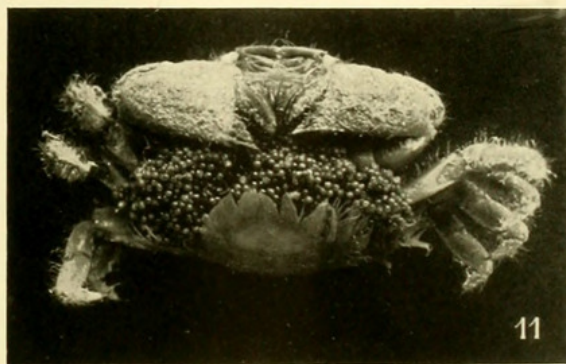
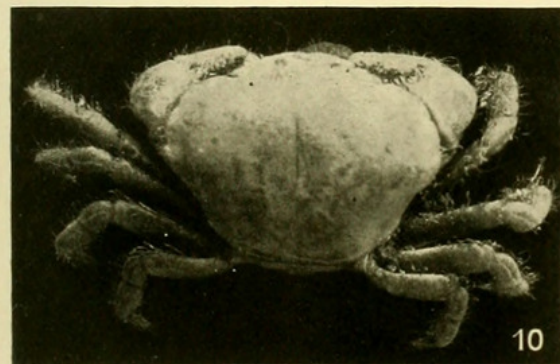
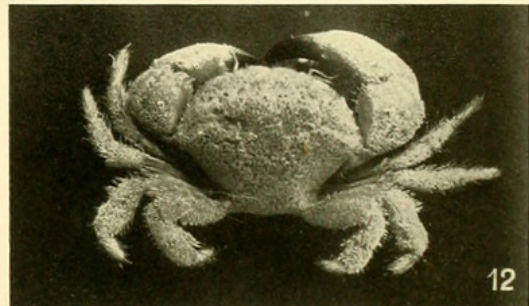
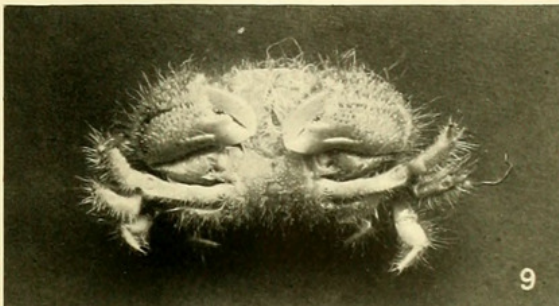
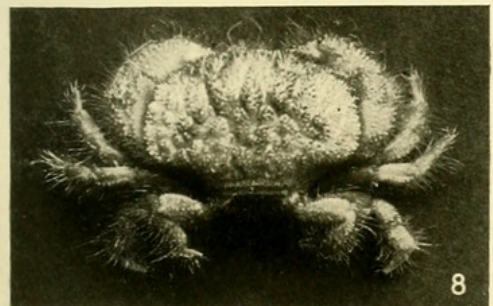
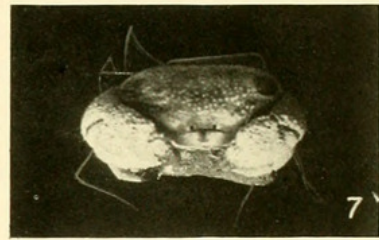
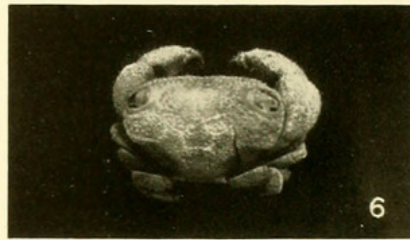
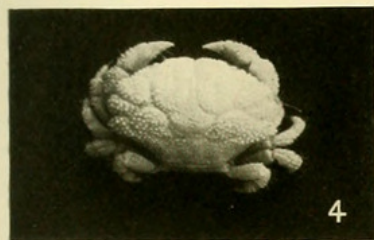
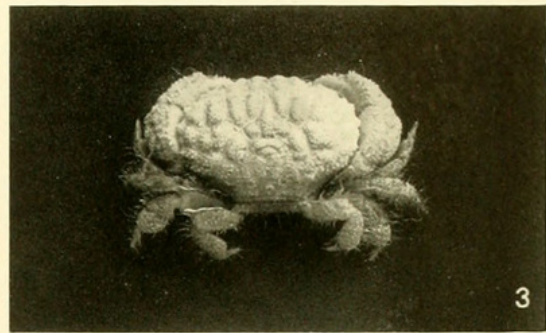
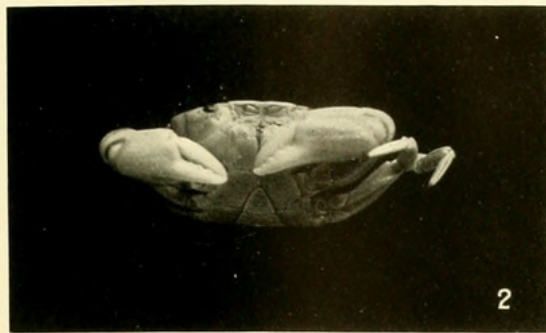
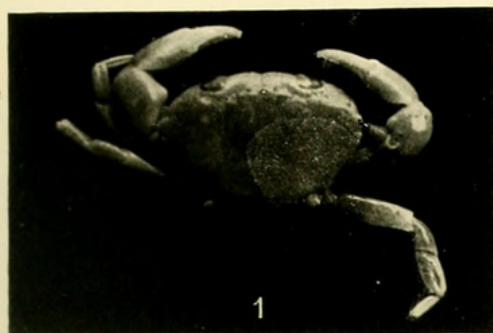
- Fig. 1. *Typhlocarcinops piroculata*, sp. nov., ♂ type, dorsal view. × 3.  
Fig. 2. Same, ventral view. × 3.  
Fig. 3. *Achæus inimicus*, sp. nov., ♀ type. × 3.  
Fig. 4. *Pseudocollodes complectens*, sp. nov., ♂ type. × 2.  
Fig. 5. *Halimus borradailei* Rathbun, ♀, Sta. E 13. × 3.  
Fig. 6. *Halimus inermis*, sp. nov., ♂ type. × 2.  
Fig. 7. *Halimus uncifer* (Calman), ♂ type. × 2.  
Fig. 8. *Naxioides spinigera* Borradaile, ♂, Sta. F 8. × 1½.  
Fig. 9. *Manella gardineri*, sp. nov., ♂ type. × 2.  
Fig. 10. *Parthenope* (*Pseudolambrus*) *plana*, sp. nov., ♀ type. × 2.  
Fig. 11. *Parthenope* (*Pseudolambrus*) *erosa* (Miers), ♂, Peros. × 1½.



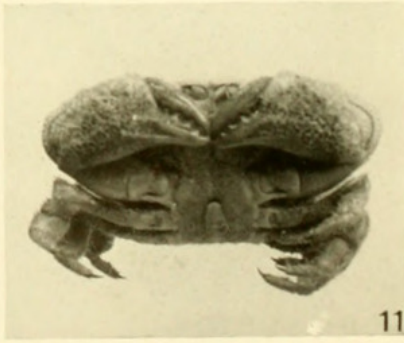
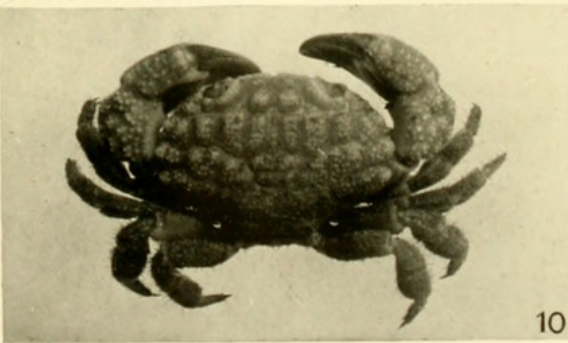
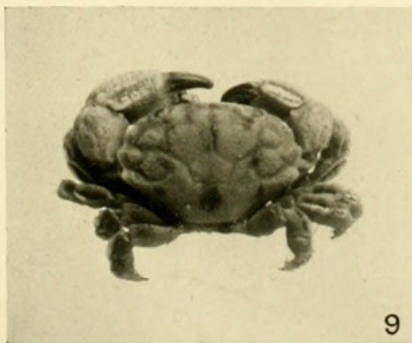
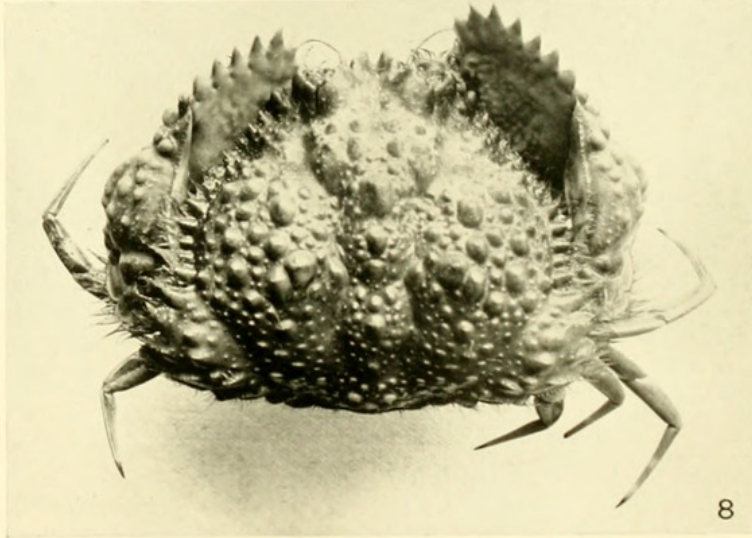
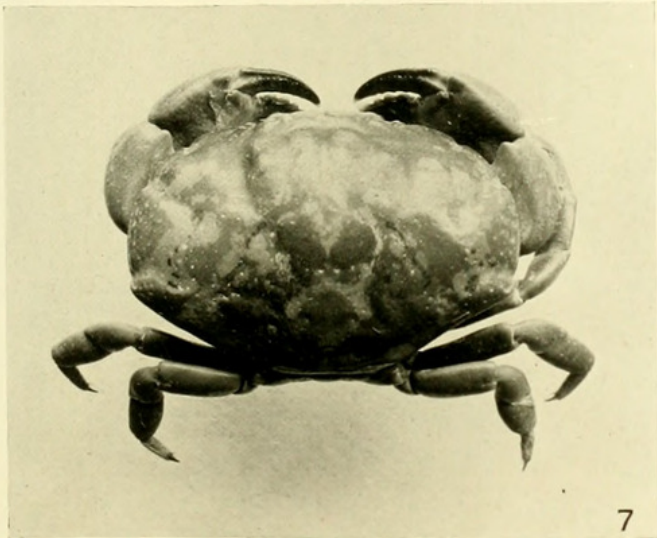
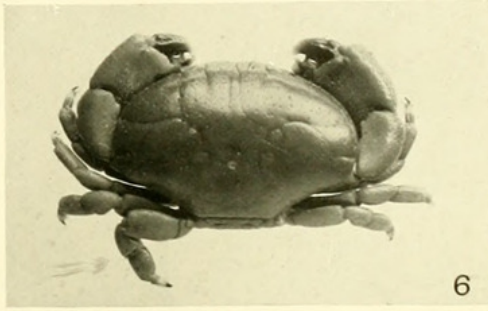
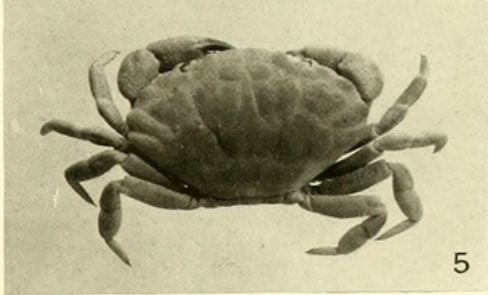
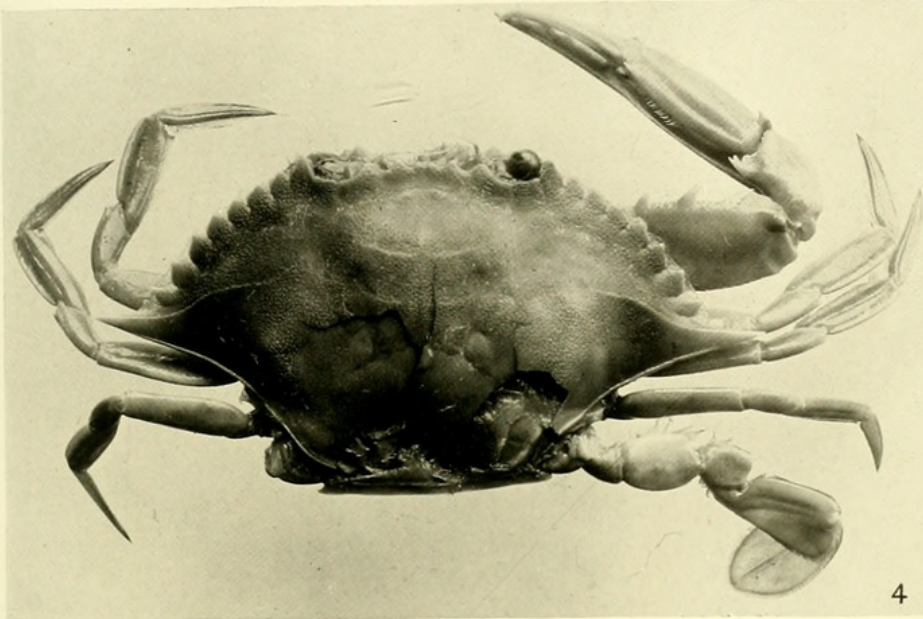
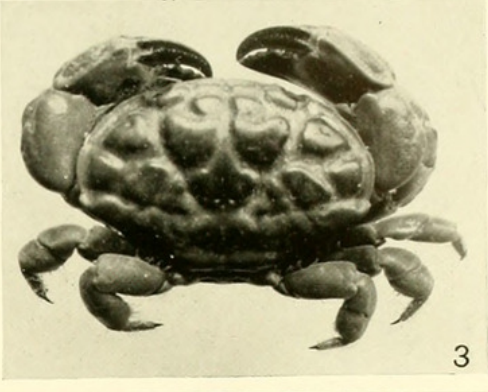
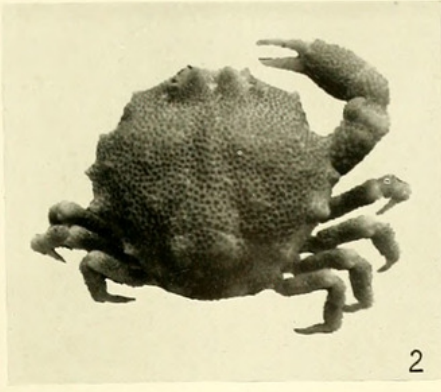
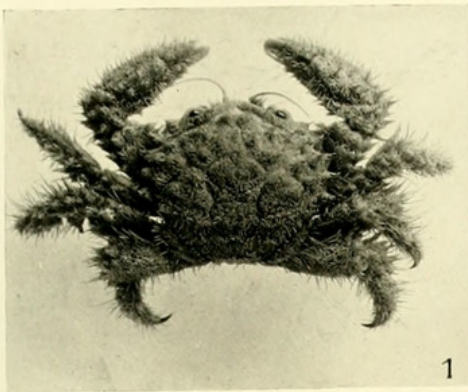


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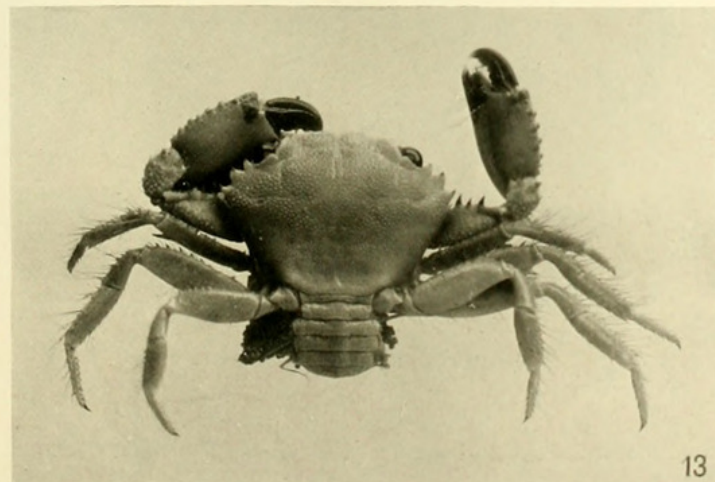
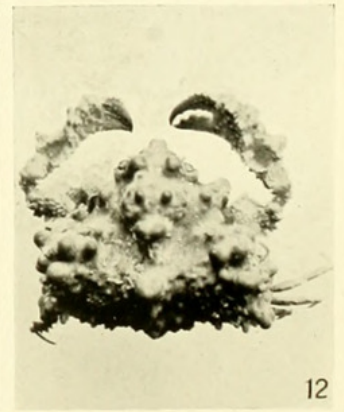
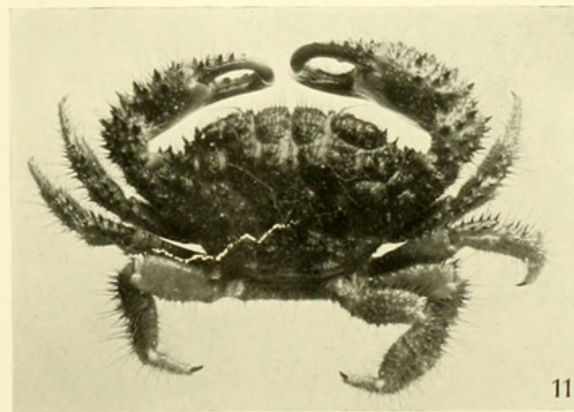
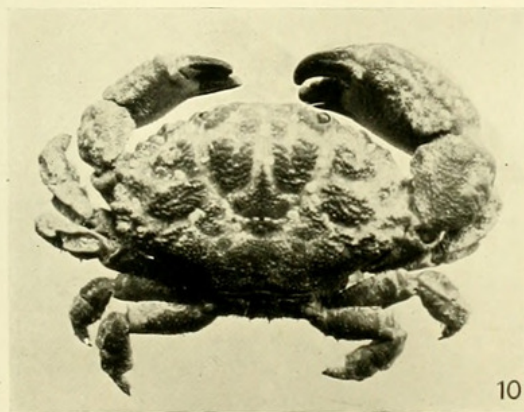
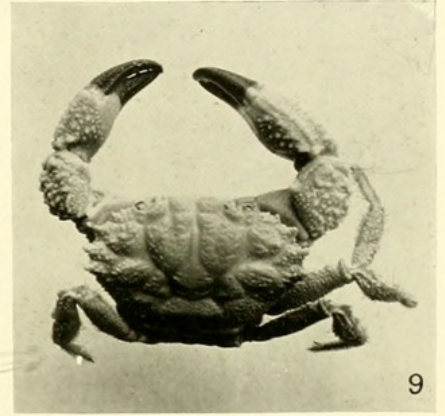
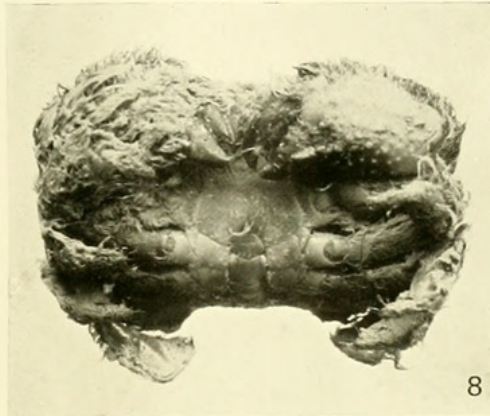
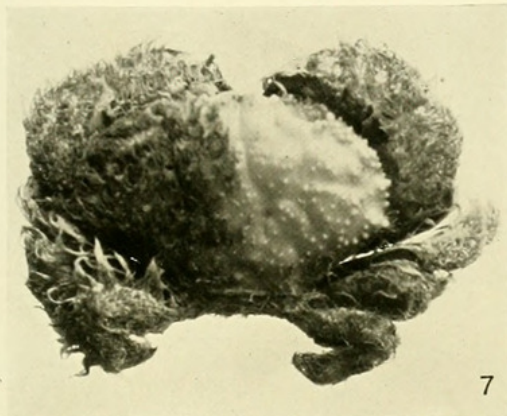
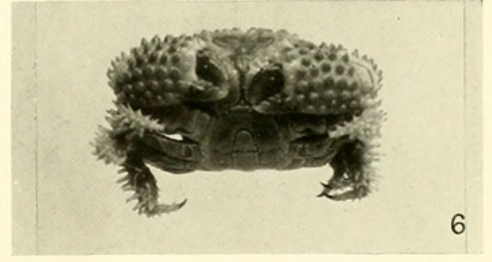
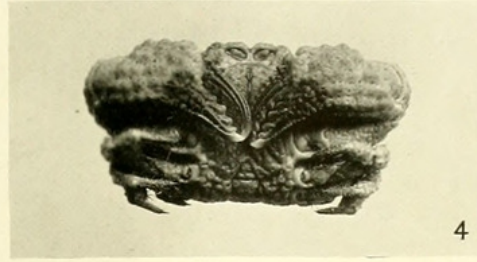
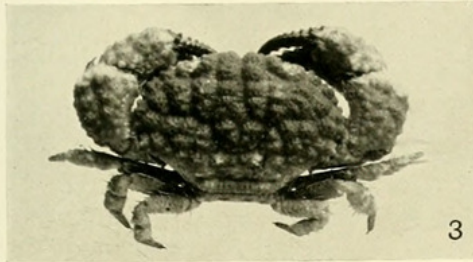
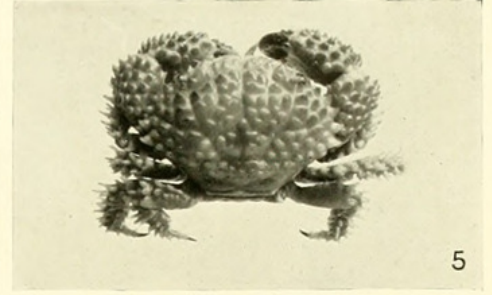
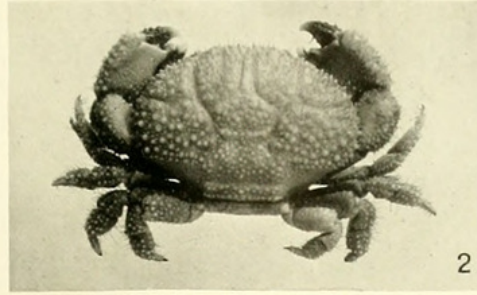
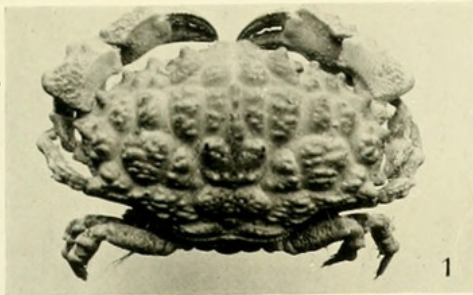




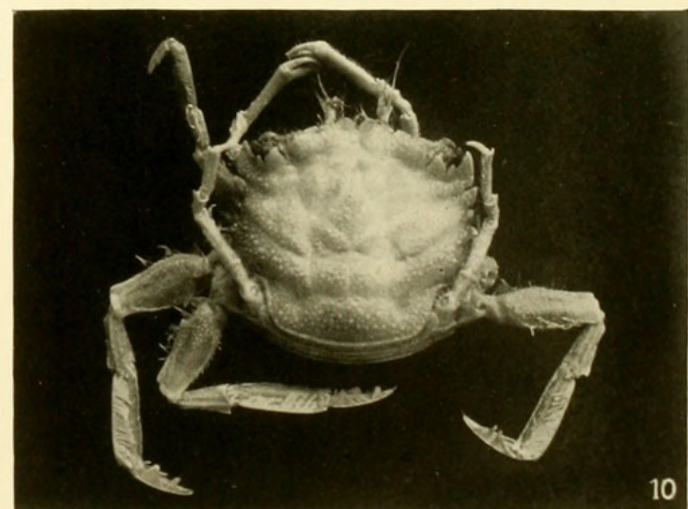
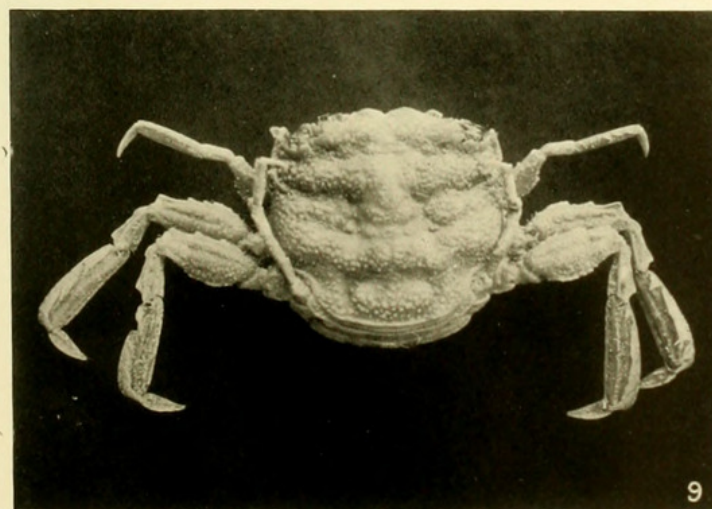
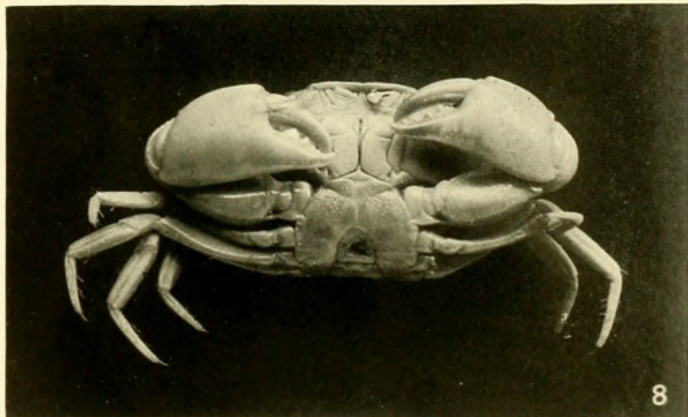
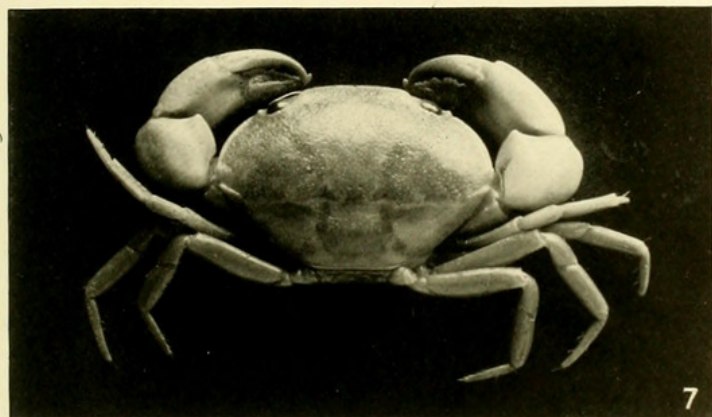
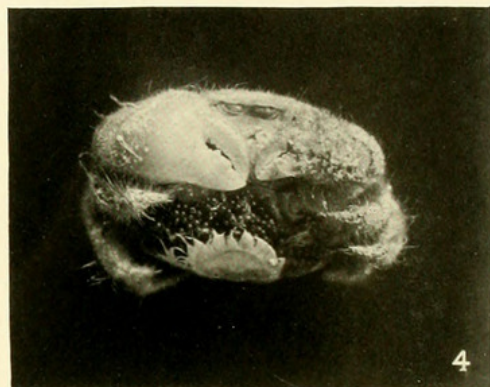
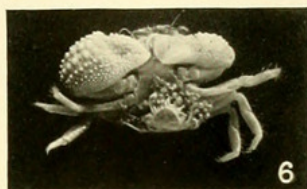
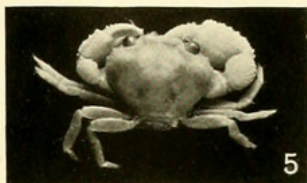
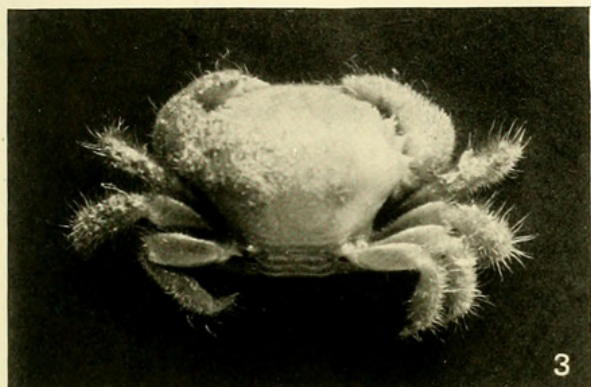
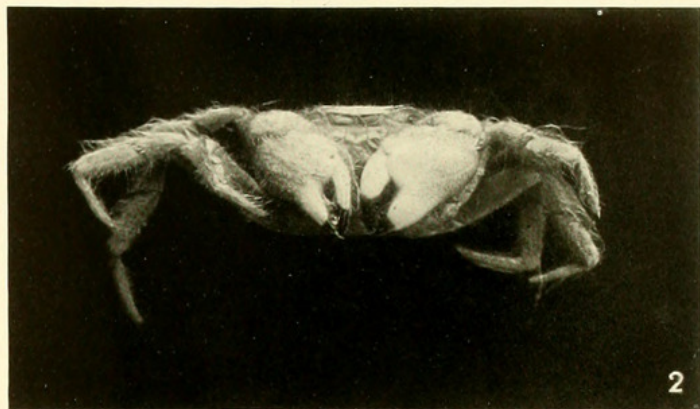
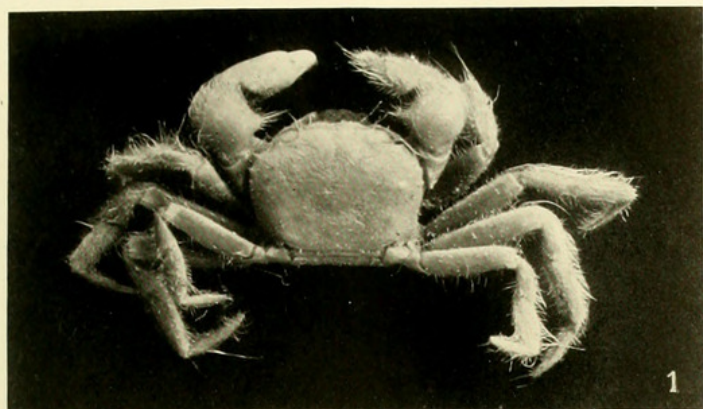


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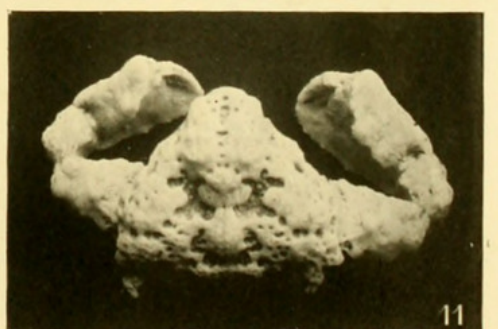
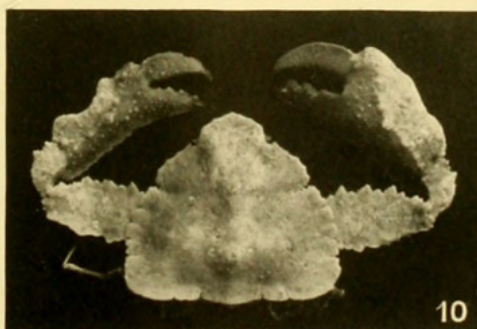
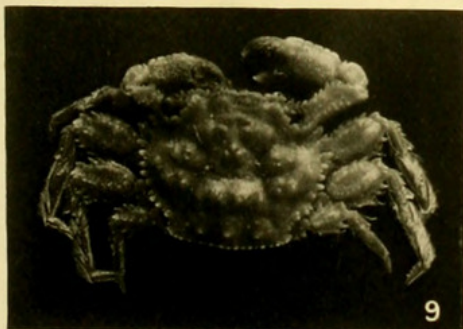
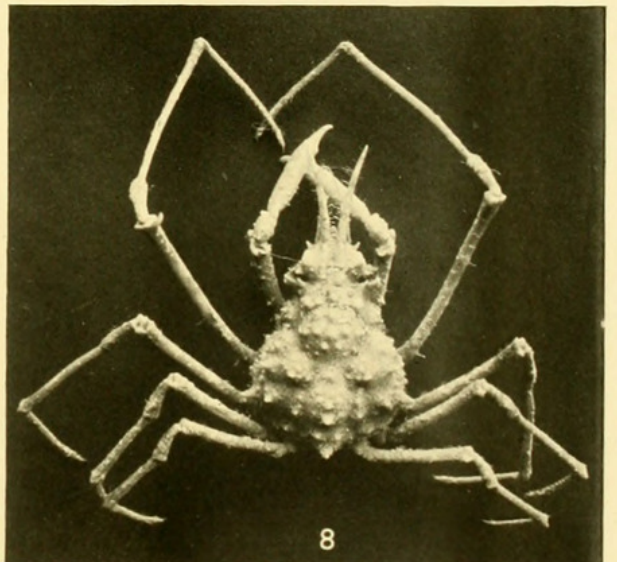
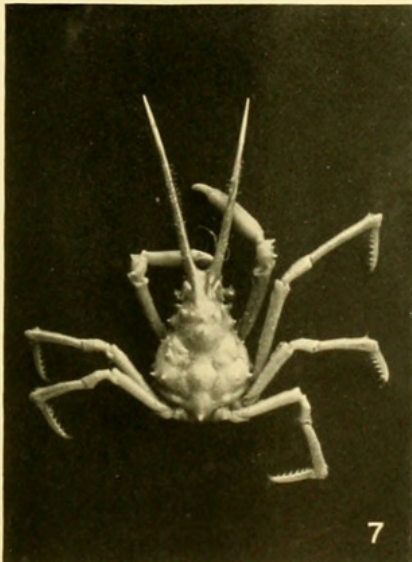
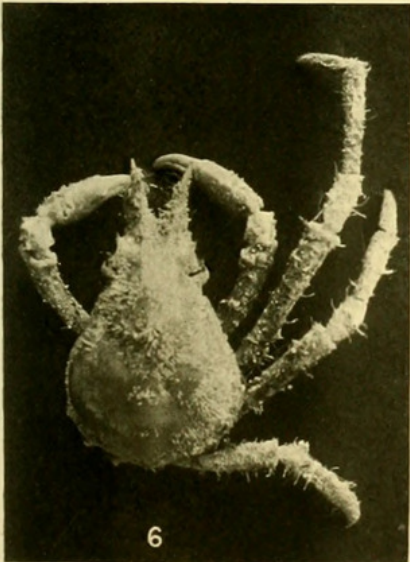
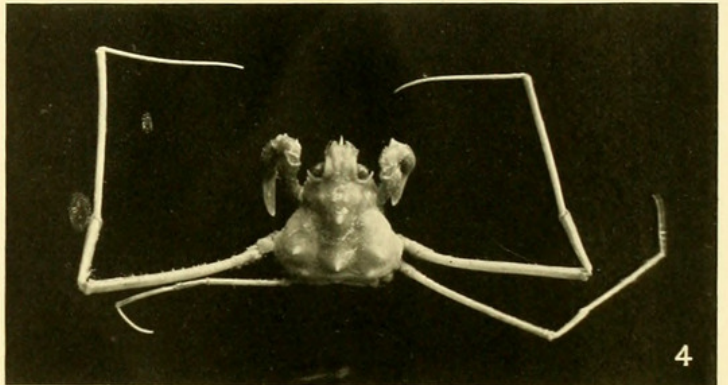
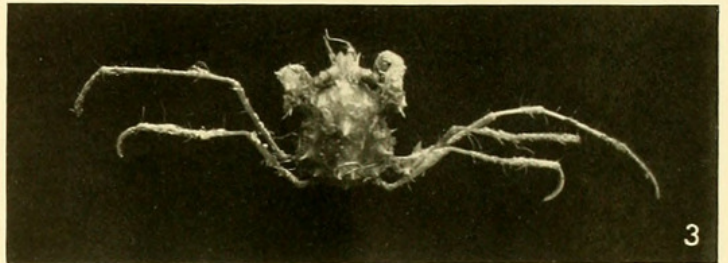
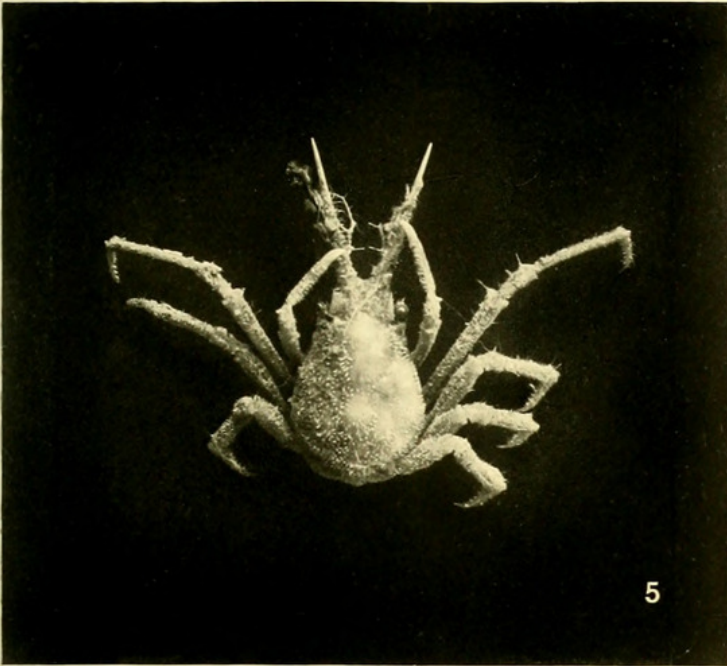
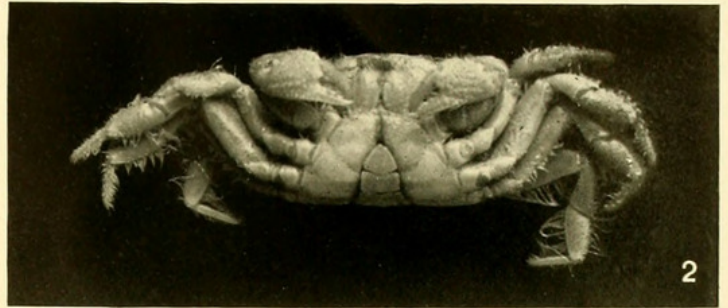
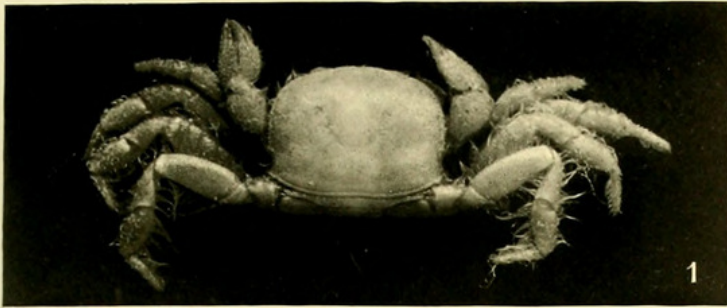






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Rathbun, Mary Jane. 1911. "The Percy Sladen Trust Expedition to the Indian Ocean in 1905. Vol. iii. No. xi. Marine Brachyura." *Transactions of the Linnean Society of London* 14, 191–261.

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