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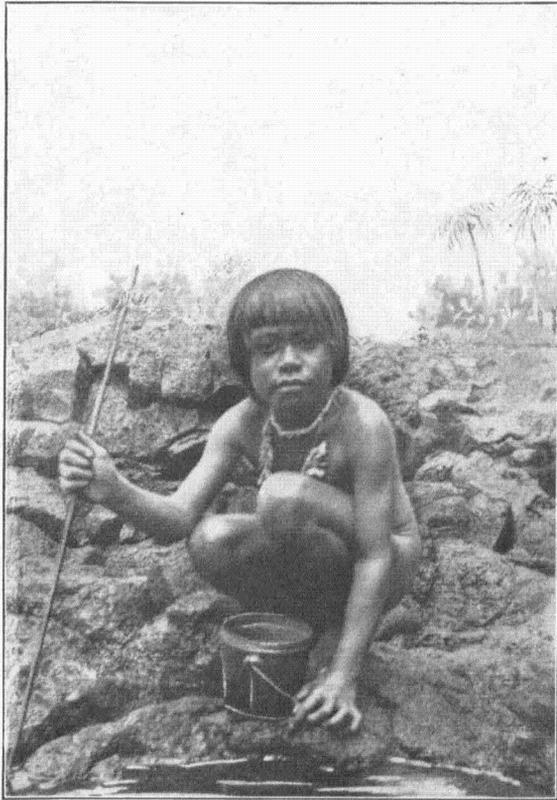
THE BRACHYURA AND MACRURA OF THE  
HAWAIIAN ISLANDS.

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By MARY J. RATHBUN.

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NATIVE HAWAIIAN BOY CATCHING CRABS.  
From photograph by H. W. Henshaw.

## THE BRACHYURA AND MACRURA OF THE HAWAIIAN ISLANDS.

By MARY J. RATHBUN.

Relatively little has been published hitherto on the decapod fauna of the Hawaiian Islands, the collecting done by the earlier expeditions being limited usually to a few days. The number of species and subspecies of Brachyura and Macrura known up to the present time was 109; in this paper that number is increased to 314.<sup>a</sup> Of these the majority (245 species) have been obtained by the U. S. Fish Commission. A few derived from other sources are contained in the National Museum collection, and 26 have been added by examination of the Brachyura in the Museum of Comparative Zoology, a privilege granted to the author by Dr. Walter Faxon, who had previously made the determinations. Twenty-eight other species are attributed to the islands in various publications, but the present writer had no means of verifying these records.<sup>b</sup>

The Fish Commission explorations began in 1891, in connection with the cable survey between California and the Hawaiian Islands, when ten hauls of the trawl and tangles were made, mostly between 300 and 375 fathoms. The results were meager compared with those realized by the three months' systematic exploration by a land party in 1901 under the leadership of Dr. D. S. Jordan and Dr. B. W. Evermann and by the *Albatross* in 1902.<sup>c</sup> This vessel occupied 397 stations in the vicinity of the islands, while field parties, led by Dr. Charles H. Gilbert, explored the shores and reefs as well as the fresh-water streams. Mr. Walter K. Fisher, of Stanford University, has given added value to the specimens by notes on their habits, color, etc.

Mr. Henry W. Henshaw, for many years a resident of Hilo, has from time to time sent Crustacea to the National Museum, and has added several species to this list. Other contributors are the late Valdemar Knudsen, a wealthy planter of the island of Kauai who was much interested in natural history, and Mr. R. C. McGregor, of the U. S. Coast and Geodetic Survey.

The Hawaiian crabs at the Museum of Comparative Zoology were taken nearly half a century ago by Mr. Andrew Garrett and Mr. Horace Mann, both zealous

<sup>a</sup> The Hawaiian Crangonidæ (=Alpheidæ) have been assigned to Dr. H. Coutière, of the École Supérieure de Pharmacie, Paris; the Anomura to Dr. James E. Benedict, of the U. S. National Museum.

<sup>b</sup> Some of these species have not since been collected, or are known only from description and figure, the type specimen having been destroyed, as *Galene hawaiiensis* Dana. A few species it is almost certain have been erroneously recorded from the Hawaiian Islands, as *Trichodactylus punctatus* Eydoux and Souleyet, which is a South American fluviatile crab, and *Pachygrapsus crassipes* Randall, one of several forms collected by Nuttall and Townsend and confused with others taken on the California coast. The occurrence of *Ocypode gaudichaudii* at Honolulu needs confirmation.

<sup>c</sup> A single dredging often embraced a long period of time and a great range of depth, therefore the statement that a species was taken at 68-179 fathoms does not indicate its actual range, but simply its occurrence at some point between those depths.

collectors, or later by Dr. W. H. Jones, U. S. Navy, who, with Dr. T. H. Streets, was surgeon and naturalist on the U. S. S. *Portsmouth* during the survey of the North Pacific Ocean in 1873-74.

Through the courtesy of Mr. Witmer Stone, the writer has made an examination of all of Randall's types of Hawaiian crabs and shrimps extant in the museum of the Philadelphia Academy of Natural Sciences. Some of these have been noted by Kingsley, Sharp, and Ortmann, but the validity of *Penæus marginatus* Randall is here established for the first time.

The Hawaiian fauna is almost entirely Indo-Pacific, the islands forming the northeastern, as the Indian Ocean is the southwestern limit, for the majority of the species. This is true of the shore and shallow water forms<sup>a</sup> and in a lesser degree of the abyssal forms, of which many are cosmopolitan and have been described by Smith, Bate, A. Milne Edwards, or Alcock, from the depths of the Atlantic, Pacific, or Indian oceans.<sup>b</sup> This circumstance of wide horizontal distribution of deep-water species has recently been emphasized by Ortmann in reporting on the Schizopoda.<sup>c</sup>

Besides 76 of the 80 species here described as new, few species are restricted to the Hawaiian Islands, and such apparent restriction may be due to incomplete knowledge. Very little affinity to the fauna of the American continent is shown. *Micropanope sexlobata*, a new species, forms a marked exception, as the genus is tropical American and the Hawaiian species is akin to *M. truncatifrons* Rathbun of the West Indies.

The figures of *Cyrtomaia smithi* were drawn by the late Dr. J. C. McConnell; the other drawings of Brachyura, as well as all the colored plates, are the work of Mr. A. H. Baldwin; Miss E. G. Mitchell made the pen and ink drawings of most of the Macrura. The photographs were taken by Mr. Clarence Dodge, excepting Plates I and II, which are the gift of Mr. H. W. Henshaw.

#### LIST OF THE SPECIES.<sup>d</sup>

Ocypode ceratophthalma (Pallas).	Grapsus strigosus longitarsis Dana.
Ocypode levis Dana.	Geograpsus lividus (Milne Edwards).
?Ocypode gaudichaudii Milne Edwards and Lucas.	Geograpsus crinipes (Dana).
Uca minor (Owen).	Hemigrapsus crassimanus Dana.
Uca tetragonon (Herbst).	Metopograpsus messor (Forskål).
Macrophthalmus telescopicus (Owen).	Pachygrapsus plicatus (Milne Edwards).
Macrophthalmus inermis A. Milne Edwards.	Pachygrapsus minutus A. Milne Edwards.
Libystes nitidus A. Milne Edwards.	Pachygrapsus longipes Rathbun.
Pilumnoplax cooki Rathbun, nov.	?Pachygrapsus crassipes Randall.
Palicus fisheri Rathbun, nov.	Planes minutus (Linnæus).
Palicus oahuensis Rathbun, nov.	Cyclograpsus granulatus Dana.
Manella spinipes (de Man), gen. nov.	Cyclograpsus henshawi Rathbun.
Cardisoma rotundum (Quoy and Gaimard).	Cyclograpsus cinereus Dana.
*Grapsus grapsus tenuicrustatus (Herbst).	Sesarma (Sesarma) angustifrons A. Milne Edwards.
Grapsus strigosus (Herbst).	Sesarma (Holometopus) obtusifrons Dana.

<sup>a</sup>The synonymy is abbreviated in the case of well-known Indian species to a reference to Alcock's classical work on the Carcinological Fauna of India, the first part of which appeared in 1895 (Jour. Asiat. Soc. Bengal, LXIV), and in which full references and descriptions may be found.

<sup>b</sup>The following shrimps occur in greatest abundance: *Pandalus martius* A. Milne Edwards, *Heterocarpus ensifer* A. Milne Edwards, *Polycheles phosphorus* (Alcock), *Nematocarcinus tenuirostris* Bate, and *Pandalus ensis* (A. Milne Edwards).

<sup>c</sup>Science, n. s., XIX, 1904, No. 491, pp. 827-828.

<sup>d</sup>Those marked with an asterisk were found in the market at Honolulu.

- Sesarma* (Holometopus) *trapezium* Dana.  
*Sarmatium faxoni* Rathbun, nov.  
*Plagusia depressa tuberculata* Lamarek.  
*Plagusia immaculata* Lamarek.  
*Percnon planissimum* (Herbst).  
*Percnon abbreviatum* (Dana).  
*Percnon pilimanus* (A. Milne Edwards).  
 ?*Trichodactylus punctatus* Eydoux and Souleyet.  
 \**Carpilius maculatus* (Linnæus).  
 \**Carpilius convexus* (Forskål).  
*Carpilodes tristis* Dana.  
*Carpilodes ruber* A. Milne Edwards.  
*Carpilodes coccineus* Rathbun, nov.  
*Carpilodes virgatus* Rathbun, nov.  
*Carpilodes vaillantianus* (A. Milne Edwards).  
*Carpilodes monticulosus* A. Milne Edwards.  
*Carpilodes supernodosus* Rathbun, nov.  
*Liomera pubescens* (Milne Edwards).  
*Liomera prætexta* Rathbun, nov.  
*Atergatis ocyroe* (Herbst).  
*Platypodia semigranosa* (Heller).  
*Platypodia granulosa* (Rüppell).  
*Platypodia eydouxii* (A. Milne Edwards).  
*Platypodia actœoides* (A. Milne Edwards).  
*Zosimus æneus* (Linnæus).  
*Lophozozymus incisus* (Milne Edwards).  
*Lophozozymus dodone* (Herbst).  
*Lophozozymus intonsus* (Randall).  
*Xantho lacunosus* Rathbun, nov.  
*Xantho bidentatus* A. Milne Edwards.  
*Xantho crassimanus* A. Milne Edwards.  
*Leptodius exaratus* (Milne Edwards).  
*Leptodius sanguineus* (Milne Edwards).  
*Leptodius molokaiensis* Rathbun, nov.  
*Leptodius nudipes* (Dana).  
*Leptodius gracilis* (Dana).  
*Leptodius waialuanus* Rathbun, nov.  
*Xanthodius biunguis* Rathbun, nov.  
*Medæus ornatus* Dana.  
*Medæus simplex* A. Milne Edwards.  
*Cycloxanthops angustus* Rathbun, nov.  
*Peleus armatus* Eydoux and Souleyet.  
*Etisis dentatus* (Herbst).  
 \**Etisis splendidus* Rathbun, nov.  
 \**Etisis lævimanus* Randall.  
*Etisodes electra* (Herbst).  
*Galene hawaiiensis* Dana.  
*Actæa tomentosa* (Milne Edwards).  
*Actæa affinis* (Dana).  
*Actæa hirsutissima* (Rüppell).  
*Actæa rufopunctata* (Milne Edwards).  
*Actæa garretti* Rathbun, nov.  
*Actæa speciosa* (Dana).  
*Actæa variolosa* Borradaile.  
*Actæa nodulosa* White.  
*Actæa hawaiiensis* Rathbun, nov.  
*Actæa* (?) *integerrima* (Dana).  
*Banareia villosa* Rathbun, nov.  
*Daira perlata* (Herbst).  
*Xanthias lamareckii* (Milne Edwards).  
*Xanthias flavescens* Rathbun, nov.  
*Xanthias notatus* (Dana).  
*Xanthias minutus* (Rathbun).  
*Xanthias canaliculatus* Rathbun, nov.  
*Micropanope sexlobata* Rathbun, nov.  
*Chlorodiella niger* (Forskål).  
*Chlorodiella lævissima* (Dana).  
*Phymodius unguatus* (Milne Edwards).  
*Phymodius obscurus* (Lucas).  
*Phymodius nitidus* (Dana).  
*Phymodius laysani* Rathbun, nov.  
*Chlorodopsis areolata* (Milne Edwards).  
*Chlorodopsis scabricula* (Dana).  
*Chlorodopsis aberrans* Rathbun, nov.  
*Pilodius flavus* Rathbun.  
*Menippe convexa* Rathbun.  
*Pseudozius caystrus* (Adams and White).  
*Pseudozius inornatus* Dana.  
*Pseudozius triunguiculatus* Borradaile.  
*Platyozius lævis* Borradaile.  
*Ozius hawaiiensis* Rathbun.  
*Lydia annulipes* (Milne Edwards).  
*Pilumnus vespertilio* (Fabricius).  
*Pilumnus alcocki* Borradaile.  
*Pilumnus nuttingi* Rathbun, nov.  
*Pilumnus acutifrons* Rathbun, nov.  
*Pilumnus andersoni* de Man.  
*Pilumnus tæniola* Rathbun, nov.  
*Pilumnus ovalis* A. Milne Edwards.  
*Actumnus obesus* Dana.  
*Eriphia sebana* (Shaw).  
*Grapsillus cymodoce* (Herbst).  
*Grapsillus ferrugineus* (Latreille).  
*Grapsillus ferrugineus intermedius* (Miers).  
*Grapsillus maculatus* MacLeay.  
*Grapsillus rufopunctatus* (Herbst).  
*Grapsillus rufopunctatus flavopunctatus* (Eydoux and Souleyet).  
*Grapsillus digitalis* (Latreille).  
*Domestia hispida* Eydoux and Souleyet.  
*Lybia tessellata* (Latreille).  
*Lybia cæstifera* (Alcock).  
*Polydectus cupulifer* (Latreille).  
*Carcinides mænas* (Linnæus).  
*Parathranites hexagonum* Rathbun, nov.  
*Parathranites latibrachium* Rathbun, nov.  
*Lissocarcinus orbicularis* Dana.  
*Lissocarcinus lævis* Miers.  
*Lupocycclus quinquedentatus* Rathbun, nov.  
*Goniocaphyra inæqualis* Rathbun, nov.

- Carupa laeviuscula* Heller.  
*Portunus sanguinolentus* (Herbst).  
 \**Portunus pubescens* (Dana).  
*Portunus* (Achelous) *argentatus* (A. Milne Edwards).  
*Portunus* (Achelous) *granulatus* (A. Milne Edwards).  
*Portunus* (Achelous) *orbicularis* (Richters).  
*Portunus* (Xiphonectes) *longispinosus* (Dana).  
*Portunus* (Xiphonectes) *macrophthalmus* Rathbun, nov.  
*Charybdis japonica* (A. Milne Edwards).  
 \**Charybdis erythroductyla* (Lamarck).  
*Charybdis orientalis* Dana.  
*Thalamonyx gracilipes* A. Milne Edwards.  
*Thalamita cœruleipes* Jacquinet.  
*Thalamita picta* Stimpson.  
*Thalamita sima* Milne Edwards.  
 \**Thalamita integra* Dana.  
*Thalamita edwardsi* Borradaile.  
*Thalamita admete* (Herbst).  
*Thalamita auauensis* Rathbun, nov.  
*Thalamita spinifera* Borradaile.  
*Thalamita alcocki* de Man.  
*Thalamita kukenthali* de Man.  
*Podophthalmus vigil* (Fabricius).  
*Kraussia integra* (de Haan).  
*Kraussia rugulosa* (Krauss).  
*Kraussia hendersoni* Rathbun.  
*Platepistoma macrophthalmum* Rathbun, gen. et sp. nov.  
*Achæus affinis* Miers.  
*Achæopsis superciliaris* Ortmann.  
*Cyrtomaia smithi* Rathbun.  
*Cyrtomaia lamellata* Rathbun, nov.  
*Oncinopus aranea* (de Haan).  
*Sphenocarcinus carbunculus* Rathbun, nov.  
*Huenia proteus* (de Haan).  
*Simocarcinus simplex* (Dana).  
*Echinœcus pentagonus* Rathbun.  
*Menæthius monoceros* (Latreille).  
*Acanthonyx simplex* Dana.  
*Halimus hilgendorfi* (de Man).  
*Halimus tenuicornis* (Pocock).  
*Halimus ovatus* (Dana).  
*Perinea tumida* Dana.  
*Chlorinoides goldsboroughi* Rathbun, nov.  
*Schizophris hilensis* Rathbun, nov.  
*Ophthalmias cervicornis* (Herbst).  
*Micippa philyra* (Herbst).  
*Micippa parca* Alcock.  
*Parthenope* (Platylambrus) *nummifera* Rathbun, nov.  
*Parthenope* (Platylambrus) *stellata* Rathbun, nov.
- Parthenope* (Platylambrus) *stellata lacunosa* Rathbun, subsp. nov.  
*Parthenope* (Platylambrus) *stellata complanata* Rathbun, subsp. nov.  
*Parthenope* (Rhinolambrus) *lamelligera* (White).  
*Parthenope* (Aulacolambrus) *hoplonotus* (Adams and White).  
*Parthenope* (Aulacolambrus) *whitei* (A. Milne Edwards).  
*Parthenope* (Parthenolambrus) *calappoides* (Adams and White).  
*Daldorfia horrida* (Linnaeus).  
*Harrovia truncata* Rathbun, nov.  
 \**Calappa calappa* (Linnaeus).  
 \**Calappa hepatica* (Linnaeus).  
*Calappa gallus* (Herbst).  
*Mursia hawaiiensis* Rathbun.  
*Mursia spinimanus* Rathbun, nov.  
*Cycloës granulosa* de Haan.  
*Tlos latus* Borradaile.  
*Tlos angulatus* Rathbun, nov.  
*Ebalia tuberculosa* (A. Milne Edwards).  
*Ebalia jordani* Rathbun, nov.  
*Nucia speciosa* Dana.  
*Randallia distincta* Rathbun.  
*Randallia gilberti* Rathbun, nov.  
*Persephona brevimana* (Alcock).  
*Ethusa mascarone hawaiiensis* Rathbun, subsp. nov.  
*Ethusina gracilipes* (Miers).  
*Hapalocarcinus marsupialis* Stimpson.  
*Callianassa articulata* Rathbun, nov.  
*Callianassa*, sp.  
*Axius pailoloensis* Rathbun, nov.  
*Axius spinosissimus* Rathbun, nov.  
*Axius rudis* Rathbun, nov.  
*Axius serratifrons* A. Milne Edwards.  
*Eiconaxius asper* Rathbun, nov.  
*Paraxius tridens* Rathbun, nov.  
*Scyllarus martensi* Pfeffer.  
 \**Scyllarides squamosus* (Milne Edwards).  
 \**Parribacus antarcticus* (Lund).  
*Parribacus papyraceus* Rathbun, nov.  
 \**Panulirus japonicus* (de Siebold).  
*Panulirus penicillatus* (Olivier).  
*Panulirus marginatus* (Quoy and Gaimard).  
*Polycheles phosphorus* (Alcock).  
*Polycheles snyderi* Rathbun, nov.  
*Polycheles granulatus* Faxon.  
*Polycheles asper* Rathbun, nov.  
*Eryoneicus indicus hawaiiensis* Rathbun, subsp. nov.  
 \**Enoplometopus occidentalis* (Randall).  
 \**Stenopus hispidus* (Olivier).  
*Spongicola henshawi* Rathbun, nov.



THE SHRIMPER, HILO.  
From photograph by H. W. Henshaw.

- Penæus canaliculatus* (Olivier).  
 \**Penæus marginatus* Randall.  
*Metapenæus affinis* (Milne Edwards)  
*Metapenæus velutinus* (Dana).  
*Metapenæus mogiensis* (Rathbun).  
*Metapenæus richtersii* (Miers).  
*Metapenæus evermanni* Rathbun, nov.  
*Solenocera lucasii* Bate.  
*Haliporus equalis* Bate.  
*Haliporus modestus* (Smith).  
*Aristeus semidentatus* Bate.  
*Benthescymus investigatoris* Anderson.  
*Benthescymus laciniatus* Rathbun, nov.  
*Benthescymus moratus* Smith.  
*Benthonectes filipes* Smith.  
*Gennadas parvus* Bate.  
*Gennadas propinquus* Rathbun, nov.  
*Gennadas* sp.  
*Sicyonia lævis* Bate.  
*Sicyonia longicauda* Rathbun, nov.  
*Sergestes tenuiremis* Krøyer.  
*Sergestes robustus* Smith.  
*Sergestes edwardsii* Krøyer.  
*Sergestes oculatus* Krøyer.  
*Sergestes parvidens* Bate.  
*Sergestes armatus* Krøyer.  
*Sergestes ventridentatus* Bate.  
*Leucifer acestra* (Dana).  
*Pontophilus gracilis* Smith.  
*Pontophilus modumanuensis* Rathbun, nov.  
*Egeon orientalis* Henderson.  
*Egeon habereri* (Doflein).  
*Rhynchocinetes rugulosus* Stimpson.  
*Processa processa* (Bate).  
*Processa hawaiiensis* (Dana).  
*Hippolyte acuta* (Stimpson).  
*Hippolysmata acicula* Rathbun, nov.  
*Hippolysmata paucidens* Rathbun, nov.  
*Spirontocaris marmorata* (Olivier).  
*Spirontocaris kauaiensis* Rathbun, nov.  
*Spirontocaris profunda* Rathbun, nov.
- Pandalus martius* A. Milne Edwards.  
*Pandalus ensis* (A. Milne Edwards).  
*Pandalus ocellus* (Bate).  
*Pandalus sindoi* Rathbun, nov.  
*Pandalus brevis* Rathbun, nov.  
*Pandalus exiguus* Rathbun, nov.  
*Pandalus spinidorsalis* Rathbun, nov.  
*Heterocarpus ensifer* A. Milne Edwards.  
*Heterocarpus lævigatus* Bate.  
*Heterocarpus signatus* Rathbun, nov.  
*Heterocarpus alexandri* A. Milne Edwards.  
*Atya bisulcata* (Randall).  
*Ortmannia hawaiiensis* Rathbun.  
*Caridina brevirostris* Stimpson.  
*Harpilius depressus* Stimpson.  
*Corallicaris quadridentata* Rathbun, nov.  
*Corallicaris truncata* Rathbun, nov.  
*Periclimenes pusillus* Rathbun, nov.  
*Periclinenes* sp.  
*Oplophorus gracilirostris* A. Milne Edwards.  
*Oplophorus foliaceus* Rathbun, nov.  
*Acanthephyra eximea* Smith.  
*Acanthephyra debilis* A. Milne Edwards.  
 \**Bithynis grandimanus* (Randall).  
*Palæmon debilis* Dana.  
*Palæmon pacificus* (Stimpson).  
*Palæmon pandaloides* Rathbun, nov.  
*Palæmonella tenuipes* Dana.  
*Palæmonella orientalis* Dana.  
*Palæmonella laccadivensis* Alcock and Anderson.  
*Gnathophyllum fasciolatum* Stimpson.  
*Nematocarcinus ensiferus* (Smith).  
*Nematocarcinus tenuirostris* Bate.  
*Nematocarcinus gracilis* Bate.  
*Stylodactylus discissipes* Bate.  
*Pasiphæa kaiwiensis* Rathbun, nov.  
*Pasiphæa truncata* Rathbun, nov.  
*Pasiphæa flagellata* Rathbun, nov.  
*Psathyrocaris hawaiiensis* Rathbun, nov.  
*Leptochela robusta* Stimpson.

## BRACHYURA.

## Family OCYPODIDÆ.

*Ocypode ceratophthalma* (Pallas).

*Ocypoda ceratophthalma* Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 345, and synonymy.

Hilo, Hawaii<sup>a</sup>; Kailua; Maui, R. C. McGregor; Lanai Beach; Honolulu; Honolulu Reef; Waikiki Beach; Waimea, Kauai; "in coral sand just above high-water mark," Henshaw.

Hawaiian Islands (Dana, as *O. urvillii*; Alcock). Hawaii (Stimpson). Hilo Beach (Miers).

<sup>a</sup> Unless otherwise indicated, specimens were collected by the United States Fish Commission at the localities cited.

**Ocypode lævis** Dana.

(Pl. VII, fig. 2.)

*Ocypode rhombea* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 123.? *Ocypoda pallidula* Jacquinot, Voy. au Pole Sud, atlas, pl. VI, 1852 (?).*Ocypoda lævis* Dana, Crust. U. S. Expl. Exped., I, 325, 1852; pl. XX, fig. 2, 1855.*Ocypoda pallidula* Dana, op. cit., p. 324; pl. XX, fig. 1 (type in U. S. Nat. Mus.).*Ocypoda cordimana* Kingsley, Proc. Acad. Nat. Sci. Phila., 1880, 185 (not all synonymy).

Hilo, Hawaii; Kahului, Maui, R. C. McGregor; Honolulu; Waikiki Beach; Laysan; "in coral sand just above high-water mark," Henshaw.

Hawaiian Islands (Dana), type male in Museum of Comparative Zoology. Hawaiian Islands, J. K. Townsend, one male, specimen labeled by Randall *O. rhombea*, in Philadelphia Academy Natural Sciences. Hilo, Hawaii (Stimpson). Laysan (Lenz, as *urvillei* and probably *cordimana*).*O. lævis* is distinct from *O. cordimana* Desmarest.**Ocypode gaudichaudii** Milne Edwards and Lucas.*Ocypode gaudichaudii* Milne Edwards and Lucas, d'Orbigny's Voy. l'Amér. Mérid., VI, pt. 1, p. 26, 1843; IX, pl. XI, fig. 4, 1847.

Honolulu (Cano). Needs verification.

**Uca minor** (Owen).*Gelasimus minor* Owen, Voy. Blossom, Crust., 79, pl. XXIV, figs. 2, 2a, 1839.

Oahu (Owen).

**Uca tetragonon** (Herbst).*Gelasimus tetragonum* Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 357, and synonymy.

Hawaiian Islands (Kingsley).

**Macrophthalmus telescopicus** (Owen).*Gelasimus telescopicus* Owen, Voy. Blossom, Crust., 78, pl. XXIV, fig. 1, 1839.*Macrophthalmus compressipes* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 123.*Macrophthalmus podophthalmus* Eydoux and Souleyet, Voy. Bonite, Crust., 241, pl. III, figs. 6-7, 1842.

Honolulu Harbor, 8 fathoms, one female, collector unknown, in U. S. National Museum. One male, four females, A. Garrett, in Museum of Comparative Zoology.

Oahu (Owen); Honolulu (Cano); Hawaiian Islands (Randall, Eydoux and Souleyet, Dana). One male, two female, types of *M. compressipes* Randall, J. K. Townsend collector, in Philadelphia Academy of Natural Sciences. One male, collected by U. S. Exploring Expedition, in Museum of Comparative Zoology. Hawaiian Islands, W. H. Pease, two males, in Philadelphia Academy of Natural Sciences.**Macrophthalmus inermis** A. Milne Edwards.*Macrophthalmus inermis* A. Milne Edwards, Ann. Soc. Entom. France (4), VII, 1867, 286; Nouv. Arch. Mus. Hist. Nat. Paris, IX, 1873, 277, pl. XII, fig. 5.

Hawaiian Islands (A. Milne Edwards).

*M. convexus* Stimpson is quite another species from *M. inermis*. It is much narrower, being not much over half again as wide as long, while *M. inermis* is twice as wide as long. The sides are less convergent posteriorly, gastric and cardiac regions narrower, front wider, about  $\frac{1}{2}$  width of carapace, last ambulatory leg much less reduced than in *M. compressipes*.**Libystes nitidus** A. Milne Edwards.*Libystes nitidus* A. Milne Edwards, Ann. Soc. Entom. France (4), VII, 1867, 285; Nouv. Arch. Mus. Hist. Nat. Paris, IV, 1868, 83, pl. XX, figs. 5-7

Honolulu (Cano).

***Pilumnoplax cooki*, sp. nov.**

(Pl. VII, fig. 3.)

Carapace more convex than usual in the genus, especially fore and aft, about  $\frac{1}{2}$  as long as broad, naked, sparingly and irregularly punctate, regions faintly indicated.

Front horizontal, advanced, slightly concave or emarginate; transversely sulcate above the margin, sulcus widest at the middle and tapering to each end; slightly more than a third the greatest breadth of the carapace.

Antero-lateral borders not more than one-half length of postero-lateral, cut into three projections, the first a shallow lobe confluent with the outer orbital tooth, the second a blunt obtuse-angled tooth; edges of teeth sharp. The third prominence is a sharp ascending conical spine directed upward and forward, and situated considerably above the level of the teeth.

Eye of good size, nearly filling the orbit; cornea brown in alcohol. Upper margin minutely notched near the middle, lower margin slightly emarginate below outer angle; inner angle a narrow tooth whose tip is just visible in dorsal view.

The last joint of the peduncle of the antenna attains the edge of the front; flagellum twice as long as the orbit is wide.

Chelipeds in male slightly unequal, heavy, a little more than twice as long as carapace; surface sparingly punctate; arm microscopically granulous, especially toward the margin; a small superior subterminal tooth; wrist less evidently granulous, inner lobe truncate, its distal corner in form of a blunt tooth; hands almost smooth, fingers gaping, the pollex curved downward in its basal half; dark color only on distal two-thirds, the color darkest in the middle, and a brown horn-color at each end.

Legs very slender, long, second pair longest,  $2\frac{1}{2}$  times as long as the carapace; smooth, unarmed, nearly bare.

Length of type male 12.7, width 15 mm.

The character of the antero-lateral dentation, as well as the convexity of the carapace, distinguishes this species from all others.

Named for Captain Cook, who discovered the Hawaiian Islands.

*Distribution*.—South coast of Oahu, 293 to 330 fathoms, stations 3818, 3917; Pailolo Channel, 256 to 290 fathoms, stations 3865, 3866 (type locality), 3883, 3884; northeast approach to Pailolo Channel, 272 to 304 fathoms, stations 4089, 4096; vicinity of Kauai Island, 283 to 309 fathoms, station 4130.

Cat. No. of type, 29364. <sup>a</sup>

## Family PALICIDÆ.

***Palicus fisheri*, sp. nov.**

(Pl. VII, fig. 5.)

Carapace with regions well marked, covered with minute granules, from each of which a short curved hair arises and with tubercles symmetrically arranged on the summits of the areolæ and coarsely granulate, the chief tubercles disposed as follows: A transverse curved line of about fourteen running from the penult lateral tooth across the cardiac region; three mesogastric; four protogastric, in one line; two epigastric; a cluster of three anterior branchial; smaller tubercles in a line of five or six, and one median in advance of the line on the intestinal region, and three on the posterior part of each branchial region.

Front cut into four narrow lobes, tips upturned, middle pair much lower, longer, more acute, and more depressed than outer pair and separated from each other by a deep U sinus.

Lateral borders moderately diverging posteriorly, cut into five long acute teeth, including orbital, diminishing backward, the last much the smallest. Posterior margin cut into nine to eleven small lobes not contiguous.

Inner supraorbital lobe separated by broad deep sinus from front, its inner angle very prominent and elevated; three deep sinuses in upper margin of orbit; a small V sinus below outer tooth; inner suborbital tooth narrow, acuminate. Eyestalks sharply granular and nodular.

<sup>a</sup> All catalogue numbers of types of new species refer to the catalogue in the U. S. National Museum.

Chelipeds shorter than carapace, unequal in both sexes, only the right or larger one being stouter than the first pair of legs; the upper surface bears some flat lobules and sharp granules; larger palm only a little longer than high.

First pair of legs a little longer than carapace; merus sharply granular, anterior border with four or five small spines and ending in a large sharp-pointed tooth, posterior border denticulate; anterior edge of carpus with a lobe near either end, posterior edge terminating in a small spine; posterior border of last two joints serrulate.

Second and third pairs of legs about  $1\frac{1}{2}$  times as long as carapace; merus broadened in middle, with sharp granules or spinules arranged in rows, anterior border with three or more spines increasing distally, a terminal triangular subacute tooth, posterior edge with seven or more spinules, including one terminal; last two joints much widened, anterior border fringed with long hair, posterior border of propodus four to five, of dactylus two to three—serrate.



Fig. 1.—*Palicus fisheri*, station 3982, larger chela of male,  $\times 3\frac{1}{2}$ .

Last pair filiform, much shorter than carapace, sharply granular or spinulous up to the dactylus, which is subequal to the propodus.

First segment of abdomen in both sexes carinate, carina granulate and ending in a sharp upturned spine; adjoining segment of sternum armed with a similar spine, which lies just outside the other.

*Dimensions*.—Male type, length 12, width 14.1 mm. The species grows much larger, an immature female with soft shell, station 4066, measuring 22.6 mm. long and 26.5 wide.

*Color*.—Legs with broad transverse bands of color.

*Distribution*.—South coast of Molokai Island, 23 to 73 fathoms, stations 3846, 3847, and 3848; vicinity of Laysan Island, 16 to 163 fathoms, stations 3939 and 3962; vicinity of Kauai Island, 40 to 233 fathoms, stations 3982 and 3987 (type locality); Aleupihana Channel, 49 to 176 fathoms, station 4066; north coast of Maui Island, 99 to 106 fathoms, station 4077. Cat. No. of type, 29368.

Named for Mr. Walter K. Fisher, of Stanford University, who accompanied the Fish Commission party to the Hawaiian Islands in 1901.

This species is allied to *P. serripes* (Alcock & Anderson) and *P. investigatoris* Alcock; differs from the former in having the borders of the carapace more deeply incised and its surface more tuberculate; in *P. investigatoris* the surface is marked by tubercles on the areolæ, but is not granulate, and the teeth of front and posterior margin are more acute.

***Palicus oahuensis*, sp. nov.**

(Pl. VII, fig. 4.)

Carapace quite high in the middle, covered with distant tubercles and granules, between which the surface is microscopically granulate.

Median lobes of front small, round, near together, on a lower level than outer pair, which are broad and very shallow, and separated feebly from the inconspicuous inner supraorbital lobe. Three small notches in upper margin of orbit; outer tooth long, triangular, acute.

Antero-lateral margins forming a very obtuse angle to each other and armed with four teeth besides the orbital; first distant from orbit and lobiform; second and third much larger, subequal, dentiform; last very small, acute. Postero-lateral and posterior margins with a few spaced tubercles.

Chelipeds about as long as carapace (in female) unequal, larger pair not much stouter than first leg; surface granular; larger palm about  $1\frac{1}{2}$  times as long as wide, fingers nearly as long as palm and crossing each other at some distance from tip.

First pair of legs a little longer than carapace, merus and carpus granulate, margins of former bluntly denticulate, a prominent blunt tooth at end of anterior margin; two lobes on same margin of carpus; edges of last two joints entire.

Second and third pairs of legs about  $1\frac{1}{2}$  times length of carapace, merus ovate, granular, margins irregularly dentate, teeth smaller and more numerous on posterior than on anterior border; the latter bearing a large terminal tooth, which is larger and acute on second pair, lobiform on third pair; remaining joints similar to those of first pair.

Last pair filiform, granulate, not  $\frac{1}{2}$  as long as carapace.

First four segments of female abdomen carinate, first three segments granulate, their carinæ, though not prominent, visible from above.



Fig. 2.—*Palicus oahuensis*, type female, larger chela,  $\times 4\frac{1}{2}$ .

*Dimensions.*—Female type, length 7.9, width 10.3 mm. Female, Honolulu Reef, length 8.6, width 11.4 mm.

*Record of specimens.*—South coast of Oahu Island, 257 to 220 fathoms, station 3919; one female type (Cat. No. 29374). Honolulu Reef; one female.

In the shape and convexity of the carapace this species approaches the West Indian *P. obesus* (A. Milne Edwards), but the antero-lateral borders are more oblique than in the latter.

**MANELLA**, gen. nov.

Differs from *Palicus* in having the legs of the last pair not different from, or abnormally smaller than, the others. Floor of orbit produced considerably beyond roof. Carapace broadest anteriorly.

The genus *Pleurophricus* was instituted in 1873 by A. Milne Edwards (Jour. Mus. Godeffroy, IV, 84 [8]) for a single species from Australia, *P. cristatipes* (op. cit., pl. 1, figs. 6–6c) which no one has since examined. He places it among the Oxystomata near *Orithyia*. In 1879 Miers (Jour. Linn. Soc. London, Zool., XIV, 660) ranged it doubtfully in the Oxyrhyncha, in which he is followed by Haswell (Cat. Austral. Crust., 22, 1882). In 1887 de Man (see below) described a second species of the genus from Amboina, which he believed to be more nearly related to the Corystoidea than to any other group. It is this second species, *P. spinipes*, which is present in the Hawaiian collection, and I am confident that it should be placed in or near the Palicidæ, as, were it not for the normal size and position of the posterior pair of legs, it might be ranged in the genus *Palicus*. The floor of the orbit is a little more advanced than in *Palicus*; otherwise the orbital region, the front, the antennal and buccal regions, the areolation of the carapace, the form of each joint of the first three pairs of legs, the character of sternum and abdomen are essentially those of *Palicus*. The shape of the carapace and chelipeds have less of the typical *Palicus*. The species of that genus which *P. spinipes* most resembles in shape is *Palicus contractus* Rathbun (Bull. Mus. Comp. Zool., XXXIX, 1902, 126, plate, figs. 7 and 8), in which the side margins converge from front to back.

I have separated generically de Man's species from the type of *Pleurophricus* on account chiefly of the legs. In *P. cristatipes* the legs are nearly of a size and the carpus is no longer than broad; while in *Manella spinipes* the first and fourth pairs of legs are much smaller than the second and third, and the carpus is elongate, with the characteristic shape of *Palicus*. In *Pleurophricus* the carapace is sub-circular and the chelipeds equal. If the male abdomen resembles that of *Palicus* and *Manella*, then the abdomen of *Pleurophricus cristatipes* represented in fig. 6c (op. cit.) is that of a young female.

This genus is dedicated to Dr. J. G. de Man, one of the most painstaking of carcinologists.

**Manella spinipes** (de Man).

(Pl. VII, fig. 6.)

*Pleurophricus spinipes* de Man, Arch. f. Naturg., LIII, 1887, 1, p. 344, pl. xv, fig. 1.

*Record of specimens.*—South coast of Molokai Island, 23 to 24 fathoms, station 3847; Auau Channel, 28 to 43 fathoms, stations 3872 and 3876.

De Man based the species on a single male, which had the front broken and lacked the right cheliped; the front is four-lobed, the lobes rounded, the middle pair lower and more advanced than the outer; median sinus deep U-shaped. The right chela is  $1\frac{1}{2}$  times as high as the left in both sexes, fingers rather short and stout, and when shut leaving a small hiatus at base. In the adult male the greater part of inner surface of hand and fingers of both chelæ is clothed with long hair; in the female and immature male this space is naked, but there is a small dark spot at the center. Besides the long hairs which lie on the upper surface of the last two joints of the legs, there are long hairs fringing the posterior edge of the merus, and in the last pair the anterior edge of the carpus. In the adult the seven segments of the abdomen are all well separated; in the immature the first to sixth segments, inclusive, may be fused.

*Dimensions.*—Length of male (station 3847) 11.7, width 13.4 mm.



Fig. 3.—*Manella spinipes*, station 3847; larger chela of male,  $\times 2\frac{1}{2}$ .

## Family GECARCINIDÆ.

*Cardisoma rotundum* (Quoy and Gaimard).

*Thelphusa rotunda* Quoy and Gaimard, in Freycinet's Voyage autour du Monde, III, Zool., p. 527, pl. 77, fig. 1 (*Thelphuse chaperon arrondi*), 1825.

*Cardisoma hirtipes* Dana, Proc. Acad. Nat. Sci. Phila., V, 1851, 253; Crust. U. S. Expl. Exped. I, 376, 1852; pl. xxiv, fig. 2, 1855.

*Cardisoma rotundum* Safford, Contr. U. S. Nat. Herbarium, IX, 1905, 90.

Oahu, H. Mann, 1864, 1 male, 1 female, in Museum of Comparative Zoology.

## Family GRAPSIDÆ.

*Grapsus grapsus tenuicrustatus* (Herbst).

*Cancer tenuicrustatus* Herbst, Naturg. Krabben u. Krebse, I, 113, tab. III, fig. 33 (not 34), 1783 (not Gronovius). See von Martens, Arch. f. Naturg., XXXVIII, 1872, 107, and Hilgendorf, Monats. K. Akad. Wiss. Berlin, 1878 (1879), 807.

*Grapsæ rude* Milne Edwards, Hist. Nat. Crust., II, 87, 1837.

*Grapsus hirtus* Randall, Jour. Phila. Acad. Nat. Sci., VIII, 1839 (1840), 124.

*Grapsus rudis* Milne Edwards, Ann. Sci. Nat. (3), Zool., XX, 1853, 168 [134].

*Grapsus maculatus* var. *tenuicrustatus* Kingsley, Proc. Acad. Nat. Sci. Phila., 1880, 193.

Hilo, Hawaii; Avalu Point, Lanai Island beach, station 3829; Honolulu market; Papai Oama; Hanalei, Kauai, reef; Necker Island; Laysan; "under stones, high-water mark," Henshaw; Kauai, A. Garrett, in Museum of Comparative Zoology.

Hawaiian Islands (Milne Edwards, Gibbes, Randall as *G. hirtus*; 1 male type, J. K. Townsend, collector, in Philadelphia Academy of Natural Sciences; (Dana as *G. pictus*).<sup>a</sup> Oahu (Kingsley). Waikiki, Oahu, and Laysan (Lenz).

*Distribution*.—The common rock crab of the tropics, *Grapsus grapsus*, is separable into two forms, one in which the lobe on the wrist is very broad and terminates in a short point (*G. grapsus* typical), and one in which the same lobe is narrow and terminates in a long narrow spine (*tenuicrustatus* Herbst). The former inhabits the coasts of America, including the outlying islands, such as the Galapagos, and also the eastern shores and islands of the Atlantic Ocean; the latter is restricted to the oriental region. This division is borne out by the large series in the U. S. National Museum, containing eight localities for *tenuicrustatus*, exclusive of the Hawaiian Islands, and in the Museum of Comparative Zoology, where the same subspecies is represented by nine localities (specimens determined by W. Faxon).

*Grapsus strigosus* (Herbst).<sup>b</sup>

*Grapsus strigosus* Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 393.

Oahu, H. Mann, 1864, 3 males, 2 females, approaching subspecies *longitarsis*, in Museum of Comparative Zoology.

Honolulu (Cano); Hawaiian Islands (Kingsley).

*Grapsus strigosus longitarsis* Dana.

(Pl. VIII, fig. 1.)

*Grapsus longitarsis* Dana, Proc. Acad. Nat. Sci. Phila., V, 1851, 249; Crust. U. S. Expl. Exped., Pt. I, 339, 1852; pl. xxi, fig. 4, 1855. Paumotu Archipelago.

*Grapsus subquadratus* Stimpson, Proc. Acad. Nat. Sci. Phila., X, 1858, 103 [49]. Hawaiian Islands.

*Orthograpsus longitarsis* Kingsley, Proc. Acad. Nat. Sci. Phila., 1880, 195.

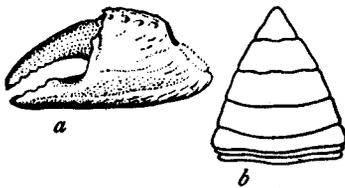


Fig. 4.—*Grapsus strigosus longitarsis*. a, Left chela of female, station 3881,  $\times 1\frac{1}{2}$ . b, Abdomen of male, Kailua,  $\times 1\frac{1}{2}$ .

<sup>a</sup> See note under *G. strigosus*.

<sup>b</sup> Dana records *G. pictus* from the Hawaiian Islands; his specimens are not extant. A specimen from Paumotu Archipelago labeled by him "*G. pictus*" is in the National Museum and is really *G. strigosus*.

Napili Harbor, Maui, station 3881, 2 females (1 ovigerous). Hawaiian Islands, W. H. Pease, North Pacific Exploring Expedition, 1 female, type of *G. subquadratus* Stimpson. Hawaiian Islands, A. Garrett, 1 female in Museum of Comparative Zoology.

"Under stones below half-tide mark on the ocean shore at Hilo" (Stimpson, unpublished MS.)

A smaller form than typical *G. strigosus*, a female bearing eggs measuring only 24.2 mm. long; also wider and more quadrate; front less advanced; fingers gaping in their basal half; ambulatory legs much longer,  $2\frac{1}{2}$  times as long as carapace, meropodites narrowing more distinctly at the distal end, propodites markedly elongate; abdomen of mature female very wide, almost concealing the coxæ of the ambulatory legs; abdomen of male broader, equilaterally triangular from the middle of the third segment to the tip.

The type of Dana's *G. longitarsis* is also in the National Museum; it is a male smaller than the females. I can not see that it differs essentially from the type of *G. subquadratus*.

*Dimensions*.—Length of larger female from Napili 24.6 mm., greatest width 28.2, width at exorbital angles 23.7, at epibranchial tooth 25.8, width of front below 11.4 mm.

#### ***Geograpsus lividus* (Milne Edwards).**

*Geograpsus lividus* Kingsley, Proc. Acad. Nat. Sci. Phila., 1880, 195.

Hawaiian Islands, A. Garrett, 2 males, in Museum of Comparative Zoology.

#### ***Geograpsus crinipes* (Dana).**

*Geograpsus crinipes* Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 396.

Oahu, H. Mann, 1864, 1 female, in Museum of Comparative Zoology. Hawaiian Islands, A. Garrett, 1 male, in Museum of Comparative Zoology.

Hawaiian Islands (Dana, Kingsley).

#### ***Hemigrapsus crassimanus* Dana.**

*Hemigrapsus crassimanus* Dana, Proc. Acad. Nat. Sci. Phila., V, 1851, 250; Crust. U. S. Expl. Exped., I, 349, 1852; pl. xxii, fig. 4, 1855.

Hawaiian Islands (Dana).

#### ***Metopograpsus messor* (Forskål). Native name, *Thukuhar* (Owen).**

*Pachygrapsus parallelus* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 127.

*Metopograpsus messor* var. *frontalis* Miers, Ann. Mag. Nat. Hist. (5), V, 1880, 311.

*Metopograpsus messor* Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 397.

Puako Bay, Hawaii; Hilo; Mauna Loa, beach; Honolulu; Pearl Harbor; Oahu, T. H. Streets; Hawaiian Islands, North Pacific Exploring Expedition, 1 female, in U. S. National Museum, 2 females in Museum of Comparative Zoology, 1 male, 1 female, in Philadelphia Academy of Natural Sciences; Kauai and Maui, A. Garrett, in Museum of Comparative Zoology; Hawaiian Islands, W. H. Jones, in Museum of Comparative Zoology. "Numerous, some under stones at high-water mark," Henshaw.

Hawaiian Islands (Randall, Dana, Streets, Kingsley), 2 males, 3 females, types of *P. parallelus* Randall, T. Nuttall and J. K. Townsend, collectors, in the Philadelphia Academy; also 2 males, 1 female, collected by the U. S. Exploring Expedition. Oahu (Owen); Hawaii (Stimpson); Hilo beach (Miers); Honolulu (Cano); Pearl Harbor, and Waikiki, Oahu (Lenz).

#### ***Pachygrapsus plicatus* (Milne Edwards).**

*Pachygrapsus plicatus* Kingsley, Proc. Acad. Nat. Sci. Phila., 1880, 200, and synonymy.

Kailua; Hilo, Hawaii, H. W. Henshaw.

Hawaiian Islands (Milne Edwards, A. Milne Edwards). Hawaiian Islands, U. S. Exploring Expedition, 2, male and female (Dana); Oahu (Kingsley); Honolulu (Cano); Laysan (Lenz).

**Pachygrapsus minutus** A. Milne Edwards.

*Pachygrapsus minutus* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, IX, 1873, 292, pl. xiv, fig. 2; New Caledonia. Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 399.

Laysan, May, 1902, 6 males, 1 ovigerous female, smaller than the types, the largest male measuring 4.5 by 6.5 mm., the female 3 by 4.6 mm.

Honolulu (Cano).

**Pachygrapsus longipes** Rathbun.

(Pl. VIII, fig. 7.)

*Pachygrapsus longipes* Rathbun, Proc. U. S. Nat. Mus., XVI, 1893, 247.

Honolulu (type locality); Honolulu reef; Kealakekua Bay, Hawaii; Hilo, H. W. Henshaw.

**Pachygrapsus crassipes** Randall.

*Pachygrapsus crassipes* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 127.

Hawaiian Islands (Randall). The locality is probably erroneous.

**Planes minutus** (Linnæus).

*Nautilograpsus minutus* Kingsley, Proc. Acad. Nat. Sci. Phila., 1880, 202.

Between Erben Bank and Kaiwi Channel, station 3800, on *Veleva*; south coast of Oahu, surface, station 3813; south coast of Molokai Island, station 3833, on floating stick.

**Cyclograpsus granulatus** Dana.

*Cyclograpsus granulatus* Dana, Proc. Acad. Nat. Sci. Phila., V, 1851, 251; Crust. U. S. Exploring Expedition, I, 361, 1852; pl. xxiii, fig. 4, 1855.

Hilo, Hawaii, under stones, high water mark, numerous, H. W. Henshaw. Kahului, Maui, R. C. McGregor. Hawaiian Islands, A. Garrett, in Museum of Comparative Zoology. Maui (Dana).

**Cyclograpsus henshawi** Rathbun.

*Cyclograpsus henshawi* Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, 75.

Hilo, Hawaii, under stones, high water mark, type locality, H. W. Henshaw. Kahului, Maui, R. C. McGregor. Oahu, Galathea Expedition. Weather coast of Hawaii, A. Garrett, in Museum of Comparative Zoology.

**Cyclograpsus cinereus** Dana.

*Cyclograpsus cinereus* Dana, Proc. Acad. Nat. Sci. Phila., V, 1851, 251; Crust. U. S. Exploring Expedition, I, 360, 1852, pl. xxiii, fig. 3, 1855.

Hawaiian Islands (Dana).

**Sesarma (Sesarma) angustifrons** A. Milne Edwards.

*Sesarma angustifrons* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, V, 1869, 26.

Collected by W. H. Pease, probably at the Hawaiian Islands, one specimen, in Peabody Museum, Yale University.

Hawaiian Islands (type locality).

**Sesarma (Holometopus) obtusifrons** Dana.

*Sesarma obtusifrons* Dana, Proc. Acad. Nat. Sci. Phila., V, 1851, 250; Crust. U. S. Exploring Expedition, I, 355, 1852; pl. xxii, fig. 9, 1855.

Hilo, Hawaii, numerous, H. W. Henshaw; a fine series, running larger than Dana's types. The largest male is 15.6 mm. long, 20.5 wide, greatest width of front 13.8 mm. Hawaiian Islands, A. Garrett, in Museum of Comparative Zoology.

Maui (Dana). Hannakakoi, Molokai (Lenz).

**Sesarma (Holometopus) trapezium** Dana.

*Sesarma trapezium* Dana, Crust. U. S. Exploring Expedition, I, 354, 1852; pl. xxii, fig. 8, 1855.  
Hawaiian Islands (Dana).

**Sarmatium faxoni**, sp. nov.

(Pl. VII, fig. 1.)

Carapace very little broader than long. Anterior third inclined. Protogastric and anterior branchial regions separately convex. Anterior mesogastric and postorbital regions depressed. H-shaped depression deep. Post-frontal tubercles of the middle pair three times as wide as those of the lateral pair; directly behind the latter and a little posterior to the line of the orbits another pair of elevations similar but wider. Surface of the anterior two-fifths of the carapace covered with coarse rough granules; the remainder with irregular confluent grooves and pits; post-lateral regions obliquely striated.

Surface of front vertical, not visible or only partially visible in dorsal view, very concave horizontally and perpendicularly, granulate; margin thin, along the anterior edge very finely crenulate; in front view this edge nearly horizontal and slightly sinuous, in subdorsal view bilobed; side margins parallel; corners rounded.

Lateral margins of carapace very convex, marked by a narrow smooth rim; three teeth, including the orbital, the first and second directed forward, narrowly acute, sharp-pointed, the first the largest; third tooth obtuse, smallest, directed outward.

Arms with a superior subterminal tooth; outer face crossed by short granular striae; lower face bordered by spiniform tubercles. Wrist with outer surface very rough with striae and granules; inner tooth broad, blunt. Hands equal in both sexes, covered outside and in with large, rather distant, sharp granules. A line of smaller granules along upper margin, below which on the inner surface are three or four short oblique granulated ridges. Fingers of male gaping, of female not gaping; upper surface of dactylus armed with horny-tipped spinules, one row of which extends at least to the distal third of the finger; similar spinules on the lower surface of the pollex.

Ambulatory legs long and flat, the third pair between 2 and  $2\frac{1}{2}$  times as long as the carapace. The merus joints widen gradually from the proximal end and may attain their greatest width at the subterminal spine or somewhat behind that point; subterminal projection a sharp spine. The propodites are elongate, with subparallel sides.

Abdomen of mature female very wide; last segment deeply set in the preceding.

*Dimensions*.—Male (Ebon), length, measured from edge of post-frontal lobes 41.2, greatest width 43, exorbital width 30.5, width at posterior epibranchial tooth 38.7, width of front 15 mm.; female (type), length, measured from edge of post-frontal lobes 34.4, greatest width 37, exorbital width 26, width at posterior epibranchial tooth 33.5, width of front 13.5 mm.

*Distribution*.—Oahu, H. Mann, 1864, one female type (Cat. No. 22837), received from Museum of Comparative Zoology, where there are additional specimens (3 males, 3 females) from the same locality, and three males from Ebon, Marshall Islands, Rev. B. G. Snow, collector.

Named for Dr. Walter Faxon.

This species differs from the typical species of the genus, *S. crassum* Dana, in the vertical front and in the terminal segment of the abdomen of the female deeply impacted in the penultimate segment.

**Plagusia depressa tuberculata** Lamarck.

*Plagusia depressa* var. *squamosa* Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 437 (not all synonymy).

Kailua and Hilo, Hawaii; Maui, R. C. McGregor; south coast of Molokai, station 3824; Honolulu; Laysan; Hawaiian Islands, W. H. Pease.

Hawaiian Islands (Stimpson); Laysan (Lenz).

This form is regarded as a subspecies of *P. depressa* because there are intergrading forms. Specimens from Madeira have every appearance of *P. depressa* from the American coast, except that the lobe on the basal joints of the legs is entire, as in true *tuberculata*. *P. immaculata* seems to me a distinct species. The designation *squamosa* Herbst is not used for *tuberculata* Lamarck in view of the fact that there appears to be doubt as to the identity of the type of the former.

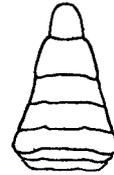


Fig. 5.—*Sarmatium faxoni*, abdomen of male cotype,  $\times \frac{1}{2}$ .

**Plagusia immaculata** Lamarck.

*Plagusia immaculata* Miers, Ann. Mag. Nat. Hist. (5), I, 1878, 150; Challenger Brachyura, 273, pl. xxii; fig. 1, 1886.

Honolulu (Miers).

**Percnon planissimum** (Herbst).

*Liolophus planissimus* Alcock, Jour. Asiat. Soc. Bengal, LXIX, 1900, 439.

Hilo and Puako Bay, Hawaii; Napili Harbor, Maui, station 3881; Honolulu, on coral reef; Hanalei, Kauai, reef; Hawaiian Islands, W. H. Pease; "under stones, high water mark," Henshaw. Maui (Dana). Hawaii (Stimpson). Hawaiian Islands (Milne Edwards, as *Acanthopus affinis*).

**Percnon abbreviatum** (Dana).

*Acanthopus abbreviatus* Dana, Proc. Acad. Nat. Sci. Phila., V, 1851, 252; Crust. U. S. Expl. Exped., I, 373, 1852; pl. xxiii, fig. 11, 1855.

South coast of Molokai Island, station 3834; Honolulu; Waikiki Beach.

**Percnon pilimanus** (A. Milne Edwards).

*Plagusia planissima* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 128.

*Acanthopus pilimanus* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, IX, 1873, 300, pl. xiv, fig. 5.

*Leiolophus pilimanus* Miers, Ann. Mag. Nat. Hist. (5), I, 1878, 154.

## Family POTAMONIDÆ.

**Trichodactylus punctatus** Eydoux & Souleyet.

Without doubt erroneously attributed to the Hawaiian Islands by those authors.

## Family PILUMNIDÆ.

**Carpilius maculatus** (Linnæus).

*Carpilius maculatus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 79, and synonymy.

Honolulu; Honolulu market; Puako Bay and Hilo, Hawaii. Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

Honolulu Reefs (Miers); Laysan (Lenz).

**Carpilius convexus** (Forskål).

*Carpilius convexus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 80, and synonymy.

Honolulu, reef and market; Waikiki Beach; Hilo; Waiawa Kanai, V. Knudsen. Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

Hawaiian Islands (Dana); 1 male, 1 female, juv., collected by U. S. Exploring Expedition, in Philadelphia Academy of Natural Sciences; Laysan (Lenz).

**Carpilodes tristis** Dana.

*Carpilodes tristis* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 82, and synonymy.

Hawaiian Islands, A. Garrett, 2 females, in Museum of Comparative Zoology.

**Carpilodes ruber** A. Milne Edwards.

*Carpilodes ruber* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, I, 1865, 228, pl. xi, figs. 4, 4a, 4b.

Honolulu (A. Milne Edwards); Pearl Harbor (Lenz).

***Carpilodes coccineus*, sp. nov.**

(Pl. VIII, fig. 4.)

Surface covered, except in the grooves, with crowded crisp granules visible to the naked eye. Carapace deeply lobulated everywhere. The groove defining the posterior lateral lobe continued to the cardiac region. As in *C. pediger*, the gastric region is divided into four longitudinal lobules and four small anterior lobules, while a shallow transverse furrow cuts off a narrow piece from the posterior extremity of the mesogastric lobule. 1L, 2L, 3L, 4L, 5L, and 6L (of Dana) are separated from one another, although 1L, 3L, and 4L are fused with the corresponding marginal lobes; there is no division between 1R and 2R, while 3R is separate. 2L and 4L have each a dimple on their antero-lateral portion. A broad transverse furrow behind the cardiac region and a narrow one above the posterior margin.

Antero-lateral lobes well marked, the posterior one acutely conical and in young specimens the one next to the last also.

Chelipeds nearly equal, granular like the carapace; two teeth at inner angle of wrist; outer surface of palm with an obscure ridge through the middle and a groove near the upper margin. Fingers slightly gaping. In the old male the gape is less, and the black color of the pollex runs well back on the palm inside and out, but the black of the dactylus does not cover the upper part of the base; tips of fingers light.

Legs granular; carpal joints faintly bilobed.

Color.—“Deep dull crimson lake” all over except the fingers. Color persisting in alcohol.

Dimensions.—Male type, length 13.9, width 23.4 mm.

Distribution.—South coast of Molokai Island, 23 to 73 fathoms, stations 3847 and 3848; Auau Channel, 28 to 65 fathoms, stations 3875 and 3876; Penguin Bank, 28 to 14 fathoms, station 4034, 1 male type (Cat. No. 29422); Hawaiian Islands, A. Garrett, April 25, 1860, in Museum of Comparative Zoology. There is also a male from Mauritius in the U. S. National Museum.

This species comes nearest to *C. pediger* Alcock and *C. cariosus* Alcock. From the former it is distinguished by the coarser granulation, the two teeth on the wrist, the absence of the strong tooth from the base of the movable finger, and by the color; from the latter by the lack of nodules on the chelipeds and legs, by the presence of the small antero-lateral gastric lobule, and by the color.

***Carpilodes virgatus*, sp. nov.**

(Pl. VIII, fig. 3.)

Much like the preceding, *C. coccineus*, but flatter; granulation fine, invisible to the naked eye and occupying the grooves as well as the lobules; groove dividing the protogastric lobules not continued back to the mesogastric area; 2L wider; 2L and 4L not dimpled; antero-lateral lobes less conical, more obtusely pointed.

Surface of chelipeds rougher, the granules on the hand arranged in a reticulating pattern with smooth intervals. Fingers moderately gaping; dark color of the pollex in the male extending back on the palm for two-thirds its length and height. Carpal and propodal joints of legs wider, the former more deeply bilobed than in *C. coccineus*.

Color, bright scarlet, persisting in alcohol, with some small spots of buff which are larger and more confluent on the posterior portion. The legs have about six bands of buff, that on the middle of the merus-joint more or less incomplete or altogether wanting.

Dimensions.—Male type, length 10.8, width 18.4 mm.

Distribution.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; Auau Channel, 13 to 43 fathoms, stations 3871, 3873, and 3876 (type locality); vicinity of Kauai Island, 68 to 179 fathoms, station 4128. Cat. No. of type, 29432.

***Carpilodes vaillantianus* (A. Milne Edwards).**

*Carpilodes vaillantianus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 85, and synonymy.

Honolulu; reef in front of Honolulu; Laysan. Hawaiian Islands, A. Garrett, 1 female in Museum of Comparative Zoology. Hawaiian Islands, W. H. Pease, 2 males in Philadelphia Academy of Natural Sciences.

Color, yellow or greenish yellow; fingers light brown with white tips

**Carpilodes monticulosus** A. Milne Edwards.

*Carpilodes monticulosus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 86.

Honolulu; Laysan. Laysan (Lenz).

**Carpilodes supernodosus**, sp. nov.

(Pl. VIII, fig. 5.)

Carapace everywhere lobulated, the lobules high and for the most part long and sausage-like, smooth to naked eye, separated by broad deep smooth depressions. Under the lens the surface of the lobules is covered with fine close depressed granulation and irregular pits, some of which are very large.

Protogastric lobule U-shaped; in front of the inner branch only is there an epigastric lobule. The hepatic and branchial lobules extending inward from the lateral lobes are long, irregular, and are incompletely subdivided near their outer ends. 6L is distinct and is subdivided by a transverse furrow; cardiac region flat; two grooves behind it. Lateral projections thick, rounded, well-marked lobes, the first of the four confluent with the orbital lobule and with the subhepatic lobule.

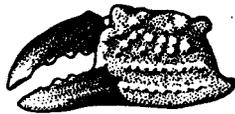


Fig. 6.—*Carpilodes supernodosus*, chela of type, male,  $\times 2\frac{1}{2}$ .

Chelipeds equal, upper margin of arm denticulate; wrist and upper surface of palm covered with irregular nodules; three longitudinal ridges on outer face of palm, the uppermost formed by a double row of nodules, the second one by a single row, the lower one simply crenulated and prolonged on the finger. Color of index continued a little on the palm. Fingers gaping.

Carpal and propodal joints of legs strongly nodulous.

*Dimensions*.—Length of male 11.8, width 20.2 mm.

*Distribution*.—Laysan, May, 1902, one male type (Cat. No. 29424); vicinity of Laysan, 10 to 19 fathoms, stations 3959 and 3960; vicinity of Modu Manu, 27 to 31 fathoms, station 4171.

*Color*.—A uniform yellowish brown or orange-red.

This species is distinguished from all others by its high smooth nodules and broad interspaces.

**Liomera pubescens** (Milne Edwards).

*Liomera pubescens* A. Milne Edwards, Nouv. Arch. Mus.

Hist. Nat. Paris, I, 1865, 223, pl. xii, figs. 6, 6a.

Laysan; south coast of Molokai Island, station 3834.

Color pink, with distant small white spots rimmed with deeper pink; hair yellow.

**Liomera prætexta**, sp. nov.

Not a typical *Liomera*, because possessed of a crest on the carapace and the carpal joints of the legs.

Carapace of characteristic *Liomera* form, 1.8 times as broad as long, sparingly granulate; from each granule springs a tuft of long yellow hairs which nearly obscure the surface except along the fronto-orbital and antero-lateral borders which are bare and more finely and densely granulate.

Front deflexed, with two lobes separated by a shallow emargination, from which a deep median furrow arises; lateral angles dentiform, fused with the orbital angles.

Orbits transversely oblong, as in *L. pubescens* (Milne Edwards); the three outer fissures deeply marked.

Antero-lateral border cristiform, cut into four lobes diminishing in size posteriorly, the first confluent with the orbital angle and twice as wide as the second; the third most prominent and twice as wide as the fourth. Lower surface of carapace granulate and in part hairy. Inner angle of basal antennal joint produced and applied along the inner side of the frontal tooth.

Chelipeds equal, small, about  $1\frac{1}{2}$  times as long as carapace. Upper distal portion of arm, entire outer surface of wrist and upper surface of palm granular and hairy. Upper margin of arm acute,

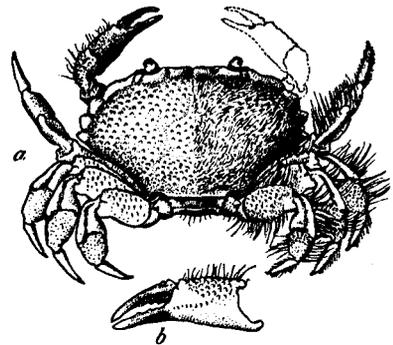


Fig. 7.—*Liomera prætexta*, station 3872. a, Dorsal view,  $\times 1\frac{1}{2}$ . b, Chela,  $\times 2\frac{1}{2}$ .

inner angle of wrist without a tooth, simply bluntly angular. Palms diminishing in width distally; a longitudinal row of granules just below the middle. Fingers long and slender, deeply grooved, narrowly gaping, terminal spoons shallow.

Legs broad, fringed with long hair, especially on the upper margin; posterior surface more or less granular and hairy. Merus joints with an acute upper edge with a row of sharp granules; carpus joints limbed above, the limb bare and continued on the following joint by a small lobe against which the carpal limb fits when the leg is straightened.

*Color*.—Orange brown in alcohol.

*Dimensions*.—Female, type, length 10.5, width 18.6 mm.; male (station 3875), length 6.7, width 11.7 mm.

*Distribution*.—Auau Channel, 28 to 65 fathoms, stations 3872 (type locality), 3875, 3876. Cat. No. of type, 29507.

The limbed carapace and carpopodites as well as the slender chelæ separate this species from other species of *Liomera*.

***Atergatis ocyroe* (Herbst).**

*Atergatis floridus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 98, and synonymy.

Oahu, H. Mann, 1864, 4 males, 2 females, in Museum of Comparative Zoology.

***Platypodia semigranosa* (Heller).**

*Lophactæa semigranosa* de Man, Abhand. Senckenb. naturf. Ges., Frankfurt a. M., XXV, 1902, 582, pl. xxi, fig. 19.

*Distribution*.—South coast of Molokai Island, 23 to 73 fathoms, stations 3847 and 3848; Auau Channel, 21 to 65 fathoms, stations 3872, 3874, 3875, and 3876; vicinity of Laysan Island, 10 to 19 fathoms, station 3960; Penguin Bank, 27 to 29 fathoms, stations 4031 and 4033; northeast coast of Hawaii Island, 50 to 62 fathoms, station 4055; vicinity of Modu Manu, 30 to 71 fathoms, stations 4149, 4150, and 4164.

In the main points these specimens agree with de Man's description and figure. The tubercles on the palm are, however, fewer and larger, including those on the crest, which are usually five or six in number. The large protuberance on the basal half of the index is broader and less protuberant, and resolvable usually into three smaller teeth not deeply separated. The 23 specimens examined agree in these particulars. The carapace of small specimens and also the propodites of the ambulatories are very much smoother than in the adult.

***Platypodia granulosa* (Rüppell).**

*Lophactæa granulosa* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 101, 1898.

Hawaiian Islands (Randall); Honolulu Reefs (Miers).

***Platypodia eydouxi* (A. Milne Edwards).**

*Lophactæa eydouxi* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, I, 1865, 248, pl. xvi, fig. 2.

*Atergatis limbatus* Streets, Bull. U. S. Nat. Mus., 1877, No. 7, 105.

Honolulu; Honolulu Reef; Pearl Harbor. Hilo, H. W. Henshaw, "under stones, high-water mark." Oahu, Dr. T. H. Streets, U. S. Navy. Hawaiian Islands, W. H. Pease, in Philadelphia Academy of Natural Sciences; A. Garrett, in Museum of Comparative Zoology.

Hawaiian Islands (A. Milne Edwards; Streets, as *A. limbatus*). Laysan (Lenz).

This species is very close to *P. granulosa* (Rüppell). The carapace is a little narrower, but more oblong transversely, being relatively wider at the hepatic regions. The lobulation is much less strong, especially noticeable on the protogastric lobes; in *P. granulosa* these lobes are deeply divided; in large specimens of *P. eydouxi* there is a shallow longitudinal groove extending entirely across the lobes, but in small specimens the groove is incomplete posteriorly. The crest on the ambulatory legs is wider in *P. eydouxi*, occupying more than one-third the width of the leg; in *P. granulosa* less than a third.

Among the immature specimens collected by A. Garrett is one with a little deeper lobulation that approaches *P. granulosa*.

**Platypodia actæoides** (A. Milne Edwards).*Lophozozymus actæoides* A. Milne Edwards, Bull. Soc. Entom. France (4), VII, 1867, 273.*Lophactra actæoides* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, IX, 1873, 189, pl. vii, fig. 7.

Laysan (Lenz).

**Zosimus æneus** (Linnæus).*Zozymus æneus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 104, and synonymy.

Oahu, H. Mann, 1884, 1 male in Museum of Comparative Zoology.

**Lophozozymus incisus** (Milne Edwards).*Lophozozymus incisus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 107, and synonymy.

Laysan (Lenz).

**Lophozozymus dodone** (Herbst).

(Pl. VIII, figs. 2, 2a.)

*Lophozozymus dodone* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 108, and synonymy.

Honolulu; Honolulu Reef; Waialua, Oahu; vicinity of Laysan, 10 to 19 fathoms, station 3960; Hilo, H. W. Henshaw.

**Lophozozymus intonsus** (Randall). Native name, *Kumimi* (Owen).

(Pl. VIII, fig. 8.)

*Xantho eudora* Owen (not Herbst), Crustacea, in Zool. Capt. Beechey's Voyage to the Pacific in H. M. S. Blossom, 1825 to 1828, p. 77, 1839.*Xantho intonsus* Randall, Journ. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 113.

Carapace perfectly smooth and polished. Gastric region well delimited and partially subdivided. Two deep grooves run in from the ultimate and the penultimate sinuses of the antero-lateral margin and are united without attaining the gastric region.



Fig. 8.—*Lophozozymus intonsus*, larger chela of male,  $\times \frac{1}{4}$ .

Front with two well marked and prominent median lobes; a small but distinct outer lobe is fused with the orbital angle. Surface of the antero-lateral crest concave except of the last tooth. The four teeth are separated by closed fissures; first and second teeth shallow and rounded, the first advanced beyond the orbital angle, but in the same plane; third tooth dentiform, its outer or posterior margin longitudinal and  $2\frac{1}{2}$  times as long as its anterior margin; fourth tooth narrow, acute, and bluntly ridged, the ridge continued inward on the carapace.

Chelipeds subequal; upper edge of arm thin, scarcely crested, fringed with long yellow hair and ough with coarse granules, which extend a little way down the outer surface. Surface of wrist and hand covered with very fine granules, forming a reticulated pattern. A very stout blunt tooth at inner angle of wrist; below it a smaller similar tooth, with tubercles and coarse granules at its base. A low blunt crest on upper margin of hand; below it on outer surface four smooth blunt longitudinal crests, of which the two superior are the broader. Fingers long, prehensile teeth very low and fitting close together; color of pollex extending far back on the palm in the male, on the lower margin even to the middle.

Margins of legs clothed with long yellow hair, scantiest on the lower border of the merus and carpus joints. Upper margin sharp but not cristate, that of the merus granulated, as is also its lower margin.

*Dimensions*.—Male, length 31.8, width 49.5 mm.; female, length 26.2, width 42 mm.; female type, length 32.2, width 49.8 (tip of left posterior tooth broken off).

*Distribution*.—Kailua, August 1–12, 1901, 1 male, 1 female. Hawaiian Islands, A. Garrett, 1 male, in Museum of Comparative Zoology.

Hawaiian Islands (Randall), 1 female, type in Philadelphia Academy of Natural Sciences. Oahu (Owen).

Near *L. pictor* (Fabricius) = *L. octodentatus* (Milne Edwards), in which the anterior of the lateral teeth is below the level of the outer orbital fissure, the posterior tooth is broader, the hands are not externally carinate, and the legs are conspicuously carinate.

***Xantho lacunosus*, sp. nov.**

(Pl. viii, fig. 6.)

In form and areolation this species bears a striking resemblance to *X. impressus* (Lamarck).<sup>a</sup> Surface everywhere deeply pitted; on the palms the pits elongate, running transversely between irregular longitudinal ridges. Carapace a little narrower than in *X. impressus*, and front less deflexed, so that in dorsal view the true margin of the lobes is visible. Movable finger more strongly deflexed; meropodites of legs with a distinct though blunt superior crest, marked off by a groove. Sixth segment of abdomen of male broader, seventh more broadly rounded. Otherwise as in the related species.

*Dimensions*.—A smaller species than *X. impressus*. Length of adult male, type, 18.4, width 30.5 mm. Length of egg-bearing female 18.8, width 31.5 mm.

*Distribution*.—Auau Channel, 32 to 65 fathoms, stations 3872, 3875, and 3876 (type locality). Cat. No. of type, 29588.

***Xantho bidentatus* A. Milne Edwards.**

*Xantho bidentatus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 114.

Hawaiian Islands (A. Milne Edwards, Miers).

***Xantho crassimanus* A. Milne Edwards.**

*Xantho (Leptodius) crassimanus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 120.

Reef in front of Honolulu; Waialua, Oahu.

In the young the four teeth of the front are slightly developed. The surface of the carapace of both young and middle sized is everywhere conspicuously pitted.

***Leptodius exaratus* (Milne Edwards).**

*Xantho (Leptodius) exaratus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 118, and synonymy.

Honolulu; Pearl Harbor; Hilo, H. W. Henshaw.

Hawaii (Stimpson).

***Leptodius sanguineus* (Milne Edwards).**

*Xantho (Leptodius) sanguineus* Alcock, Jour. Asiatic Soc. Bengal, LXVII, 1898, 119, and synonymy.

Honolulu; Honolulu Reef; Waialua, Oahu; Hilo; Puako Bay and Kealakekua Bay, Hawaii; Napili Harbor, Maui, station 3881; Necker Island; Waikiki Beach, Waianae; Kailua. One specimen at Honolulu was taken from mouth of *Gymnothorax laysana*. "Under stones, high-water mark" Henshaw.

Hawaiian Islands (Randall, as *Lagostoma nodosa*; Streets). Oahu, Maui and Hilo (Dana); Hilo, 1 female, U. S. Expl. Exped., in Museum of Comparative Zoology. Kannakakai, Molokai (Lenz).

Both forms described by Dana under the names *Chlorodius sanguineus* and *C. nodosus* occur here.

***Leptodius molokaiensis*, sp. nov.**

(Pl. ix, fig. 1.)

Closely allied to *L. exaratus* (Milne Edwards), but a much rougher species. The anterior two-thirds of the carapace in large part rugose, the rugosities composed of sharp granules. Lateral teeth very prominent, acuminate, sides concave and granulate; no supplementary tooth behind the fifth tooth. Lobes of front so deeply hollowed that a small distinct lobe is formed at the outer end.

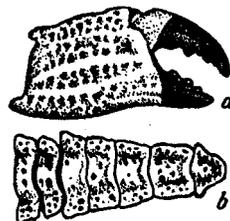


Fig. 9.—*Xantho lacunosus*, type, male. a, Chela,  $\times 1\frac{1}{2}$ . b, Abdomen,  $\times 1\frac{1}{2}$ .

<sup>a</sup>Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 115.

Chelipeds very rough; wrist nodulous and granulous, a few spinules at inner angle; granules of the hand very uneven and arranged in irregular transverse series, the ridges of the fingers marked by coarse granules. Fingers shorter than in *L. exaratus*, the dactylus strongly hooked and reaching beyond the pollex. Tips of fingers broadly hollowed, a subterminal tuft of hair. Index with a large tooth at its middle, and a smaller one on the proximal side of the first; dactylus with two or three teeth on basal half. Color of index curving moderately back on palm. Merus joints of legs armed with a row of short spines above and sharp granules below on the proximal two-thirds. Last three joints granulous, their margins sharply spinulous.



Fig. 10.—*Leptodius molokaiensis*, larger chela of type male,  $\times 24$ .

*Dimensions*.—Male, length 10, width 14.7 mm.; female, length 7.9, width 11 mm.

*Type locality*.—South coast of Molokai, 43 to 66 fathoms, station 3850; 1 male, 1 egg-bearing female (Cat. No. 29492).

Stimpson, in his unpublished report on the Crustacea of the North Pacific Exploring Expedition, describes and figures many forms which he considers varieties of *Leptodius exaratus*. Our species approaches some of these in the form of the carapace, but is much rougher; none of his species have the meropodites armed with spines.

#### ***Leptodius nudipes* (Dana).**

(Pl. ix, fig. 3.)

*Xantho* (*Leptodius*) *nudipes* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 121, and synonymy.

Hawaiian Islands, A. Garrett, 2 males, in Museum of Comparative Zoology.

Carapace deeply areolate. The posterior accessory denticle of the last antero-lateral tooth has the appearance of being on the postero-lateral margin. An oblique groove runs to the middle of the postero-lateral margin.

Front deeply four-lobed, a distinct median V.

The proximal half of the anterior margin of the merus of the ambulatory legs is hairy, as are both margins of the inner surface of the arm of the cheliped.

Length of male 11, width 16.5 mm.

#### ***Leptodius gracilis* (Dana).**

(Pl. ix, fig. 2.)

*Chlorodius gracilis* Dana, Crust. U. S. Expl. Exped., I, 210, 1852; pl. xi, fig. 13, 1855.

Oahu, H. Mann, 4 males, 2 females, in Museum of Comparative Zoology.

#### ***Leptodius waialuanus*, sp. nov.**

(Pl. VIII, fig. 9.)

Also of the *exaratus* group, but approaching nearer *L. sanguineus*.

Carapace narrower than in any of the allied species. Supplementary tooth wanting, although there is a short granulated ridge, and its complementary groove, leading out to the point where the supplementary tooth exists in *L. sanguineus*. Carapace rather convex, almost smooth posteriorly, irregularly pitted, very finely granulated. Antero-lateral teeth angular, hooked forward, not much projecting, the fifth retreating. Front advanced, median emargination minute, lobes slightly concave, but not subdivided. Inner orbital angles very broad, orbits correspondingly narrow. Cheliped (the left only is present) much as in *L. sanguineus*, but fingers shorter; three superior crests of movable finger each with a lobe at base.

Length of female 10, width 13.8 mm.

Waialua, Oahu, 1902, 1 female (Cat. No. 29506).



Fig. 11.—*Leptodius waialuanus*, chela of type female,  $\times 24$ .

**Xanthodius biunguis**, sp. nov.

(Pl. VIII, fig. 10.)

Nearest to *X. cristatus* (Borradaile).<sup>a</sup>

Upper surface thinly coated with coarse tubular hairs, which only partly disguise the markings on the carapace. Gastric region and its subdivisions plainly marked; branchio-hepatic area indistinctly subdivided. Carapace granulate all over.

Front bent down, lobes convex, granulate, outer angles well marked and separated by a rectangular notch from the much thickened and granulate orbital rim. No superior orbital notches; inferior notch very small, terminating a deep fissure. Four low side teeth, or lobes, with granulated edge, the first fused with the orbital tooth. Inner lower angle of orbit prominent, but less advanced than the superior angle.

A low, blunt ridge on the endostome reaches the front edge of the mouth.

Chelipeds unequal, granulate all over except on inner face of arm and lower face of palm; upper and inner margins of arm hairy; inner tooth of wrist blunt; granules of palm large, continued on base of fingers. Fingers grooved, gaping, broadly hooped at tips, a large tooth at middle of larger pollex, another at base of dactylus.

Legs obscurely granulate, long-hairy above; dactyls two-tipped; a curved spine a little stouter than the horny nail is situated just behind or below the latter.

Length of female type 5.4, width 7.8, fronto-orbital width 5.5 mm.

*Distribution*.—Honolulu coral reef, July 22, 1901 (type locality), Cat. No. 25335; Honolulu, 1891; Kailua, August, 1901.

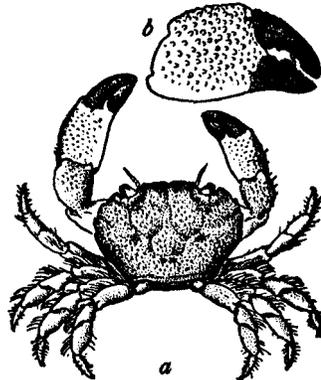


Fig. 12.—*Xanthodius biunguis*. a, Dorsal view of type female,  $\times 2$ . b, Chela of male, Kailua,  $\times 3$ .

**Medæus ornatus** Dana.

(Pl. IX, fig. 5.)

*Medæus ornatus* Dana, Crust. U. S. Expl. Exped., I, 182, 1852; pl. IX, fig. 1, 1855.

*Distribution*.—South coast of Molokai Island, 23 to 73 fathoms, stations 3847, 3848, 3850; Anau Channel, 13 to 43 fathoms, stations 3871, 3872, 3874, 3876.

Lahaina, Maui (Dana); Hawaiian Islands (Miers).

The largest male (station 3872) measures 13.8 mm. long, 20.9 broad. In the adult males the fingers of the larger chela are truncate at the tip, the point being turned abruptly inward; the truncate surface is slightly hollowed out. The black color of the immovable finger extends well back on the palm in both chelæ of the male, reaching below nearly to the wrist.

**Medæus simplex** A. Milne Edwards.

(Pl. IX, fig. 10.)

*Medæus simplex* A. Milne Edwards, Jour. Mus. Godeffroy, IV, 1873, 79 [3].

Hilo, Hawaii, H. W. Henshaw, two specimens, male and female, the latter ovigerous, both larger than the type, the male measuring 13.4 by 20.2 mm., the female 11.2 by 17 mm.

**Cycloxanthops angustus**, sp. nov.

(Pl. IX, fig. 6.)

A narrow species, carapace three-fourths as long as wide; gastric region very convex from side to side, antero-lateral limb concave, edges of teeth upturned. Surface deeply areolated posteriorly as well as anteriorly, 2M, 3M, and 5L being especially well marked. Posterior margin beaded, in front of it a transverse ridge. Surface coarsely and unevenly granulate, short-pubescent.

<sup>a</sup> Fauna and Geog. Maldive and Laccadive Arch., I, 252, 1902.

Front three-tenths width of carapace. Margin little convex, two-edged, lower edge closely granulate, upper edge with about eight larger granules, intervening transverse sulcus hairy; median notch shallow, outer angle a prominent blunt tooth, separated by an almost rectangular notch from the inner orbital angle, which is narrower, more spiniform, and more upcurved.

A lobe on upper margin of orbit; outer angle narrow, acute; below it a deep narrow sinus.

Four teeth on antero-lateral margin (besides the orbital), separated by broad sinuses from which furrows run inward on the carapace; margins armed with large acute granules, tip of each tooth near its middle, last tooth smallest.

Basal antennal joint narrow, anterior margin oblique, joining by its inner angle the sharp lower edge of the front and separated by a narrow slit from the sharp-pointed inner angle of the orbit. Lower surface of the carapace hairy and sparingly granulate.

Chelipeds very unequal in both sexes. Surface granulate, arm serrulate above; surface of wrist and upper half of larger hand deeply rugose; carpal tooth narrow, blunt; smaller hand coarsely granulate, especially along upper margin, except on upper half of inner surface, which is deeply grooved. Both hands with a superior longitudinal groove and a tuberculiform tooth at articulation with carpus. Fingers long, grooved, fitting tight together; very large basal tooth on dactylus of larger chela. Color of thumb very slightly continued on palm.

Legs very rough with granulation. Merus joints armed above with cylindrical blunt spines; largest on last pair. Carpal and propodal joints of all the legs and meral joints of last pair deeply grooved across and lengthwise. Legs and proximal half of chelipeds hairy.

*Color*.—That of iron rust.

*Dimensions*.—Female type, length 8.8, width 11.6, fronto-orbital width 6.9 mm. Male, station 3847, length 7.8, width 10.9, fronto-orbital width 6.3 mm.

*Distribution*.—South coast of Molokai Island, 23 to 66 fathoms, stations 3847, 3850 (type locality); Auau Channel, 21 to 28 fathoms, station 3874. Cat. No. of type, 29453.

This species is altogether different from any other described species of *Cycloxanthops*, but approaches nearest to *C. vittatus* (Stimpson), which is wider, smoother, and has more antero-lateral teeth.

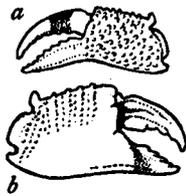


Fig. 13.—*Cycloxanthops angustus*, type female,  $\times 2\frac{1}{2}$ . a, Left chela. b, Right chela.

#### *Pelceus armatus* Eydoux & Souleyet.

*Pelceus armatus* Eydoux & Souleyet, Voy. Bonite, Zool., I, pt. 2, p. 226; atlas, pl. I, figs. 10-15, 1842 (*Pelée armé* on plate).

Hawaiian Islands (Eydoux and Souleyet).

#### *Etisus dentatus* (Herbst).

*Etisus dentatus* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 129, and synonymy.

Oahu, H. Mann, 1864, 1 female in Museum of Comparative Zoology.

#### *Etisus splendidus*, sp. nov.

(Pls. III and X.)

Surface as in *E. dentatus* (Herbst).

Antero-lateral border cut into 9 to 13 (exclusive of external orbital angle) procurved teeth, very uneven as to size and place, but about 5 of them larger than the others.

Front more advanced than in *E. dentatus*, the two lobes with slightly concave margins; median sinus not closed, but forming a buttonhole—that is, closed in front, narrowly open behind. Orbits larger; inner angle narrower, and separated by a deeper, rounder sinus from the front than in *E. dentatus*. The space between the two upper fissures of the orbit does not form a tooth; the two inferior teeth are more widely separated than in *E. dentatus*. The lobe of the basal antennal joint extends farther out, filling the whole of the orbital fissure.

Chelipeds in the fully developed male normally very strong and equal, as in the male from Ebon; in the type male from Honolulu market represented in plate X, the right cheliped is probably

abnormally reduced and resembles the chelipeds of the female. The latter are much smaller and either equal or nearly so. Larger arm of type male with three spines above and a good deal of hair proximally; anterior end with a few tubercles. Smaller arm with one spine above. In the female there are many spines and spinules on the upper border, not in a single row, and on the distal margin a row of spines. Wrist with two strong spines at inner angle, one below the other; in the male a few low tubercles on the surface, the larger one behind the articulation with the hand; in the female these tubercles are much more pronounced. Two rows of four or five protuberances each on upper surface of palms, tubercles in male, blunt spines in female. In the male, the fingers of the larger chela are relatively longer than those of the smaller. They are similar to those of *E. dentatus*, but a little wider and the gape correspondingly narrower. In color they are bluish black, edges of spoons white. Fingers of female still shorter and rougher, the two superior ridges of the dactylus armed each with 3 or 4 tubercles on their basal half; color, light brown, which, in the female from Honolulu, extends along the lower surface of the palm for two-thirds of its length, but in the female collected by Mr. Mann extends not at all on the palm.

The legs are much as in *E. dentatus*.

The penult segment of the male abdomen is distinctly broader than long; in *E. dentatus* as long as broad.

Color, brilliant red.

*Dimensions*.—Type male, length 93.5, width 145 mm.; male, Ebon, length 93.5, width 153 mm.; female, Honolulu, length 77, width 112.7 mm.

*Distribution*.—Honolulu, 1 female; Honolulu market, 1901, 1 male; 1902, 1 male type (Cat. No. 29464). Oahu, H. Mann, 1864, 1 female, in Museum of Comparative Zoology. Ebon, Marshall Islands, Rev. B. G. Snow, received April 14, 1877, 1 male, in Museum of Comparative Zoology.

This species has a remarkable resemblance to *E. dentatus*, from which it is separated by the characters given above.

#### *Etisus lævimanus* Randall.

*Etisus lævimanus* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 131, and synonymy.

Honolulu; Honolulu Reef and market, 1 male about 55 mm. wide has the carapace almost concealed by shells, and shells are also attached to the arms and legs. Pearl Harbor, Oahu, Dr. T. H. Streets. Hawaiian Islands, A. Garrett and Dr. W. H. Jones, in Museum of Comparative Zoology; W. H. Pease, in Philadelphia Academy of Natural Sciences.

Hawaiian Islands (Randall, Dana, Streets); one male from Oahu or Maui collected by the United States Exploring Expedition, specimen in the Museum of Comparative Zoology; two males, types, T. Nuttall, collector, in Philadelphia Academy of Natural Sciences. Honolulu Reefs (Miers). Pearl Harbor (Lenz).

#### *Etisodes electra* (Herbst).

(Pl. IX, fig. 7.)

*Etisodes electra* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 133.

Honolulu Reef; Honolulu; Hawaiian Islands, A. Garrett, in Museum of Comparative Zoology. Hawaiian Islands (Miers).

Hawaiian specimens have been compared with a photograph of the type of *Cancer metis* Herbst, which they closely resemble. The type is a male ♀ b=9.4 mm. They also agree with the unpublished figure of Stimpson's *Chlorodius dentifrons*.

#### *Galene hawaiiensis* Dana.

*Galene Hawaiiensis* Dana, Crust. U. S. Expl. Exped., I, 232, 1852; pl. XIII, figs. 5a-b, 1855 (*Hawaiiensis* on plate).

Hawaiian Islands (Dana).

***Actæa tomentosa*** (Milne Edwards).

*Actæa tomentosa* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 140.

Oahu, H. Mann, 1864, 2 males, in Museum of Comparative Zoology.

***Actæa affinis*** (Dana).

*Actæodes affinis* Dana, Crust. U. S. Expl. Exped., I, 197, 1852; pl. xi, fig. 3, 1855.

*Actæodes tomentosus* Miers, Challenger Rept., Zool., xvii, 135, 1886 (part).

Hilo, H. W. Henshaw; Puako Bay, Hawaii; Honolulu; Honolulu Reef; Waialua and Waikiki Beach, Oahu; Laysan.

Hawaiian Islands (Miers, as *Actæodes tomentosus*).

***Actæa hirsutissima*** (Rüppell).

*Actæa hirsutissima* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 141, and synonymy.

Puako Bay, Hawaii; Penguin Bank, 28 to 14 fathoms, station 4034; vicinity of Modu Manu, 26 to 33 fathoms, station 4148.

***Actæa rufopunctata*** (Milne Edwards).

*Actæa rufopunctata* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 142, and synonymy.

South coast of Molokai, 23 to 24 fathoms, station 3847; Auau Channel, 28 to 43 fathoms, stations 3872 and 3876; Penguin Bank, 28 to 14 fathoms, station 4034; vicinity of Kauai Island, 68 to 179 fathoms, station 4128. Hawaiian Islands, W. H. Pease, 1 male, 1 female, in Philadelphia Academy of Natural Sciences.

Color note on male, station 4034: "Dull brownish-green, nodules red."

***Actæa garretti***, sp. nov.

(Pl. ix, fig. 8.)

Carapace less than two-thirds as long as wide, ovoid, strongly lobulated, lobules about 27, exclusive of those about front and orbits, densely and finely granulated, separated by smooth grooves filled with long hair, light-colored (in alcohol).

Dorsal surfaces of carpal and propodal joints of chelipeds and legs lobulated like the carapace, and furnished with similar hairs.

Front deflexed so that its margin is not visible in a dorsal view; margin sinuous, with shallow median emargination. Upper margin of orbit tumid, crossed by two furrows and separated by a fissure from the lower margin.

Antero-lateral margin cut into four lobules, and about same length as postero-lateral.

Outer angle of basal antennal joint not quite reaching tip of inner lower angle of orbit.

Outer and lower surfaces of hands coarsely granulate, the granules arranged in three or four lines on outer surface. Fingers in side view acutely pointed, slightly hollowed at tips.

*Dimensions*.—Largest specimen, female, Hawaiian Islands, length 8.9, width 13.8 mm.; type male, length 7.3, width 11.2 mm.

*Distribution*.—Hawaiian Islands, A. Garrett, 1 ovigerous female, in Museum of Comparative Zoology. Kingsmill Islands, A. Garrett, 1 male type, U. S. National Museum, Cat. No. 30524; 1 male, 1 female, in Museum of Comparative Zoology. Society Islands, A. Garrett, 1 male, in Museum of Comparative Zoology. Mauritius, 1 male, in United States National Museum.

This species is very near *A. rufopunctata*; the carapace is wider, the grooves are filled with long hair, the lateral margin is split up into 4 instead of 5 lobules.

***Actæa speciosa*** (Dana).

*Actæa speciosa* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 143, and synonymy.

Honolulu; French Frigate Shoal, 15 to 16 fathoms, station 3969.

Hawaii, among madrepores, 3 fathoms (Stimpson); Laysan (Lenz).

*Actæa variolosa* Borradaile.

*Actæa variolosa* Borradaile, Fauna and Geogr. Maldive & Laccadive Arch., I, pt. 3, 256, text fig. 54, 1902.

Auau Channel, 43 to 32 fathoms, station 3872; Necker Island Shoal, 16 to 171 fathoms, station 3975; vicinity of Modu Manu, 20 to 21 fathoms, station 4168.

Length of male, station 3872, 8.6 mm., width 12.1 mm.

These specimens agree with Borradaile's description, except that the carapace is a little wider. The black color of the immovable fingers extends back on the palm to about the middle of the propodal joint.

*Actæa nodulosa* White.

(Pl. ix, fig. 4.)

*Actæa nodulosa* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 148.

*Distribution*.—Auau channel, 32 to 43 fathoms, stations 3872 to 3873; Perquin Bank, 14 to 29 fathoms, stations 4031 (type locality), 4032 to 4034; northeast coast of Hawaii, 50 to 63 fathoms, station 4063; Aleunihana channel, 49 to 176 fathoms, station 4066; vicinity of Modu Manu, 20 to 33 fathoms, stations 4148 and 4158.

Honolulu reefs (Miers).

In the series collected are several specimens larger than before noted; the largest male is 12 mm. long and 20 wide, the largest female 12.8 by 21.5 mm.

The greater part of the tubercles of the surface are berry-like, covered with granules, either squamiform or acorn-shaped. Chelipeds unequal in the male only; arms high as long, upper margin with two very irregular lobes, on which the granules are sharp; wrist with a moderate tubercle at inner angle and a smaller one below it. Tubercles of palm arranged more or less longitudinally, those of the 3 or 4 uppermost rows very prominent. Fingers very deeply grooved, their basal half roughened, tips acute, when closed leaving a very narrow interspace at base. Dark color of index in male only running far back on palm, almost to proximal end. On the legs the tubercles of the upper surface are elongated into cylindrical spines. Dactyls and lower surface and distal end of propodi tomentose.

*Color*.—"Coral red and pink mottled."

The very prominent conical lateral lobes give this species a *Xantho*-like aspect.

*Actæa hawaiiensis*, sp. nov.

(Pl. ix, fig. 9.)

Hawaiian Islands, A. Garrett, 1 male type, in U. S. National Museum (Cat. No. 30523), 2, male and female, in Museum of Comparative Zoology.

A narrow species, somewhat *Pilumnus*-like, convex, not lobulated, posterior two-fifths scarcely areolated. Regions deeply separated from each other. Surface covered with scaly granules or tubercles, larger on branchial and hepatic regions; sparsely hairy, hairs yellow in alcoholic specimens. Protogastric and branchial regions partially subdivided by shallow grooves.

Front moderately deflexed, with deep V-shaped emargination, lobes very oblique. Orbits with two Vs above and one below outer angles. Antero-external angle of basal antennal joint not nearly reaching tip of lower angle of orbit.

Antero-lateral margin dentate and resolvable into four teeth besides the orbital; edges granulated. Some of these teeth may be subdivided into 2 or 3, except the last, which is narrow, simple, and most upturned. Postero-lateral border equal to chord of antero-lateral border minus posterior tooth.

Wrists and hands coarsely granulate and sparsely hairy, like the carapace; granules somewhat in rows. Fingers elongate, pointed, gaping at base, light brown in alcohol, largest tooth at middle of pollex; dactyls granulate above at base. Color of pollex running far back on palm, in male only, where on lower margin it reaches middle of palm.

Ambulatory legs fringed with hair above; carpal and propodal joints coarsely granulate, the former with a longitudinal groove above.

*Dimensions*.—Type male, length (to tip of frontal lobes) 13.5, width 18.9 mm.; largest male, 19.5 by 26.6 mm.; female, 19.5 by 26.6 mm.

This species has somewhat the shape of *A. lata* Borradaile, but its sides are more strongly dentate, front more deeply emarginate, fingers longer.

*Actæa* (?) *integerrima* (Dana).

*Actæodes* ? *integerrimus* Dana, Crust. U. S. Expl. Exped., I, 201, 1852; pl. xi, fig. 7, 1855.  
Oahu or Maui (Dana).

*Banareia villosa*, sp. nov.

(Pl. ix, fig. 15.)

Entire surface, except the lobes of the front and orbits, the antennal region and epistome, the distal half of the fingers, and the inner face of chelipeds and legs, clothed with long tubular hairs, which conceal the surface, except for about thirteen large, red, regularly placed granules on the carapace and three antero-lateral lobes partially visible.

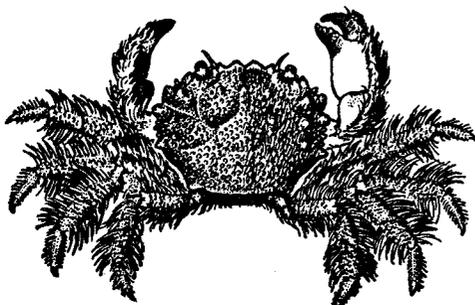


Fig. 14.—*Banareia villosa*, type female,  $\times 2\frac{1}{2}$ .

Carapace three-fourths as long as wide, very convex fore and aft, slightly so from side to side, covered with granules of irregular size, visible when hair is removed; regions well indicated; a high cluster of granules on the hepatic region.

Front deeply four-lobed; orbital margin lobed between sinuses.

Antero-lateral margin with three thick and narrow granulated lobes (besides the orbital); last interspace much greater than the subequal first and second. Postero-lateral margins converging at slightly more than a right angle.

Antennæ as in *B. armata*; basal joint broad, subrectangular, touching the front with the outer half of its distal margin.

Epistome cut by a deep rounded notch on either side.

Chelipeds equal, granulate on outer surface and on upper margin of arm, which has also a large subterminal notch; granules of hand arranged in part serially. Some of the larger and higher granules visible in the midst of the shaggy coating. Fingers blade-like. Dactylus longer than pollex, but folding behind it when closed; a few low prehensile teeth at base.

Granules of legs visible only on removal of hair. Horny tips of dactyls very slender.

*Dimensions*.—Female type, length 7.2, width 9.2 mm.

*Distribution*.—Vicinity of Laysan Island, 57 to 130 fathoms, stations 3935, female type (Cat. No. 29411), and 3936, 1 male, soft-shell.

This species differs from the type species of the genus, *B. armata* A. Milne Edwards, and from *B. inconspicua* Miers in its shaggier coat, narrower carapace, naked front.

The characteristic covering and subdorsal position of the last two pairs of legs when flexed give this crab a *Dromia*-like aspect.

*Daira perlata* (Herbst).

*Daira perlata* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 155.

Oahu, H. Mann, 1864, 4 females, in Museum of Comparative Zoology.

*Xanthias lamarckii* (Milne Edwards).

*Xanthodes lamarckii* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 157, and synonymy.

Hawaiian Islands, A. Garrett, 2, male and female, in Museum of Comparative Zoology.

**Xanthias flavescens**, sp. nov.

(Pl. IX, fig. 11.)

A typical *Xanthias*, of the form of *X. lamarckii*. Surface finely granular except on the postero-medial region.

Orbital region marked off by a groove, gastric region and its three subdivisions well delimited, a well-marked groove extending from the third lateral sinus inward to the gastric region.

Outer angle of front not very pronounced, separated from the supraorbital margin. Groove leading from the orbit faint.

Antero-lateral border divided into four somewhat dentiform lobes (exclusive of orbital angle), the first two very low and preceded by rounded sinuses, the third more dentiform, but very obtusangular, the fifth very small and retreating.

Chelipeds very unequal in the male, stout, granulated; wrist also nodular; granules of palm arranged more or less in transverse series; larger chela very heavy, half as high as length of carapace; fingers of both chelae stout, grooved, not gaping; the dark-brown color of the index extending halfway back on the palm and also two-thirds its height, inside and out.

Legs finely granular, nearly naked; merus joints minutely serrulate above; next two joints nodular.

A small species, an adult male measuring 4.6 mm. long, 7.2 wide, fronto-orbital width 4.7 mm.

*Distribution*.—Vicinity of Laysan Island, 79 to 130 fathoms, station 3936 (type locality); Aleuni-hana channel, 176 to 49 fathoms, station 4066. Cat. No. of type, 29584.

The adult females are only 5.7 and 4.3 mm. wide, respectively. The lateral teeth are more pronounced than in the male, and the chelipeds are very unequal, though less so than in the male.

*Color*.—The specimens are almost white in alcohol, chelipeds and legs banded with yellow, carapace with a few longitudinal stripes of the same color.

One can separate this from *X. lamarckii* by the smoother carapace, nonacuminate lateral teeth and uneven chelipeds.

**Xanthias notatus** (Dana).

*Xanthodes notatus* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 158.

Honolulu; Waikiki Beach; Laysan.

Hawaiian Islands (Dana, Miers).

**Xanthias minutus** (Rathbun).

(Pl. IX, fig. 14.)

*Xanthodes minutus* Rathbun, Proc. U. S. National Museum, XVI, 1893, 238.

Surface smooth, except for the areolations, and shining. Deep grooves separate the fronto-orbital region, the epigastric, protogastric, and mesogastric areas, extend inward from the last two lateral sinuses and cut off the second of the marginal lobules. Hepatic and protogastric lobules faintly divided anteriorly.

Front divided into two convex lobes and having a submarginal groove; three distinct grooves in the orbital border. Antero-lateral border cut into four rounded lobes including the orbital. The basal antennal joint runs up a little way alongside the dentiform prolongation from the front, but does not nearly reach the tip of the lower inner angle of the orbit.

Chelipeds subequal; upper border of arm ending in sharp tooth, a subterminal notch; wrists nodose, inner angle bilobed; hands marked by a few longitudinal ridges, the upper of which is somewhat nodose, surface covered with fine reticulating granules. Fingers pointed, not gaping, index grooved, dactylus with lines of punctae; color of index extending back on the palm.

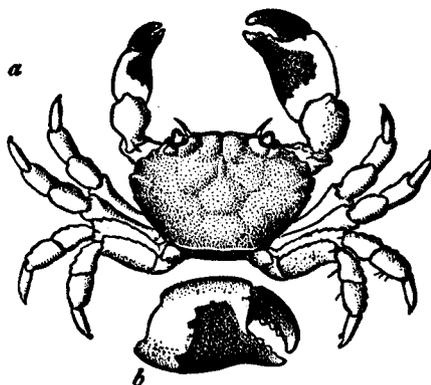


Fig. 15.—*Xanthias flavescens*, type male. a, Dorsal view,  $\times 3\frac{1}{2}$ . b, Larger chela,  $\times 4$ .



Fig. 16.—*Xanthias minutus*, station 4169, chela,  $\times 24$ .

Legs unarmed; last two joints sparsely hairy; otherwise the crab is devoid of hair.

*Dimensions*.—Length of male 9.2, width 14, fronto-orbital width 10.5 mm.

Color, a very dark claret; legs with a few transverse bands of a lighter color.

This species was founded on a very small specimen, in which the characters are much less pronounced than in the full-grown.

*Distribution*.—Kaiwi channel, 14 fathoms, station 3469 (type locality); Aleunihana channel, 176 to 49 fathoms, station 4066; vicinity of Modu Manu, 21 to 26 fathoms, stations 4147, 4169.

***Xanthias canaliculatus*, sp. nov.**

(Pl. ix, fig. 12.)

Surface smooth and shining, irregularly and sparingly punctate. A groove marks off the orbital region and the first two antero-lateral lobes. Gastric region partially limited laterally; only the anterior end of the mesogastric indicated. A short groove running in from the penult sinus of the lateral margin halfway to the gastric region; a still shorter groove running in from the last sinus. Epigastric lobes and outer half of protogastric lobes emphasized by grooves in front of them.

Front one-third width of carapace, deflexed, so that the true edge is scarcely visible from above, with a submarginal groove; bilobed, outer corner pronounced but obtusangular, fused with orbital angle. Orbital margin smooth, three outer furrows shallow; inner lower lobe rounded.

Antero-lateral teeth four, the first two shallow lobes, the first not separated from the orbital angle; the third and fourth dentiform, blunt, smoothly ridged.

Basal antennal joint with its inner angle just touching the front; outer angle not nearly reaching the tip of the orbital tooth.



Fig. 17.—*Xanthias canaliculatus*, chela of type female,  $\times 2\frac{1}{2}$ .

Chelipeds equal, short, smooth, and punctate. Arm broader than long, above hairy and granulate; subterminal groove of wrist very deep; a conical obtuse tooth at inner angle and below it a much smaller acute one. On outer face of palm three very deep longitudinal grooves forming corresponding smooth elevations.

Fingers (of female) narrow, rather long, fitting close together, dark brown.

Legs smooth outside, very hairy above, last two joints hairy below, merus joints with upper margin sharply granular.

*Dimensions*.—Female, length 7.9, width 12.9 mm., fronto-orbital width 7.8 mm.

*Type locality*.—Honolulu, 1901, 1 female (Cat. No. 25343).

This species in its areolation, front and lateral teeth suggests the typical species of *Lophozozymus*, *L. pictor*, but the absence of crests and the great breadth across the front and orbits removes our species from that genus. The deeply fluted hands are its most striking characteristic.

***Micropanope sexlobata*, sp. nov.**

(Pl. ix, fig. 13.)

Carapace about two-thirds as long as broad, slightly convex. Regions well marked, the gastric and its three subdivisions, the cardiac and the intestinal; a groove runs inward from the penult lateral sinus to the gastric region; 1R and 2R are confluent, 3R is distinct; 4L is cut off from 5L, but the latter less completely from 6L; 1M bounded posteriorly by a faint groove. The grooves, besides being deeply impressed, are emphasized by a short pubescence. Surface covered with rather distant sharp granules, finer on the postero-medial portion. Transverse granular ridges traverse the anterior border of the epigastric lobes, the outer half of the protogastric region, and the hepatic region.

Front a little more than one-third as wide as carapace, its anterior portion abruptly deflexed, so that in a strictly dorsal view the lower or true margin is not wholly visible; upper margin truncate, a median U sinus, edge ornamented; the oblique surface of the turned-down front is concave and of very slight depth; its lower or anterior margin, viewed obliquely from above, has a median U sinus; each lobe thus formed is subdivided into three, a narrow submedian lobe, a broad, rounded intermediate lobe, and a small outer triangular lobe which is bent down and just meets with its tip the basal antennal joint. A notch and groove separate the inner orbital angle.

Two triangular notches in the upper margin of the orbit and a larger one below the outer angle; inner suborbital tooth broad and blunt, less prominent than upper angle.

Of the five normal antero-lateral teeth, the orbital is small and inconspicuous, the second is represented only by a granule which projects sharply beyond the other marginal granules; third and fourth teeth of good size, with a sharp point turned forward; fifth tooth very small, indicated rather by the notch and groove in front of it.

Chelipeds very unequal in both sexes, arm short, granulous outside, upper border spinulous; wrist and outer surface of smaller palm, upper half of larger palm coarsely granulous; inner tooth of wrist triangular, sharp; behind and below it a much smaller tooth; the infero-distal half of the larger palm, though smooth to the naked eye, covered with very minute reticulating granules. Fingers of larger chela gaping moderately, a large tooth at base of dactyl.

Legs long and slender, moderately hairy; meopodites armed above with short spinules or sharp granules which are also found on the ridges of the two following joints.

*Dimensions*.—Male (station 4066), length 5.4, width 8 mm. Female (station 4066), length 5.6, width 8.5 mm.

*Distribution*.—Vicinity of Laysan Island, 57 to 163 fathoms, stations 3935, 3936, 3939; Aleunihana channel, 176 to 49 fathoms, station 4066 (type locality). Cat. No. of type, 29529.

This species approaches nearest *M. truncatifrons* Rathbun of the West Indies, but the latter is more coarsely granulated, less distinctly areolated posteriorly and the front less evidently six-lobed.

#### *Chlorodiella niger* (Forskål).

*Eurüppelia* sp., Cano, Boll. Soc. Nat. Napoli (1), III, 1889, 102.

*Eurüppelia* sp., Cano, op. cit., 209.

*Chlorodius niger* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 160, and synonymy.

South coast of Molokai, station 3834; Honolulu; reef in front of Honolulu; Laysan; weather coast of Hawaii, A. Garrett, in Museum of Comparative Zoology.

Hawaiian Islands (Dana, Stimpson). Honolulu (Cano).

#### *Chlorodiella lævissima* (Dana).

*Chlorodius lævissima* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 161.

Honolulu; Waikiki Beach; south coast of Molokai, 23 to 73 fathoms, stations 3847 to 3849; Auau channel, 13 to 43 fathoms, stations 3871 to 3874, 3876; vicinity of Laysan, 20 to 30 fathoms, station 3955; Penguin Bank, 28 to 14 fathoms, station 4034; northeast coast of Hawaii, 24 to 83 fathoms, station 4061; vicinity of Kauai, 68 to 179 fathoms, station 4128; vicinity of Modu Manu, 24 to 40 fathoms, station 4163.

Hawaiian Islands (Dana).

The line is not sharply drawn between this species and the preceding. Judging from specimens which have been preserved an equal length of time in alcohol, *C. lævissima* has an orange-reddish color, while *C. niger* is brownish. Adult *C. niger* has the carapace finely granulate under the lens. Adult *C. lævissima* has the central part of the dorsum smooth; young specimens of both are much smoother. Neither is the arching of the fingers, mentioned by Dana and Alcock, to be relied on.

#### *Phymodius ungulatus* (Milne Edwards).

*Phymodius ungulatus* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 162, and synonymy.

Honolulu; reef in front of Honolulu.

Hawaiian Islands (Streets).

While this species, so far as I have examined specimens, appears to be distinct from *P. obscurus*, yet the chelipeds are not just as described by Alcock, being smoother than in *P. obscurus*. See Borradaile, Fauna and Geography Maldives and Laccadive Arch., I, 259, 1902.

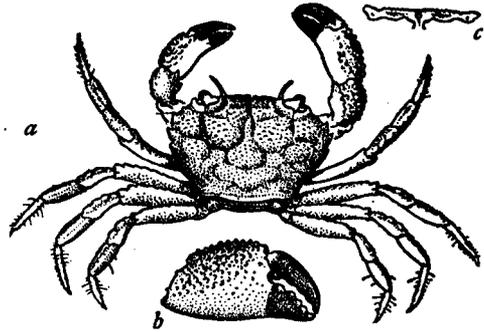


Fig. 18.—*Micropanope sexlobata*. a, Dorsal view of type female,  $\times 2\frac{1}{2}$ . b, Larger chela of type male,  $\times 3\frac{1}{2}$ . c, Front view of front,  $\times 4$ .

**Phymodius obscurus** (Lucas).

*Chlorodius obscurus* Lucas, in Jacquinot and Lucas, Voy. au Pole Sud, Zool., III, Crust., p. 26, 1853; atlas, pl. III, fig. 4, 1852 (?).

*Phymodius monticulosus* (Dana), Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 163, and synonymy.

Hilo, Hawaii, H. W. Henshaw; south coast of Molokai, station 3834; Honolulu; Honolulu Reef; Oahu, Galathea Expedition, received from Copenhagen Museum; Oahu, Dr. T. H. Streets.

If this species is kept separate from *P. unguilatus*, the name given by Lucas should take precedence of that given by Dana, as the figure at least of the former antedates Dana's work. (See Crust. U. S. Expl. Exped., I, 207.)

**Phymodius nitidus** (Dana).

*Pilodius nitidus* Dana, Crust. U. S. Expl. Exped., I, 218, 1852; pl. XII, fig. 7, 1855.

Honolulu; Waikiki Beach; south coast of Molokai, station 3834.

**Phymodius laysani**, sp. nov.

(Pl. XII, fig. 8.)

Regions of carapace well defined and subdivided by deep grooves, the lobules corresponding very nearly with those in *P. sculptus* (A. Milne Edwards). 1L is, however, separated from the first antero-lateral lobe, 2L and 3L are confluent, 1R is not cut off from the marginal lobe. Surface crisply granulate.

Outer angles of front not separable from the inner angles of the orbit. Orbital fissures very faint. Antero-lateral border cut into four lobes.

Basal antennal joint touching the front by its inner distal angle, its outer angle prolonged into the gap between front and orbit.

Chelipeds of male equal, short; some hairs on ischium, merus and carpus; arm granulous outside, sharply so above; wrist granulous and nodulous, a blunt tooth inside; hands with granulated nodules above gradually diminishing below to large granules and then to fine granules; granules continued at least half length of fingers; the latter stout, with thick, blunt points, very slightly hollowed.

Legs finely granulous, sharply so on upper margins, which are thickly fringed with long yellow bristles.

*Dimensions*.—Male type, length 5.8, width 8.3, fronto-orbital width 5.3 mm.

*Type locality*.—Laysan, May, 1902; 1 male (Cat. No. 29530).



Fig. 19.—*Phymodius laysani*, type male. a, Dorsal view,  $\times 2$ . b, Chela,  $\times 3.4$ .

This species, while it has the general appearance of a *Phymodius*, especially of *P. sculptus*, in its naked carapace and chelæ and bristly legs, differs from that genus, as previously known, in the granulation of the surface, in the union of the frontal and orbital angles, in the equal chelipeds, and indistinct spooning of the fingers.

**Chlorodopsis areolata** (Milne Edwards).

*Chlorodius areolatus* Milne Edwards, Hist. Nat. Crust., I, 400, 1834.

*Etisodes cælatus* Dana, Crust. U. S. Expl. Exped., I, 188, 1852; pl. IX, fig. 4, 1855.

*Chlorodopsis areolatus* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, IX, 1873, 231, pl. VIII, fig. 8.

Hawaiian Islands, A. Garrett, 1 female, in Museum of Comparative Zoology.

I think that A. Milne Edwards is correct in his surmise (op. cit., p. 235) that *E. cælatus* Dana is the same as *Chlorodius areolatus* of the elder Milne Edwards, and should be retained in *Chlorodopsis* rather than in *Etisodes*.

The Hawaiian specimen measures 11 by 17.8 mm., fronto-orbital width 11.6 mm. Its antennal flagellum is excluded from the orbit more by the wide contact of upper and lower angles of orbit than by the extension of the basal joint into the hiatus, differing in this regard from the figures both of Dana and A. Milne Edwards.

*Chlorodopsis scabricula* (Dana).

*Pilodius scabriculus* Dana, Crust. U. S. Expl. Exped., I, 220, 1852; pl. xii, fig. 9, 1855.

Honolulu, 1891, 1 immature male.

The regions are faintly areolate, minutely scabrous, grooves smooth, lateral projections spines (except the orbital), spine E much smaller but similar to the others.

A row of four lobules parallel to the margin; a similar lobule at 2L.

Lobes of front sinuous, entire to the naked eye, minutely granulous under the lens, outer angle well marked, but not spiniform nor very prominent.

The outer projection of the basal antennal joint reaches as far as the end of the suborbital tooth, but does not exclude the flagellum from the orbital gap.

The tubercles of the wrist and upper surface of palm are large, conical, acute. Upper margin of legs spinulous.

Dana says "tooth E nearly obsolete, hand and carpus very minutely tuberculate." In spite of these discrepancies I place the specimen under *C. scabricula* until the species shall have been better worked out.

Our specimen agrees very well with A. Milne Edwards's description and figure of *C. spinipes*, but it is not the *C. spinipes* of Heller and de Man, in which the orbit has a spine below the outer sinus, nor *C. spinipes* Alcock (Jour. Asiatic Soc. Bengal, LXVII, 1898, 169, ubi syn.), in which the outer angle of the front is spine-like and the carapace coarsely granular.

*Chlorodopsis aberrans*, sp. nov.

Carapace about three-fifths as long as broad, posterior third not subdivided. Regions and sub-regions fairly well marked; protogastric lobes lightly and incompletely subdivided. A groove running inward from the penult lateral sinus to the gastric region, otherwise the branchio-hepatic region is undivided. Surface covered with sharp tubercles, irregular in size, as a rule diminishing from in front backward and becoming granules on the postero-medial region. Surface sparingly hairy.

Frontal lobes broad, rounded, granulated, separated by a U-shaped median sinus; a small lobe at outer angle, distinct from the less advanced orbital angle. Orbital margin spinulous; outer emargination of good size.

Antero-lateral projections four, the first a narrow granulated lobe below the level of the orbital angle; the second, third, and fourth, stout spines with granulated borders.

Lower surface of carapace much like the upper. Outer angle of basal antennal joint prolonged a little into the orbital hiatus, but not excluding the flagellum from the orbit, nor nearly reaching summit of inner lower tooth of orbit.

Chelipeds in a male a little unequal; exposed surfaces covered with conical sharp-pointed tubercles which on upper margin of arm, hand, and inner angle of wrist become elongate and spiniform and more or less curved. Tubercles of hand continued halfway along the deeply grooved fingers, which shut tight, their acute tips overlapping. Dark color of thumb in male continued a little way back on palm.

Legs finely granulate, sparingly hairy, margin spinulous.

*Dimensions*.—Male, length 4.7, width 8 mm.

One specimen only, a male, was taken in the vicinity of Modu Manu, 23 to 26 fathoms, station 4146 (Cat. No. 29434).

This species, although not a typical *Chlorodopsis* by reason of the sharp fingers, nevertheless has much in common with *C. woodmasoni* Alcock, which is more deeply areolated and not so sharply granular.

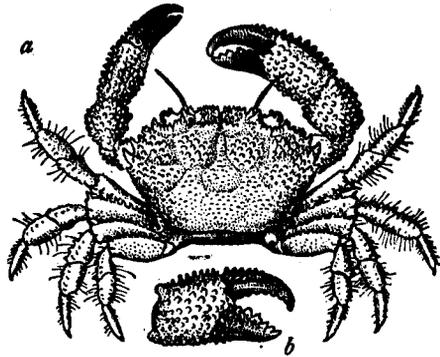


Fig. 20.—*Chlorodopsis aberrans*, type male. a, Dorsal view,  $\times 3\frac{1}{2}$ . b, Chela,  $\times 3\frac{1}{2}$ .

The orbito-antennal area varies in the species assigned to this genus. In *C. melanochirus* A. Milne-Edwards, the upper and lower angles of the orbit are approximate, the intervening space being evenly filled by the prolongation of the antennal joint; at the same time the flagellum is distinctly excluded from the orbit. In *C. pilumnoides* (White) the upper and lower angles of the orbit are a little farther apart, and the basal antennal joint extends its outer angle into the hiatus, but without filling it or reaching the summit of the lower orbital tooth, or excluding the flagellum. In our species the antenna is much as in *C. pilumnoides*, but the orbital angles are farther apart.

***Pilodius flavus* Rathbun.**

*Pilodius flavus* Rathbun, Proc. U. S. Nat. Mus., XVI, 1893, 239.

Carapace two-thirds as long as wide, rather convex.

With the aspect of a *Pilumnus*. A coating of long yellow hairs does not hide the areolation of the carapace, which is evident to the naked eye. Regions well marked. Protogastric lobes partially subdivided by a short longitudinal furrow. Orbital groove distinct. 1M separate, also 1L (very small), 2L,

3L, 4L, 5L, and 6L; a groove between 2R and 3R. Regions sparingly dotted with irregular rough granules; interspaces smooth.

Fronto-orbital width three-fourths, front three-eighths, of width of carapace. Frontal lobes of middle pair rounded, granulated, separated by a small U-shaped median sinus; outer lobes bluntly triangular, bent down and separated from the blunt inner angle of orbit by a rectangular notch and a groove. Margin of orbit granulated; two V notches above, a deep open external fissure.

Five antero-lateral spines, including the orbital, which is the smallest; each has one or more accessory spines or spinules; those accompanying the third and fourth spines may be almost

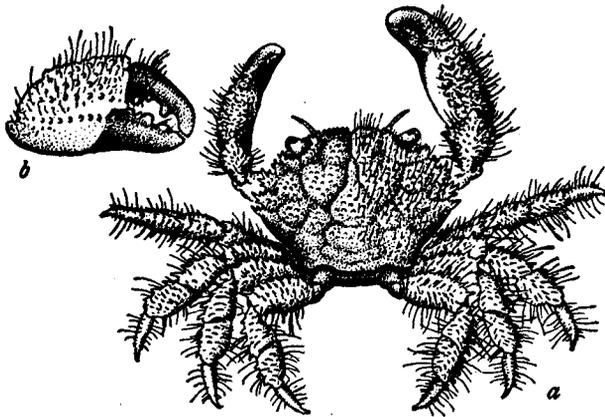


Fig. 21.—*Pilodius flavus*, station 4148, male. a, Dorsal view,  $\times 2$ . b, Larger chela,  $\times 2\frac{1}{2}$ .

as long as the primaries. Parallel to the margin is a row of three sharp conical tubercles, opposite each of the last three marginal spines.

Postero-lateral margins converging so that if prolonged they would meet at slightly more than a right angle.

Lower surface of carapace granulated and hairy. Basal antennal joint broadly touching the lobe of front; outer angle moderately prolonged and reaching end of inner orbital angle; next joint standing in orbital hiatus.

Chelipeds in male very unequal, in female slightly so. Spines on upper border of arm (three to five), outer surface of wrist (two at inner angle), on upper outer surface of palm in rows (where they are more conical), and basal half of dactylus; granules on surfaces and other margins of arm and on middle outer surface of palm, one row continued on thumb. Infero-external surface of palm in larger chela of male smooth and naked; in smaller chela of male and both chelæ of female the spines and hairs cover the whole outer face of palm. Fingers gaping, with spoon tips, prehensile teeth large and irregular. Color line of index slanting obliquely downward across the palm equally in both sexes; tips of fingers white.

Legs spinous; largest spines on the upper margin of carpal and propodal joints, and of the meral joint of the last pair, and also at the distal end of the merus of the other pairs.

Color.—Orange yellow.

Dimensions.—Male, station 4148, length 8.8, width 12.8, fronto-orbital width 9.4 mm.; female, station 4162, length 8.8, width 13, fronto-orbital width 9.5 mm.

*Distribution*.—Kaiwi Channel, 14 fathoms, station 3469 (type locality); vicinity of Laysan Island, 20 to 30 fathoms, station 3954; French Frigate Shoal, 14½ to 17½ fathoms, stations 3968, 3970; vicinity of Modu Manu, 20 to 160 fathoms, stations 4147, 4148, 4150, 4158, 4159, 4162.

I believe this species is distinguished from *P. pubescens* Dana, de Man,<sup>a</sup> by the rougher carapace, broader front, absence of large spines or teeth from the fore margin of arm (one granule only near the proximal end is enlarged).

**Menippe convexa** Rathbun.

(Pl. XI, fig. 4.)

*Menippe convexa* Rathbun, Proc. U. S. Nat. Mus., XVI, 1893, 239.

Carapace very convex in both directions, smooth, punctate. Anterior end of mesogastric region indicated; epigastric lobes elevated.

Front a little more than one-fourth width of carapace; lobes very oblique, median sinus V-shaped; outer angle a tuberculiform lobe, separated by a groove from the upper margin of orbit.

Antero-lateral border bluntly rimmed; of the four lobes the first two are very obtusely angled, the last two subacutely so, all near their anterior margin; the first is half as long as the second, second and third subequal; from the fourth a ridge runs inward on the carapace.

Chelipeds in female massive, very unequal; arm and wrist almost smooth, coarsely punctate; on the hand there is a flattened granulation visible to the naked eye. Inner angle of wrist tuberculiform. A large tooth near base of pollex of larger chela.

*Dimensions*.—Female, length to the tips of frontal lobes 15.5, width 21, width of front 5.8 mm.

Known only from the type specimen, a female taken at Honolulu, collector unknown; specimen in bad state of preservation.

**Pseudozius caystrus** (Adams and White).

*Pseudozius caystrus* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 181.

Hawaiian Islands, A. Garrett, in Museum of Comparative Zoology.

**Pseudozius inornatus** Dana.

(Pl. XI, fig. 1.)

*Pseudozius inornatus* Dana, Crust. U. S. Expl. Exped., I, 234, 1852; pl. XIII, figs. 7a-7c, 1855.

Kailua, Hawaiian Islands, A. Garrett, in Museum of Comparative Zoology.

Hawaiian Islands (Dana).

In the male the index finger is only twice as long as its breadth at base.

Length 13.5, width 23.9, width of front, exclusive of orbital angles, 5.3 mm.

**Pseudozius triunguiculatus** Borradaile.

*Pseudozius triunguiculatus* Borradaile, Fauna and Geogr. Maldive & Laccadive Arch., I, 242, text fig. 44, 1902.

South coast of Molokai, 8 fathoms, station 3834, one ovigerous female lacking the larger cheliped. Length 3.8, width 5.2 mm.

**Platyozius laevis** Borradaile.

(Pl. XI, fig. 7.)

*Pseudozius (Platyozius) laevis* Borradaile, Fauna & Geogr. Maldive & Laccadive Arch., I, 243, text fig. 45, 1902.

Anau Channel, 28 to 43 fathoms, station 3876; Penguin Bank, 28 to 14 fathoms, station 4034; northeast coast of Hawaii, 50 to 63 fathoms, stations 4055 and 4063; vicinity of Modu Manu, 27 to 31 fathoms, station 4171.

Several specimens are larger than the type, the largest, a female, measuring 10.4 by 13.2 mm. The fronto-orbital region is definitely depressed below the postfrontal surface. Front with a ridge

<sup>a</sup>Abh. Senck. naturf. Ges. Frankfurt a. M., XXV, 619, 1902.

above, behind, and parallel to the margin. The posterior of the lateral teeth is more dentiform than in the young. The anterior border of the merus of the maxillipeds is not notched, as in typical *Pseudozizus*.

***Ozius hawaiiensis* Rathbun.**

*Ozius hawaiiensis* Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, 77.

Hilo, Hawaii, H. W. Henshaw.

***Lydia* <sup>a</sup> *annulipes* (Milne Edwards).**

*Ozius* (*Euruppellia*) *annulipes* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 188, and synonymy. Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

***Pilumnus vespertilio* (Fabricius).**

*Pilumnus vespertilio* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 192.

Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

***Pilumnus alcocki* Borradaile.**

*Pilumnus alcocki* Borradaile, Fauna & Geogr. Maldive & Laccadive Arch., I, 248, text fig. 48, 1902.

Penguin Bank, 28 to 14 fathoms, station 4034; vicinity of Modu Manu, 33 to 71 fathoms, station 4149.

According to a note by the collector, the color is red; in the alcoholic specimens the hairs are red. The fringe of long hair across the front and the eye peduncles is a most conspicuous feature.

***Pilumnus nuttingi*, sp. nov.**

(Pl. XI, fig. 8.)

Carapace subcircular, four-fifths as long as wide. Hairs for the most part short, not disguising the areolation. Regions, as well as three subdivisions of gastric region, plainly marked. Surface almost smooth.

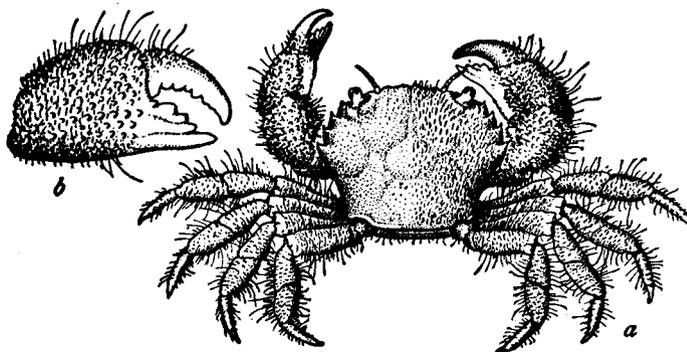


Fig. 22.—*Pilumnus nuttingi*, type female. *a*, Dorsal view,  $\times 3\frac{1}{2}$ . *b*, Larger chela,  $\times 4\frac{1}{2}$ .

Front cut by a median V into two shallow submedian lobes unarmed; outer lobes not well separated from the small inner angle of the orbit. Three cuts in orbit shallow; margin unarmed, except for short spinule at outer angle.

Antero-lateral about two-thirds as long as postero-lateral margin, cut into three teeth each tipped with a forward-projecting spine. Postero-lateral margins converging at an angle of about 55 degrees.

Basal joint of antenna not quite reaching the front; a deep notch between this joint and acute inner angle of orbit. Lower surface of carapace partly granular.

Chelipeds very unequal in both sexes. Arm with subterminal tooth above; wrist sparingly granulate, sharply angled inwardly; hand stout, covered with acute granules, diminishing inferiorly, arranged mostly in rows; hairs absent from lower distal portion of larger palm. Granules on basal third of dactylus; fingers crossing when closed; prehensile teeth larger in pollex than in dactylus.

<sup>a</sup> *Lydia* Gistel, Naturg. Thierreichs, p. ix, 1848, was substituted for *Eudora* de Haan, 1833, preoccupied, and takes precedence of *Euruppellia* Miers, 1884.

Legs unarmed, thinly clothed with long and short hairs.

*Dimensions*.—Female type, length 5.5, width 7 mm.; male, station 3848, length 4.5, width 6 mm.

*Distribution*.—South coast of Molokai Island, 23 to 73 fathoms; stations 3847, 3848; Penguin Bank, 27 to 29 fathoms, station 4032; vicinity of Modu Manu, 24 to 160 fathoms, stations 4150, 4160 (type locality), 4163. Cat. No. of type, 29551.

This species is distinguished by its narrow form, and relative lack of armature, the four antero-lateral spines being the only sharp projections.

Named for Prof. C. C. Nutting, who accompanied the *Albatross* to the Hawaiian Islands in 1902.

***Pilumnus acutifrons*, sp. nov.**

Carapace narrow, seven-sided, smooth, slightly areolated, convex, with scattered tufts of hair.

Frontal lobes deflexed, margin very oblique, subtruncate, finely granulate, separated by a large V, inner angles sharp, outer angles ill-defined and separated by a shallow furrow but no notch from the inconspicuous orbital angle.

Upper orbital notches slight, a spine at outer angle; two spines on lower margin besides the one at the tip of the triangular inner lobe.

Antero-lateral margin with three spines, two of which are larger than the one at the orbit and have broad bases and long slender tips, the last small and bifid at tip.

Chelipeds very unequal in male, spinous; spines on upper margin of arm very irregular, the larger and more distal spines compound; lower margins and upper distal end of outer surface spinulous; wrist armed with about fourteen large curved spines, of which the one at the inner angle is the longer. The large hand is heavy and spinous only on the upper and proximal portion of the outer face, remainder smooth, spines in rows and diminishing from above downward; small hand spinous on the whole outer face. Fingers stout, grooved in small chela, almost smooth in large one, dactyls spinulous proximally, fingers when closed leaving only a very narrow slit at base.

Legs slender, armed above with long, rather distant spines, and below with spinules. Chelipeds and legs sparingly clothed with long hair.

*Dimensions*.—Male type, length 3, width 3.8 mm.

*Type locality*.—French Frigate Shoal, 17 to 17½ fathoms, station 3970; 1 male (Cat. No. 29543).

This species has some resemblance to *P. tahitensis* de Man in the oblique lobes of the front and the scattered tufts of hair, but in our species the lobes are more oblique, the orbits and chelipeds are more spinous, the chelæ of different shape.

***Pilumnus andersoni* de Man.**

*Pilumnus andersoni* de Man, Jour. Linn. Soc. London, Zool., XXII, 1887, 59, pl. III, figs. 5, 6.

Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 194. Borradaile, Fauna & Geogr. Maldives & Laccadive Arch., I, 245, 1902.

Vicinity of Laysan, 10 to 19 fathoms, station 3960, 2 females, much smaller than the types, the larger measuring only 6.2 mm. in width. They agree very well with de Man's description, except that the outer orbital angle is sharper, in fact a spine, smaller, however, than the other antero-lateral spines.

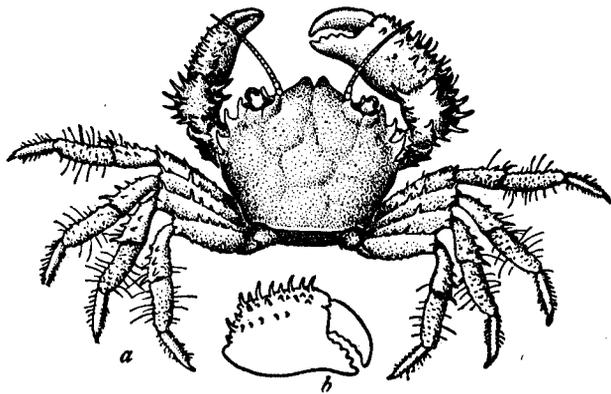


Fig. 23.—*Pilumnus acutifrons*, type male. a, Dorsal view,  $\times 6\frac{1}{2}$ . b, Larger chela,  $\times 5\frac{1}{2}$ .

*Pilumnus tæniola*, sp. nov.

(Pl. XI, fig. 3.)

Carapace very wide, about five-sevenths as long as wide; slightly convex transversely, more convex in the opposite direction, the anterior half being strongly declivous; in shape oval-oblong, the postero-lateral margins being not far from parallel; regions scarcely indicated; surface smooth, punctate, pubescent and thinly clothed with long fine hair.

Fronto-orbital width four-fifths width of carapace. Margin of front not visible in dorsal view; lobes convex, most produced in their inner half; outer angle small and inconspicuous, as is also the inner angle of the orbit. Orbit very oblique, margin granulate, without fissures, a slender sharp spine at outer angle; inner lower angle very obtuse, not nearly so advanced as the upper angle.

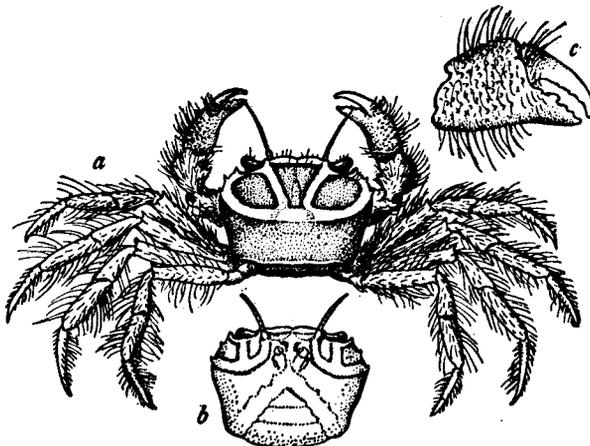


Fig. 24.—*Pilumnus tæniola*, type female. a, Dorsal view,  $\times 2\frac{1}{2}$ . b, Ventral view, showing color markings. c, Chela,  $\times 4$ .

Antero-lateral margin convex, only half as long as postero-lateral and armed with two very small slender spines additional and similar to the orbital and quite independent of the general outline of the carapace. Antennules stout, transversely folded, basal joint inflated. Antennæ with basal joint slender, not quite reaching end of lower angle of orbit; second joint loose in orbital hiatus; flagellum long, reaching farther back than posterior lateral spine. Endostomial ridges well defined, reaching the anterior boundary of the buccal cavern. Outer maxillipeds small, not filling the buccal cavity. Chelipeds equal in the female (the male lacks a right cheliped), short; arm granulate outside, a sharp-pointed tooth above near distal end, behind it the margin slightly roughened; wrist granulate, a long spine at inner angle, with a shorter one below it; palm higher than its superior length, upper margin very convex, outer surface granulate. Chelipeds and legs clothed with long hairs, which only partially obscure the surface. Hairs and granules continued part way on the fingers. Prehensile teeth of pollex larger than those of dactylus. When the fingers are closed the tips cross and there is a very slight hiatus at base.

Legs long and slender; a slender spine at distal end of upper margin of meral and carpal joints; a longer spine at distal third of the same margin of the merus of each pair except the last.

Abdomen of male with seven separate segments.

*Dimensions*.—Female type, length 5.8, width 7.7, fronto-orbital width 6.4 mm.; male, station 3876, length 5.6, width 7.1, fronto-orbital width 6 mm.

*Distribution*.—Auau channel, 28 to 43 fathoms, station 3876; Penguin bank, 28 to 14 fathoms, station 4034 (type locality). Cat. No. of type, 29554.

In regard to the antennæ and maxillipeds this species approaches *Platypilumnus*, but the endostomial ridge clearly reaches the anterior margin of the buccal cavern. The type species of that genus, *P. gracilipes* Alcock, also differs notably in its flat carapace. Our species in its shape approaches *P. rotumanus* Borradaile, which possesses larger antero-lateral spines and more elongate chelæ.

The two specimens agree in characteristic color pattern, being ornamented in the anterior half, both above and below, by light bands bordered on each side with a narrow stripe of dark brown.

*Pilumnus ovalis* A. Milne Edwards.

*Pilumnus ovalis* A. Milne Edwards, Ann. Soc. Entom. France, (4), VII, 1867, 280.  
Hawaiian Islands (A. Milne Edwards).

**Actumnus obesus** Dana.

(Pl. XI, fig. 2.)

*Actumnus obesus* Dana, Crust. U. S. Expl. Exped., I, 244, 1852; pl. XIV, fig. 3, 1855.

In most respects our specimens agree with Dana's description and figures. Dana says, "Antero-lateral margin arcuate, almost entire, very faintly four-lobed, lobes minutely denticulate." In his figure 3a no lobes are indicated. His type was considerably larger than the specimens in hand, which show plainly the 3 marginal lobes separated by narrow incisions. The point of each lobe or tooth is at its anterior end, and is marked by a little longer granule or spinule; the teeth project beyond the general marginal line only by the length of this spinule. The areolations are a little more plainly marked than in Dana's figure.

Length of male, station 3849, 9.6, width 12.8 mm.

South coast of Molokai, 43 to 73 fathoms, stations 3849 and 3850.

Lahaina, Maui, dredged (Dana).

**Eriphia sebana** (Shaw).*Cancer sebanus* Shaw, in Shaw & Nodder, Nat. Misc., XV, 1803, pl. 591.*Eriphia lewimana* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 214, and synonymy.

Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

**Grapsillus cymodoce** (Herbst).

(Pl. XI, fig. 6.)

*Trapezia cymodoce* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 219.

Hawaiian Islands, A. Garrett, in Museum of Comparative Zoology.

**Grapsillus ferrugineus** (Latreille).*Trapezia cymodoce*? Faxon, Mem. Mus. Comp. Zool., XVIII, 1895, 22.*Trapezia ferruginea* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 220.

Hawaiian Islands, H. Mann and A. Garrett, in Museum of Comparative Zoology; U. S. Exploring Expedition, in Museum of Comparative Zoology.

Hawaiian Islands (Dana, as *T. cymodoce*; Randall, as *T. cymodoce*); 2 males, 3 females, J. K. Townsend, collector, in Philadelphia Academy of Natural Sciences. Honolulu (Cano, as *T. cymodoce* a).**Grapsillus ferrugineus intermedius** (Miers).*Trapezia maculata* Streets, Bull. U. S. Nat. Mus., No. 7, 1877, 106 (not synonymy).*Trapezia ferruginea* var. *intermedia* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 220.

Hilo, H. W. Henshaw; Oahu, Dr. T. H. Streets; Honolulu; Honolulu Reef; Waikiki Beach; Laysan; south coast of Molokai, 8 to 24 fathoms, stations 3834 and 3847; vicinity of Laysan, 10 to 30 fathoms, stations 3955, 3959, and 3962; French Frigate Shoal, 14½ to 16½ fathoms, station 3968; Penguin Bank, 27 to 29 fathoms, stations 4031 and 4032; vicinity of Modu Manu, 26 fathoms, station 4147.

Honolulu reefs (Miers, Alcock).

This subspecies or variety, as also *areolatus* (noted by Alcock), has a very fine scurf-like pubescence on the upper surface of the chelipeds. This must be borne in mind in using Alcock's key to the Indian species of *Trapezia*.**Grapsillus maculatus** MacLeay.*Trapezia maculata* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 221. Not *T. maculata* Streets.

Kaiwi Channel, 14 fathoms, station 3469; south coast of Molokai, 23 to 24 fathoms, station 3847; vicinity of Laysan, 10 to 19 fathoms, stations 3959 and 3960; French Frigate Shoal, 14½ to 17 fathoms, stations 3968 and 3971; vicinity of Kauai, 18 to 41 fathoms, station 4023; Penguin Bank, 14 to 29 fathoms, stations 4031, 4032, and 4034.

Hawaiian Islands (Dana, Eydoux and Souleyet, as *T. tigrina*). Hawaii (Stimpson). Laysan, on coral stalk (Lenz).

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a *T. ferruginea* mentioned by Cano on pages 90 and 102, is not noticed in his annotated list on page 211.

**Grapsillus rufopunctatus** (Herbst).

(Pl. xi, fig. 5.)

*Trapezia rufopunctata* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 222.

Hawaiian Islands, 1901; Oahu, Dr. T. H. Streets; Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

Honolulu reefs, 18 fathoms (Miers, as *T. rufopunctata* var. *guttata*, p. xxxi, and *T. rufopunctata* var., p. 168). Honolulu (Cano). Hawaiian Islands (A. Milne Edwards, as *T. acutifrons*).**Grapsillus rufopunctatus flavopunctatus** (Eydoux & Souleyet).*Trapezia flavo-punctata* Eydoux & Souleyet, Voyage Bonite, Zool., I, pt. 2, p. 230, pl. ii, fig. 3, 1842.Hawaiian Islands (Eydoux and Souleyet; A. Milne Edwards, as *T. latifrons*). Laysan (Lenz, as *T. latifrons*).**Grapsillus digitalis** (Latreille).*Trapezia digitalis* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 222.

Waikiki Beach; Honolulu; Honolulu reef.

**Domecia hispida** Eydoux and Souleyet.*Domecia hispida* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1897, 230.

Honolulu; vicinity of Laysan, 10 to 19 fathoms, stations 3960 and 3962; vicinity of Kauai, 18 to 41 fathoms, station 4023; Penguin Bank, 27 to 29 fathoms, station 4032.

Hawaiian Islands (Eydoux and Souleyet). Laysan (Lenz).

**Lybia tessellata** (Latreille).*Melia tessellata* Richters, Beitr. Meeresf. Mauritius u. d. Seychellen, p. 150, pl. xvi, figs. 19-22, 1880.

Borradaile, Fauna and Geogr. Maldive and Laccadive Arch., I, 250, text fig. 49, 1902.

*Lybia tessellata* Rathbun, Proc. Biol. Soc. Wash., XVII, 1904, 102.

Vicinity of Laysan, 20 to 30 fathoms, station 3955, 1 female; vicinity of Modu Manu, 20 to 30 fathoms, station 4158, 1 female.

Note by the collector of female, station 4158: "This crab held the little sea anemones one in each claw and presented them in a boxing attitude whenever teased or approached by another crab." The anemone is a species of *Bunodeopsis*, according to Dr. J. E. Duerden.

The color markings on the carapaces of these specimens (preserved in formalin) are not in the form of polygons, but except for 6 irregular white patches (2 anterior and 4 posterior) the surface is covered with a labyrinth of fine lines inclosing finer and more broken lines.

**Lybia cæstifera** (Alcock).*Melia cæstifer* Alcock, Jour. Asiat. Soc. Bengal, LXVII, 1898, 231; Illus. Zool. Investigator, Crust., pt. VII, pl. xxxviii, fig. 4, 1899.South coast of Molokai, 23 to 24 fathoms, station 3847, one female, 3.5 mm. long by 4.9 wide. I think that this is probably *L. cæstifera*, although the carapace is a little wider than in the type. There are no color lines visible. Otherwise it agrees very well with the description and figure.**Polydectus<sup>a</sup> cupulifer** (Latreille).*Pilumnus cupulifer* Latreille, Encyc. Méth., Hist. Nat., Entom., X, 1825, 124. Ile de France.*Polydectus cupulifera* Milne Edwards, Hist. Nat. Crust., II, 146, 1837.*Pilumnus cupulifera* Milne Edwards, Cuvier's Règne Anim., disciples ed., atlas, pl. xiv, fig. 4 (figure inaccurate).<sup>a</sup> *Polydectus* Rafinesque, Analyse de la Nature, p. 142, 1815, a genus of mollusks, noted in Scudder's "Nomenclator," is a *nomen nudum*.

*Polydectus villosus* Dana, Crust. U. S. Expl. Exped., I, 227, 1852; pl. XIII, figs. 3 a-e, 1855. Raraka Island, Paumotu Group.

*Polydectus cupulifer* Richters, Beitr. Meeresf. Mauritius u. d. Seychellen, p. 149, pl. xv, figs. 17-20, pl. xvi, figs. 1-8, 1880. Fouquets, Mauritius.

*Record of specimens.*—Hilo, Hawaii, H. W. Henshaw, 2 males, 3 females. "They occur under stones in 2 or 3 feet of water in a little inlet where the tide continually flows and ebbs. They are by no means rare there, though one has to turn over a number of big stones or coral blocks to find one crab." Vicinity of Laysan, 10 fathoms, station 3959, 1 male.

Three of the specimens hold an actinian in each hand; two specimens, the smallest of all, have an actinian in one hand, not in the other; the sixth specimen lacks the right cheliped altogether, but the left grasps an actinian. These anemones are variable in size. A crab of good size, about 15 mm. in width (devoid of hair) has in one hand an anemone about 10 mm. in diameter, in the other one not more than 6 mm. in diameter. The anemones are firmly grasped by the chelae, the sharp prehensile spines digging into the flesh; usually the fingers are spread so as to seize opposite sides of the anemone, but in the case of the large one above mentioned the fingers of the crab are flexed and nip into a small bit of the anemone. Compare Richters's description and figures.

### Family PORTUNIDÆ.

#### *Carcinides mænas* (Linnæus).

Hawaiian Islands, 1 male, in U. S. National Museum, recorded by Streets. (See Streets, Bull. U. S. Nat. Mus., No. 7, 1877, 109; and Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 14.)

#### *Parathranites hexagonum*, sp. nov.

(Pl. XII, fig. 3.)

Carapace broad-hexagonal.

Length about four-fifths of width exclusive of spines. Surface strongly areolated, granulated, the granules coarser on the elevated portions; seven high conical tubercles, one on each protogastric area, one posterior mesogastric and in same line one at inner branchial angle, two cardiac side by side. Of smaller tubercles there is one posterior cardiac and three posterior branchial, which form a longitudinal curve with the protogastric and anterior branchial tubercles.

Front four-toothed, teeth subtriangular, blunt, median pair a little more advanced, median sinus V form, lateral sinuses U form. No tooth at inner angle of orbit. Upper margin of orbit with two open fissures.

Antero-lateral projections, 6; first or orbital narrow, blunt, resembling those of the median frontal pair, and separated by a shallow sinus from the second, which is low and very blunt. Next three regularly dentiform, the third subacutely pointed, the fourth with acuminate tip, fifth with even more slender tip. Sixth projection a spine about twice as long as preceding tooth. Extremities of posterior margin armed with a long upcurved spine.

A blunt tooth at lower inner angle of orbit, more advanced than the front; outer sinus a large V. Orbit about two-thirds as wide as the front. Antennæ and maxillipeds much as in *P. orientalis* (Miers).

Chelipeds one and two-thirds as long as carapace. A subdistal spinule on anterior border of ischium. A strong spine at middle of same border of merus and a spine near distal end of outer border. Spine at inner angle of wrist half as long as palm; a smaller spine at outer angle, and on outer surface five or six blunt spinules. Upper surface of hand with two strong costæ and three spines, of which the inner distal is strongest, distal spine of outer border subterminal. Two indistinct ridges along the inner and the outer surface of the hand. Fingers as long as palm.

Of the first three pairs of legs only the last remain; they are one and two-thirds as long as carapace. Natatory legs unarmed, merus slender.

Second and third segments of abdomen of male strongly carinated; sixth much broader than long, sides slightly converging.



Fig. 25.—*Parathranites hexagonum*, abdomen of type male,  $\times 28$ .

*Dimensions*.—Male, length 11.8, extreme width 21.5, width to base of lateral spines 15.3, fronto-orbital width 8.7 mm.

*Type locality*.—South coast of Molokai Island, 92 to 212 fathoms, station 3838; 1 male, immature (Cat. No. 29674).

A young and much-mutilated specimen was taken at station 3982, vicinity of Kauai Island, 233 to 40 fathoms, in which the frontal teeth of the median pair are considerably more advanced than those of the lateral pair and are separated from each other by a very narrow fissure.

*P. hexagonum* can be told at once from the type species, *P. orientalis*, by the broader, more hexagonal carapace, additional side tooth, and longer side spine.

***Parathranites latibrachium*, sp. nov.**

In shape resembles *P. hexagonum*. Length about three-fourths of width exclusive of spines. Surface with a number of prominent tubercles, lower than in *P. hexagonum*; of these one is proto-gastric, two side by side on posterior mesogastric, two cardiac behind the preceding, and two forming an obliquely longitudinal line at inner angle of branchial region. A smaller tubercle is anterior mesogastric, and one posterior cardiac. All the elevated portions granulated.

Front more advanced than in *P. hexagonum*, four-toothed, median pair blunt, triangular, about as wide as median sinus, more advanced than lateral pair, which are broad-triangular, subacute, and set off by a U-shaped sinus.

Antero-lateral projections six, the first or orbital blunt, the others becoming slenderer and sharper except the last, which is a long stout spine.

Posterior margin ending in a short upcurved spine.

Lobe at lower inner angle of orbit not nearly so advanced as the front; outer emargination of moderate size. Basal joint of antenna with a narrow outer lobe which runs into the orbital hiatus.

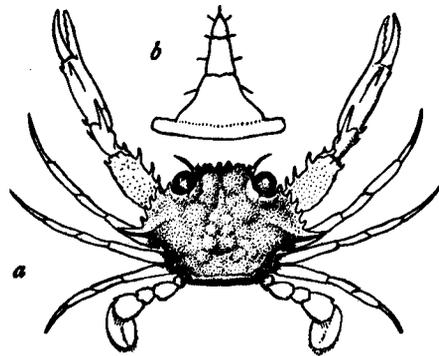


Fig. 26.—*Parathranites latibrachium*, male type. a, Dorsal view,  $\times 2\frac{1}{2}$ . b, Abdomen,  $\times 4\frac{1}{2}$ .

First joint of palpus of outer maxilliped with its inner margin remarkably expanded, forming a vertical lamina. Epistome better defined and more deeply notched than in *P. hexagonum*.

Three spines on inner border of arm, one very small at outer distal end. A long spine half as long as palm at inner angle of wrist and a strong spine at outer angle. Three spines on hand, the inner strong and subdistal, the outer subdistal small, the one above the wrist curved, three additional costæ on outside and two on inside of hand.

Natatory legs unarmed, merus very little longer than wide.

Second and third segments of male abdomen carinated, sixth much longer than wide, sides converging.

*Dimensions*.—Male, length 6, extreme width 10.8, width to base of lateral spines 8.4, fronto-orbital width 6 mm.

*Type locality*.—Vicinity of Modu Manu or Bird Island, 20 to 30 fathoms, station 4158; 1 male (Cat. No. 29676).

By the broad merus of the last pair of feet and the lobe on the basal antennal joint, this species is most notably separated from the other *Parathranites*.

***Lissocarcinus orbicularis* Dana.**

*Lissocarcinus orbicularis* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 20. Ortmann, Bronn's Thier-Reichs, V, 1900, II Abth., 1239.

Honolulu Reef, May 8, 1902, 1 female; Puako Bay, July 12, 1902, 1 male from a holothurian.

*Lissocarcinus lævis* Miers.

*Lissocarcinus lævis* Miers, Challenger Rept., Brachyura, 205, pl. xvii, fig. 3, 1886. Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 21.

Northeast coast of Hawaii Island, 77 to 75 fathoms, station 4057, 1 male.

The two truncate lobes of the front have a sinus a little deeper than in Miers's figure, while the inner angle of the orbit is not so projecting, more rectangular. Surface under the lens finely granular. On the branchial region one can trace a transverse crest running to the last side tooth, which is more slender than figured, while the other teeth are more dentiform.

*Dimensions*.—Male, length 6, width 7.3 mm.

*Lupocyclus quinquentatus*, sp. nov.

(Pl. XII, fig. 7.)

Carapace three-fourths as long as wide; hirsute, except on transverse granulated ridges. Ridge connecting teeth of posterior pair interrupted either side of gastric region; in front of it, two gastric ridges, the posterior continuous, the anterior widely interrupted at the middle; behind it a cardiac ridge and on each side three short branchial ridges, the second one of which is interrupted near its inner end. A short post-cardiac ridge; also clusters of granules near the second, third, and fourth antero-lateral teeth, and four clusters more or less distinct on the frontal region.

Front advanced, six-toothed including orbital angle; teeth triangular, acute, middle pair stoutest and most advanced and separated by the most acute sinus; submedian pair smallest, may be a little more or less advanced than the outer pair. Two supra-orbital fissures.

Five subequal antero-lateral teeth, sharp-pointed, including the orbital, which is the stoutest, while the last is the most spiniform. A rudimentary tooth in each of the first three sinuses. A curved line joins the posterior and postero-lateral margins.

Outer suborbital fissure V-shaped; inner angle spiniform, much less advanced than upper angle. Outer lobe of basal antennal joint narrow, occupying only half the width of the orbital hiatus.

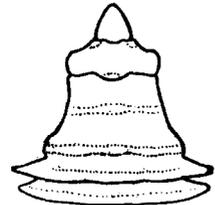


Fig. 28.—*Lupocyclus quinquentatus*, abdomen of type male,  $\times 1\frac{1}{2}$ .

Chelipeds nearly two and one-half times as long as carapace in male, two and one-sixth times in female; merus very stout with three (occasionally four) large spines on inner margin and a small one at distal end of each margin. Small spine at distal inner end of ischium. Wrist with an inner and two outer subdistal spines. Hand subcylindrical, with three large spines—i. e., the customary one near the wrist, and two at the middle on each side of upper

surface; in addition there is on the smaller chela only a small spine on outer distal end, overlapping the dactylus. Fingers slender, longer than palm.

Merus of the natatory feet twice as long as broad, armed with two spines on posterior border, one larger subdistal, one smaller distal. Greater part of posterior margin of propodus armed with small stout denticles. Midrib of dactylus terminating in a spine.

Surface of chelipeds and legs traversed by longitudinal grooves, interspaces for the most part crossed by transverse granulated rugae.

Abdomen of male broad except for terminal segment, the penult being more than twice as wide as long.

*Dimensions*.—Male, station 4034, length to median sinus 26.5, width 36.2, fronto-orbital width 22.6; female, station 3876, length to median sinus 27.8, width 37.6, fronto-orbital width 23.9.

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; Auau Channel, 28 to 43 fathoms, station 3876; Penguin Bank, south coast of Oahu, 14 to 28 fathoms, stations 4031, 4034 (type locality); northeast coast of Hawaii Island, 24 to 83 fathoms, stations 4054, 4061; vicinity of Modu Manu, 31 to 56 fathoms, stations 4160, 4164. Cat. No. of type, 29669.

*Color*.—According to a note by the collector, the type male is "translucent yellowish, heavily mottled with vermilion. Dorsum of carapace nearly clear red, ventral side whitish."

This species differs from *L. rotundatus* Adams & White in the greater prominence of the inner orbital angles, fewer lateral teeth and arm spines, and more numerous lines on the carapace.



Fig. 27.—*Lissocarcinus lævis*, station 4057, abdomen of male  $\times 6\frac{1}{2}$ .

**Goniocaphyra inæqualis**, sp. nov.

(Pl. XII, fig. 9.)

Bears a strong resemblance to the type species of the genus *G. truncatifrons* de Man, of which there is a female specimen from Samoa in the U. S. National Museum.

Carapace narrower; anterior and antero-lateral regions finely and evenly granulate, the coarse antero-lateral granules of the older species being absent. Side teeth similar in number and position; no denticle between first and second, the suborbital region being very finely granulate. In front view the orbits diminish in height outwardly.

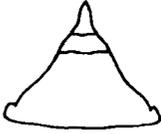


Fig. 29.—*Goniocaphyra inæqualis*, station 3876, abdomen of male,  $\times 4\frac{1}{2}$ .

Chelipeds much more unequal in the male than in the related species, the smaller one twice as long as the carapace is wide, the larger one about two and a quarter times as long. The borders of the inner surface of the arm are coarsely granulous, and are devoid of the spines of *truncatifrons*. The smaller chela of the male is similar to that in the last-named species, but the larger chela is very heavy, the fingers very short, being less than two-thirds as long as the palm.

*Dimensions*.—Male, length 7, width 10.6 mm.

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; Auau Channel, 13 to 43 fathoms, stations 3871 (type locality), 3872, 3873, 3874, 3876; vicinity of Kauai Island, 68 to 179 fathoms, station 4128. Abundant at stations 3847 and 3876. Cat. No. of type, 29657.

**Carupa læviuscula** Heller.

*Carupa læviuscula* Heller, Verh. zool. bot. Ges. Wien, XII, 1862, 520; Reise Novara, Crust., 27, pl. III, fig. 2, 1865. Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 26.

Honolulu, 1 male, 1 female.

Laysan (Lenz).

**Portunus sanguinolentus** (Herbst).

*Cancer sanguinolentus* Herbst, Naturg. d. Krabben u. Krebse, I, 161, pl. VIII, figs. 56, 57, 1783.

*Neptunus sanguinolentus* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 32.

Honolulu; Pearl Harbor; Oahu, Dr. T. H. Streets; Heeia; Hilo; Hilo Bay, H. W. Henshaw; south coast of Oahu, surface, station 3813; Kaunakaki Harbor, Molokai, station 3844; north coast of Molokai, surface, stations 3889 and 3905; Pailolo Channel, 30 to 52 fathoms, station 3861; Auau Channel, 14 fathoms, station 3870; south coast of Oahu, surface, station 3921; Hawaiian Islands, U. S. Exploring Expedition, 1 male, 1 female; Maui, lee coast of Oahu and weather coast of Hawaii, A. Garrett, in Museum of Comparative Zoology.

Hawaiian Islands (Randall, Dana, Streets), 4 males, 2 females, J. K. Townsend, collector, in Philadelphia Academy of Natural Sciences. Hawaii (Miers). Haunakackai, Molokai (Lenz).

This may be the "*Neptunus diacanthus*" recorded by Cano from Honolulu.

Note on this species at Hilo, by H. W. Henshaw, July 26, 1898: "The common bay crab, numbers of which are brought in every time the fishermen draw their nets. They look much like our Chesapeake crab, and the Kanakas catch them in the same manner—circular net, baited with a bit of meat or fish—as the crabs are caught along the Eastern Shore."

**Portunus pubescens** (Dana).

(Pl. XIV, fig. 1.)

*Lupa pubescens* Dana, Crust. U. S. Expl. Exped., I, 274, 1852; pl. XVI, fig. 9, 1855.

*Achelous pubescens* A. Milne Edwards, Arch. Mus. Hist. Nat. Paris, X, 1861, 342.

Honolulu; Honolulu market; Maui, R. C. McGregor; Kauai, A. Garrett, in Museum of Comparative Zoology.

Maui (Dana).

**Portunus (Achelous) argentatus** (A. Milne Edwards).

*Neptunus argentatus* A. Milne Edwards, Arch. Mus. Hist. Nat. Paris, X, 1861, 332 and 339, pl. xxxi, fig. 4.

Honolulu (Cano).

Two young specimens, each about 3 mm. long, from the surface on north coast of Molokai Island, station 3889, belong to the *argentatus* group, but are too small to be determined with certainty.

**Portunus (Achelous) granulatus** (A. Milne Edwards).

(Pl. XII, fig. 2.)

*Lupea granulata* A. Milne Edwards, Hist. Nat. Crust., I, 1834, 454.

*Neptunus (Achelous) granulatus* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 45.

*Distribution*.—South coast of Molokai Island, surface and 43 to 66 fathoms, stations 3846, 3850; Auan Channel, 21 to 28 fathoms, station 3874; vicinity of Modu Manu, 20 to 31 fathoms, stations 4158, 4159; Hilo, 1901; Oahu, H. Mann, 1864, in Museum of Comparative Zoology, determined by W. Faxon. Laysan (Lenz).

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

(Pl. XII, fig. 4.)

*Achelous orbicularis* Richters in Möbius, Meerest. Maurit., 153, pl. xvi, figs. 14, 15, 1880.

*Neptunus (Achelous) orbicularis* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 47.

Vicinity of Laysan Island, 16 fathoms, station 3962.

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

(Pl. XII, fig. 6.)

*Xiphonectes longispinosus* Doflein, Abh. math.-phys. Cl. k. bayer. Akad. Wiss., München, XXI, 1902, 659, pl. v, fig. 7.

*Portunus (Xiphonectes) longispinosus* Rathbun, Bull. Mus. Comp. Zool., XXXIX, Dec., 1902, 130, and synonymy.

Honolulu Reef; Hilo; weather coast of Kauai, A. Garrett, in Museum of Comparative Zoology.

Hawaiian Islands (Dana).

**Portunus (Xiphonectes) macrophthalmus** sp. nov.

(Pl. XII, fig. 5.)

Allied to *P. (X.) longispinosus*. Fronto-orbital width less; median pair

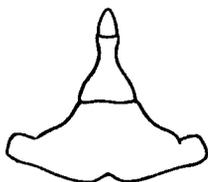


Fig. 31.—*Portunus (Xiphonectes) macrophthalmus*, abdomen of type male,  $\times 3\frac{1}{2}$ .

of frontal teeth narrower, submedian pair more triangular; orbits narrower and more deeply cut. Antero-lateral spines fewer (four or five), excluding the orbital and the long lateral spine; in *P. longispinosus* they are usually six (occasionally seven), divisible into two sets, the two anterior separated by a wider space from the four posterior. Outer tooth of orbit narrow, acutely pointed; inner suborbital lobe triangular; merus of last pair of legs unarmed; crest of third segment of male abdomen very prominent, notched in the middle; penult segment longer than broad, much constricted.

*Dimensions*.—Male, station 4160, length 11.9, entire width 27.5, fronto-orbital width 10.4; female, station 3986, length 4.7, entire width 9.7, fronto-orbital width 4.9 mm.

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; vicinity of Kauai Island, 362 to 55 fathoms, station 3986; vicinity of Modu Manu, 31 to 39 fathoms, station 4160 (type locality). Cat. No. of type, 29688.

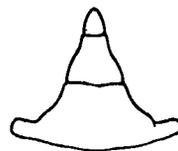


Fig. 30.—*Portunus (Xiphonectes) longispinosus*, Honolulu Reef, abdomen of male,  $\times 2\frac{1}{2}$ .

**Charybdis japonica** (A. Milne Edwards).

(Pl. XIII, fig. 2.)

*Portunus* (*Charybdis*) *6-dentatus* de Haan, Fauna Japon., Crust., 41, pl. XII, fig. 1, 1835. Not *Cancer sexdentatus* Herbst.

*Goniosoma japonicum* A. Milne Edwards, Arch. Mus. Hist. Nat. Paris, X, 1861, 373.

*Charybdis japonica* Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, 27.

Honolulu, U. S. S. *Tuscarora*, 2 females. Honolulu, collector unknown, 1 male, 1 female.

This species is, I think, the one described and figured by de Man (Jour. Linn. Soc. London, XXII, 1888, 80, pl. v, fig. 2) as *Goniosoma affine* Dana, but it differs from the true *Charybdis affinis* of Dana in the following characters:

*C. affinis* is wider across front and orbits; front less advanced and less arcuate; side teeth a little concave on their outer slope, making them appear narrower. In *affinis* the merus of swimming feet is nearly as broad as long, while in *japonica* it is one and a half times as long as broad. Penult segment of male abdomen with sides more convex in *affinis*, so that the segment is widest at its middle, while in *japonica* it is widest at proximal end.

There are in the Museum of Comparative Zoology specimens of *C. affinis* from Singapore and Penang, collected by Capt. W. H. A. Putnam.

The *Charybdis affinis* of Alcock (Jour. Asiat. Soc. Bengal, LXVIII, 1899, 56) must be a different species, as it has a transverse ridge on the cardiac region, contradictory to the descriptions by Dana and de Man.

The species grows to be quite as large as *C. cruciata*; and it may be noted that one of the conspicuous differences between these two lies in the merus of the last pair of legs, which in *C. cruciata* is shorter or three-fourths as broad as long (not three-fourths as long as broad) and in *C. japonica* two-thirds as broad as long.

**Charybdis erythroductyla** (Lamarck, 1818).

(Pl. IV.)

*Thalamita pulchra* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 117, pl. IV.

*Goniosoma erythroductylum* A. Milne Edwards, Arch. Mus. Hist. Nat. Paris, X, 1861, 369, and synonymy.

Puako Bay, Hawaii; Honolulu; Honolulu market; Oahu, H. Mann, 1864, in Museum of Comparative Zoology; Waiawa, Kauai, Valdemar Knudsen; Kauai, A. Garrett, in Museum of Comparative Zoology.

Hawaiian Islands (Randall), 2 females, types of *T. pulchra*, Nuttall and Townsend, in Philadelphia Academy of Natural Sciences; length of larger, measured to tips of frontal teeth, 161.5, width 188.8 mm.

Honolulu (Lenz).

**Charybdis orientalis** Dana.

(Pl. XIII, fig. 1.)

*Charybdis orientalis* Dana, Proc. Acad. Nat. Sci. Phila., VI, 1852, 85; Crust.

U. S. Expl. Exped., I, 285, 1852; pl. XVII, fig. 10, 1855. Not *C. (Goniosoma) orientalis* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 63.

Carapace about two-thirds as long as broad; four series of transverse granular ridges, the posterior of which connects the last pair of side teeth; surface pilose except on the ridges and margins and two bare spots on the cardiac region.

Front cut into 6 truncated teeth, not including the inner orbital angles.

Antero-lateral borders with 5 large teeth, the last not larger than the others; a small denticle at outer base of first tooth. Posterior border arcuate and curving into the postero-lateral borders; below the marginal rim at either end of posterior border there is a smooth lobule.

Major diameter of orbit less than one-fourth width of inter-orbital space, the lobe at lower inner angle dentiform, obtusangular, the lobe below the outer angle distinct, not dentiform.

Arm with 3 spines on the anterior border and one on the posterior border; wrist with a strong spine at the inner angle, 3 small spines on the outer side; 5 large spines on upper surface of hand.



Fig. 32.—*Charybdis orientalis*, Honolulu, abdomen of male,  $\times \frac{1}{4}$ .

Upper surface of arm, wrist, and hand covered with large granules. Four longitudinal granulated crests on outside of hand below the spines and 2 on the inside; intermediate spaces filled by short transverse granulated costæ, which also ornament the outside of the arm. Hands swollen. Fingers with deep pilose grooves separating high smooth ridges.

Merus of fifth pair of legs only one and a half times as long as its width at middle, armed with a long distal spine on posterior border. The hind margin of the propodus is armed with a few scattering short, blunt spinules.

Penult segment of abdomen of male a little wider than long, sides subparallel except at distal end.

*Dimensions*.—Male, length from base of median notch 51.3, entire length 53.2, width 74 mm.

*Distribution*.—Honolulu, 1 male. Specimens from the Philippine Islands (including the type) and the Society Islands in the Museum of Comparative Zoology.

Honolulu (Lenz).

***Thalamonyx gracilipes* A. Milne Edwards.**

*Thalamonyx gracilipes* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, IX, 1873, 169, pl. iv, fig. 3. Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 71.

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; Auau Channel, 21 to 43 fathoms, stations 3872, 3874.

***Thalamita cœruleipes* Jacquinot.**

*Thalamita cœruleipes* Jacquinot, in Jacquinot & Lucas, Voyage au Pole Sud, Zool., III, Crust., p. 53, 1853; atlas, pl. v, fig. 6, 1852 (?).

Oahu, H. Mann, 1864, in Museum of Comparative Zoology; determined by W. Faxon.

The postero-lateral angles of the carapace are marked by a rimmed lobe outside the usual postero-lateral ridge. Posterior margin of propodus of natatory legs armed with six or seven spines increasing distally.

***Thalamita picta* Stimpson.**

*Thalamita picta* Stimpson, Proc. Acad. Nat. Sci. Phila., X, 1858, 39.

Waikiki Beach; Honolulu; Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

***Thalamita sima* Milne Edwards.**

*Thalamita sima* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 81.

Hawaiian Islands (Cano).

***Thalamita integra* Dana.**

*Thalamita integra* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 85.

Hilo; Honolulu Reef; Honolulu, U. S. S. *Tuscarora* and Dr. W. H. Jones; Pearl Harbor; Oahu, Dr. T. H. Streets.

Honolulu, 16 to 20 fathoms (Miers); Honolulu (Alcock); Honolulu market, also Hawaii (Miers); Oahu (Lenz); Hawaiian Islands (Dana, Streets).

***Thalamita edwardsi* Borradaile.**

*Thalamita edwardsi* Borradaile, Proc. Zool. Soc. London, 1900, 579; Fauna and Geog. Maldives and Laccadive Islands, I, 1902, 202.

In the Hawaiian collections are found three forms which come within the *admète* group.

The first or smoothest (*T. edwardsi* Borradaile) is tolerably abundant on the coral reefs, though much less so than *T. integra*. The cardiac region is devoid of a crest, and there are only faint traces of its continuation on the branchial regions; fourth lateral tooth rudimentary, minute, often not discernible. Of the crests on the hand the two uppermost are granulous and each armed with two spines, those of one series alternating with those of the other, the distal extremities armed with a blunt tooth; third crest obsolete; fourth strong and smooth in the young or in the old, obsolete except toward extremities of palm; fifth well developed, smooth; space between first and second crests finely granulous, also halfway to third crest (if such were developed).

The second form is rather rare on the reefs, and is characterized by a distinct crest on the cardio region and in the same line a short and distinct crest on each branchial region; fourth lateral tooth well developed, but smaller than the others. The five crests of the hand are well developed and granulous, the granules diminishing in size from the third to the fifth crest; the terminal projections of the two upper crests may be acute or spinous; space between first and third crests coarsely granulous, which granulation may extend to the fourth crest.

The third form inhabits deeper water and occurs in considerable numbers at some stations. All the crests are as strong as or even stronger than in form 2; the fourth tooth is rudimentary as in *edwardsi*; five crests of hand all well developed and granulous, the space as far down as the fourth crest coarsely granulous, some granulation just above the fifth crest, two spines in first row, three in second; lower surface of hand granulous, also a portion of inner surface.

*Distribution of T. edwardsi.*—Honolulu, U. S. S. *Tuscarora*, Dr. W. H. Jones and U. S. Fish Commission; Honolulu Reef; Waikiki Beach; Oahu, Dr. T. H. Streets; Hanalei, Kauai, reef; Hilo; Maui, A. Garrett, in Museum of Comparative Zoology; Hawaiian Islands (Dana, Streets, as *T. admete*).

The only variation from the typical *edwardsi* is noted in a female from Honolulu (Cat. No. 25379) in which the fourth tooth is better developed, and the hands tend toward the roughness of form No. 3.

There are in the National Museum no specimens from elsewhere than the Hawaiian Islands.

The second form I have called *T. admete* (Herbst), because it seems to me that the specific name *admete* should be applied to a form in which the fourth side tooth is well developed. Herbst's type of *Cancer admete* is not extant (cf. Hilgendorf, Monats. K. Akad. Wiss. Berlin, 1878, 799), therefore one must rely on his description and figure.

#### ***Thalamita admete* (Herbst).**

*Cancer Admete* Herbst, Natur. d. Krabben u. Krebse, III, pt. 3, p. 40, pl. LVII, fig. 1, 1803.

Herbst shows in his figure a fourth tooth of good size and moreover says "der vierte Zahn ist aber weit kleiner, als die übrigen, mehr dornenartig, und hat das Ansehen, als sey er als ein junger zwischen den beyden grösseren hervorgewachsen."

*Distribution.*—Laysan, May 1902; Waiawa, Kanai Island, V. Knudsen, 1887.

Specimens of the same are in the National Museum from Anamba Islands in the China Sea, Samoa, and Lord Howe Island.

The description of *T. savignyi* A. Milne Edwards applies very well to these specimens except that the inner face of the hand is not granulous.

While I may be mistaken in naming this form, I think that it is more nearly correct than the application of "*admete*" made by Alcock (1899) and Borradaile (1902).

#### ***Thalamita auauensis*, sp. nov.**

(Pl. XII, fig. 1.)

The third form of the *admete* group described above is not found in Borradaile's key (loc. cit. 1902), hence a new name is proposed.

A different specific designation seems to be warranted for each form of the Hawaiian series and no striking intergradations are to be seen in the collection in the National Museum from other localities, which, however, is very limited.

Named for Auau Channel where this crab is the most plentiful.

*Distribution.*—South coast of Molokai Island, 23 to 73 fathoms, stations 3847, 3849, 3850; Auau Channel, 13 to 43 fathoms, stations 3871, 3872, 3873, 3876 (type locality); northeast coast of Hawaii Island, 24 to 83 fathoms, station 4061; vicinity of Kauai Island, 68 to 179 fathoms, station 4128; vicinity of Modu Manu, 26 to 183 fathoms, stations 3978, 4147, 4149, 4161, 4164. Cat. No. of type, 29602.

#### ***Thalamita spinifera* Borradaile.**

*Thalamita exetastica* var. *spinifera* Borradaile, Fauna and Geog. Maldive and Laccadive Arch., I, 203, 1902.

The specimens agree with Borradaile's description in having the chelipeds covered to a large extent with rounded granulations instead of squamæ and the lower side almost smooth (that is, smooth

to the naked eye, but really microscopically squamose); and the propodite of the swimming foot armed posteriorly with spinules.

It may be added that the subspecies is much larger and wider than typical *exetastica*, the largest male (station 3876) measuring 19 mm. long by 27.1 wide, the largest female (station 3850) measuring 17.2 by 25.2 mm.

The characters of the eighty specimens examined agree except that in those of medium size there is some variation in the size of the secondary tooth at the base of the first tooth, it being sometimes rudimentary, sometimes plainly developed; in large specimens it is a slender spine of good size.

*Distribution*.—South coast of Oahu Island, 238 to 52 fathoms, station 3811; south coast of Molokai Island, 23 to 212 fathoms, stations 3838, 3847 to 3850; Auau Channel, 13 to 65 fathoms, stations 3871 to 3876; vicinity of Kauai Island, 24 to 233 fathoms, stations 3982, 3987, 4002, 4024, 4128; northeast coast of Hawaii Island, 24 to 113 fathoms, stations 4057, 4061, 4062, 4063.

***Thalamita alcocki* de Man.**

*Thalamita alcocki* de Man, Abh. Senckenb. naturf. Ges. Frankfurt a. M., XXV, 1902, 646.

Vicinity of Modu Manu or Bird Island, 26 to 33 fathoms, station 4148, one ovigerous female, 7.7 mm. long, 11.6 wide, fronto-orbital width 9.6 mm.

***Thalamita kukenthali* de Man.**

*Thalamita kukenthali* de Man, Abh. Senckenb. naturf. Ges. Frankfurt a. M., XXV, 1902, 650.

Aleunihana Channel, 176 to 49 fathoms, station 4066; one male, 8 mm. long, 11.4 wide, fronto-orbital width 10 mm.

In this specimen the cardiac crest can scarcely be made out.

This and the preceding species differ from *T. exetastica macrodonta* Borradaile (Fauna and Geog. Maldive and Laccadive Arch., I, 203, 1902) in having spines on the hinder edge of the last propodite.

***Podophthalmus vigil* (Fabricius).**

*Podophthalmus vigil* Miers, Challenger Rept., Zool., XVII, 207, 1886, and synonymy.

Honolulu, Pearl Harbor; lee coast of Oahu, A. Garrett, in Museum of Comparative Zoology; Heeia; Mauna Loa, beach; Hilo.

Hawaiian Islands (Gibbes, Randall), 4 males, Nuttall and Townsend, collectors, in Philadelphia Academy of Natural Sciences. Honolulu Reefs (Miers). Honolulu (Lenz).

**Family CANCRIDÆ.**

***Kraussia integra* (de Haan).**

(Pl. xiv, fig. 3.)

*Kraussia integra* Alcock, Jour. Asiat. Soc. Bengal, LXVIII, 1899, 97, and synonymy.

*Distribution*.—Vicinity of Laysan Island, 20 to 30 fathoms, station 3955, 1 female with eggs; north-east coast of Hawaii Island, 50 to 63 fathoms, station 4063, 1 juv.

***Kraussia rugulosa* (Krauss).**

*Kraussia rugulosa* Dana, Crust. U. S. Expl. Exped., I, 302, 1852; pl. xix, fig. 1 a-f, 1855. De Man, Arch. f. Natur., LIII, 1887, 1, p. 343, pl. xiv, fig. 2.

Island of Maui (Dana).

***Kraussia hendersoni* Rathbun.**

(Pl. xiv, fig. 2.)

*Kraussia nitida* Henderson, Trans. Linn. Soc. London (2), V, 1893, 379, pl. xxxvii, fig. 9.

*Kraussia hendersoni* Rathbun, Bull. Mus. Comp. Zool., XXXIX, 1902, 133.

I have not seen *K. rugulosa*, but to judge from the figures given by Dana and de Man (loc. cit.), the carapace is more orbicular, narrower through the hepatic region, the fingers are longer and quite otherwise in shape, and there are three or four antero-lateral teeth evident behind the orbital tooth.

One egg-laden female of *K. hendersoni* was taken at station 3876, Auau Channel, 28 to 43 fathoms. It differs from a Samoan example in having the submedian lobes of front as advanced as the lateral pair; the granules which make up the rugæ of the palm and also those on the fingers are more elevated and are plainly visible to the naked eye.

**PLATEPISTOMA, gen. nov.**

Epistome broad (from side to side), its posterior margin well defined and not overlapped by the outer maxillipeds. Merus of latter as broad as long, its antero-external angle produced. Buccal cavity widening anteriorly.

Carapace suborbicular, margins spinous. Eyestalks very stout, filling the orbits. Basal joint of antenna longer than wide, filling the orbital hiatus.

In the well-defined buccal cavity in which the maxillipeds neatly fit, this genus is not a typical Cancrid, and approaches the Pilmnidæ; the genus *Telmessus* is perhaps nearest of the Cancridæ; in all other respects it has the characteristic appearance of the family. In the form of the carapace it has much the aspect of *Hypopeltarium*; the basal joint of the antenna is not far removed from *Atelecyclus*.

It is unfortunate that this new form should be represented in the collection by only a young specimen; but, although the adult may differ, it is obviously not possible to place the species in any known genus.

**Platepistoma macrophthalmum, sp. nov.**

Carapace slightly wider than long, suborbicular with a fairly well-marked lateral angle, moderately convex in both directions; regions indicated, surface uneven, pubescent and covered with sharp granules, with longer spinules on the summits of the areolæ.

Front appearing tridentate; the median tooth small, triangular, bent down to the interantennular septum; the lateral teeth are shallow lobes formed by upper margin of antennular fossettes.

Orbits shallow, large, a little wider than high and completely filled by the eyes; upper margin spinulose and cut by two small V-shaped notches.

Antero-lateral and postero-lateral margins subequal, the former convex and cut into five large, alternating with four small, spines, the spines broad at base and slender pointed. On the straight postero-lateral margin there is a spine of medium size, next the lateral angle, followed by several spinules.

Lower orbital margin with a small round sinus not far from its middle; inner angle tipped with a spinule, but slightly more advanced than outer angle.

Basal segment of antennules large, suboblong, tapering distally. The same segment of antennæ is long, reaching for half its length beyond the lower orbital

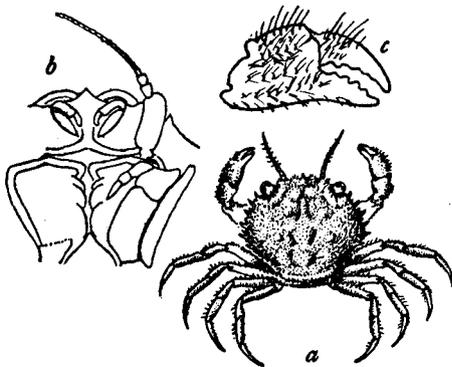


Fig. 33.—*Platepistoma macrophthalmum*, type female.  
a, Dorsal view,  $\times \frac{3}{4}$ . b, Antennal and buccal area,  
 $\times 10$ . c, Chela,  $\times \frac{9}{2}$ .

angle and meeting the upper orbital angle, sides subparallel, concave inner margin forming external boundary of antennular cavity. Movable part of antennæ half as long as carapace. Epistome short, posterior margin notched behind middle of antennules.

The buccal cavity widens perceptibly anteriorly. Maxillipeds not at all pediform. Merus wider than ischium, wider than long, antero-external angle much produced laterally and rounded; anterior margin transverse. Exognath surpassing in length the endognath.

Chelipeds equal and of moderate size, much as in *Telmessus*; spinulose, spinules arranged in longitudinal series on the palm, and largest on upper surface. Fingers furrowed, dentate on inner edges and fitting together when closed.

Legs of moderate size, merus and carpus joints minutely spinulose above, with a longer terminal spinule. Horny nail very long and slender, occupying nearly one-third of dactylus. The whole animal is covered with a pubescence, which must be removed in order to see the spinulation and granulation.

*Dimensions*.—The single specimen, which is a young female, measures only 4.2 mm. long and 4.7 wide.

*Type locality*.—North coast of Maui Island, 238 to 253 fathoms, station 4083, 1 female (Cat. No. 29791).

#### Family INACHIDÆ.

##### *Achæus affinis* Miers.

*Achæus affinis* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 172.

*Distribution*.—South coast of Molokai Island, 60 to 64 fathoms, station 3845; vicinity of Laysan Island, 163 to 59 fathoms, station 3939; northeast coast of Hawaii Island, 50 to 63 fathoms, station 4063; north coast of Maui Island, 56 to 59 fathoms, station 4072.

##### *Achæopsis superciliaris* Ortmann.

*Achæopsis superciliaris* Ortmann, Zool. Jahrb., Syst., VII, 1893, 36, pl. III, fig. 3.

*Distribution*.—Vicinity of Laysan Island, 163 to 59 fathoms, station 3939; north coast of Maui Island, 57 to 58 fathoms, station 4076.

The specimens which I have referred here are much smaller than that figured by Ortmann, the largest measuring 4.7 mm. in length. They are, however, adult, most of the females being laden with ova. The margin of the rostral lobes, as well as the supra-ocular margin, is spinulose. The spine above the posterior branchial margin represented by Ortmann is indicated only by a tubercle. Nevertheless, I think it very probable that they are the same species.

##### *Cyrtomaia smithi* Rathbun.

(Pl. VI.)

*Cyrtomaia smithi* Rathbun, Proc. U. S. Nat. Mus., XVI, 1893, 229.

A large species.

Surface covered with rough granules, carapace finely pubescent anteriorly. Regions well marked. Three gastric spines, the posterior median the smallest; cardiac region divided by a shallow longitudinal depression into two swellings each tipped with a spine. Other spines are as follows: One small anterior branchial; a submarginal branchial row continued on the pterygostomian region; a prominent spine at outer angle of orbit and another on upper margin, a line of spinules between and in line with the upper orbital and the larger gastric spine; one or more median gastric spinules; a small marginal hepatic spine. Rostral spines short, conical, horizontal, interspace V-shaped; median subrostral spine equally strong. Spines of carapace diminishing in size with age.

Basal joint of antennæ with outer and anterior margin spinulose.

Chelipeds in male three and three-fourths times as long as body, armed with spines and spinules; merus nearly as long as propodus, the longest spine on the innermost row. Palms enlarging distally, a row of strong spines on middle of inner and of outer face; protuberances of upper surface very coarse. Fingers irregularly toothed, narrowly gaping. Palms of female much more slender.

First pair of legs four or five times as long as carapace, spines of last two joints extremely long and slender on the lower or posterior side, forming in flexion a formidable weapon. Other legs rapidly diminishing in length, strength, and armature, the last pair being two and a half times length of carapace and devoid of spines except one at tip of merus. In the old the penult pair is equally devoid of spines. In the young the last three pairs are very nearly of a length.

Sternum armed with spines mostly slender. First and sixth segments of abdomen in both sexes with a distal median spine; second to fifth segments, inclusive, with two distal submedian spinules.

*Dimensions*.—Male, station 3984, length to median sinus 61, to tip of rostrum 65, width 69.3, length of arm 105, of propodus 113, of dactylus 48.8, length of first ambulatory about 235 mm., greatest span 2 feet 4 inches. The largest specimen is a male, station 4083, which has a paper shell and is badly broken. Length of arm 140, of propodus 149, of dactylus 67, span 3 feet.

*Color*.—Note by collector on male, station 3817: "Pale pink on sides and posterior portion of carapace, becoming salmon pink on anterior part of carapace and on two anterior pairs of legs; three posterior pairs lighter, almost white; eyes lustrous gray."

Note by collector, station 3984: "Female, pale madder pink shading to yellow ocher on dorsum of legs. Abdomen white. Male, pale yellow ocher."

*Distribution.*—Kaiwi Channel, 298 to 447 fathoms, stations 3470 (type locality), 3473, 3474, 3475, 3476, and 4112; south coast of Oahu Island, 220 to 337 fathoms, stations 3817, 3911, 3916, and 3919; northwest coast of Oahu Island, 241 to 282 fathoms, stations 4116 and 4117; southwest coast of Oahu

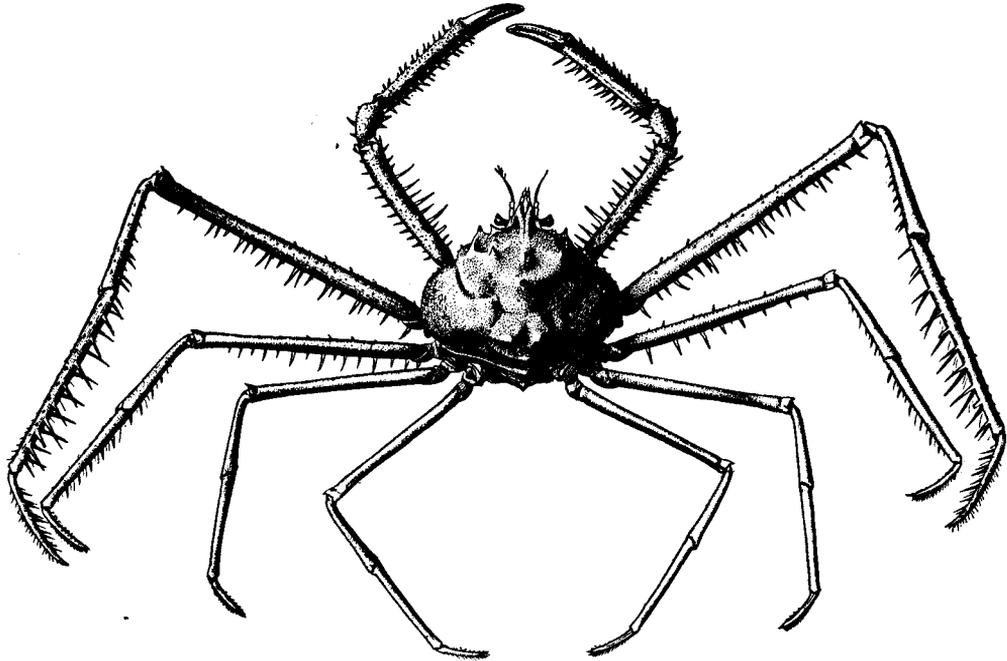


Fig. 34.—*Cyrtomaia smithi*, female type, reduced.

Island, 352 to 357 fathoms, station 4123; south coast of Molokai Island, 222 to 498 fathoms, stations 3824 and 3839; north coast of Molokai Island, 328 to 414 fathoms, station 3892; Pailolo Channel, 256 to 684 fathoms, stations 3865, 3867, 3868, 3883, and 3884; northeast approach to Pailolo Channel, 272 to

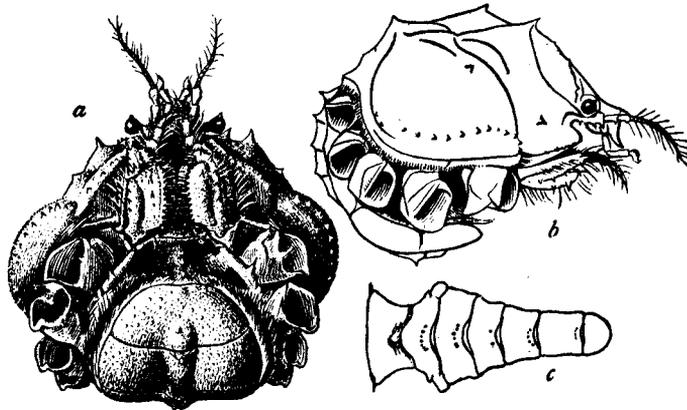


Fig. 35.—*Cyrtomaia smithi*. a, Ventral view of female, Cat. No. 17518,  $\times 7_6$ . b, Side view of same. c, Abdomen of male, station 3984,  $\times 4$ .

286 fathoms, stations 4096 and 4097; vicinity of Modu Manu, 222 to 800 fathoms, stations 3979 and 4166; vicinity of Kauai Island, 55 to 478 fathoms, stations 3984, 3986, 3998, 4022, 4028, 4130, 4131, and 4132; north coast of Maui Island, 238 to 267 fathoms, stations 4083 and 4084.

*Cyrtomaia lamellata*, sp. nov.

A small species. Resembles much the preceding. Carapace wider. Spines of carapace long, as in *C. smithi* of equal size, not as in *C. smithi* adult; thirteen long spines, three gastric, two cardiac, two branchial (one behind the other), one exorbital, one marginal hepatic; a row of short spines just below the epimeral suture and a short row subparallel and above it.

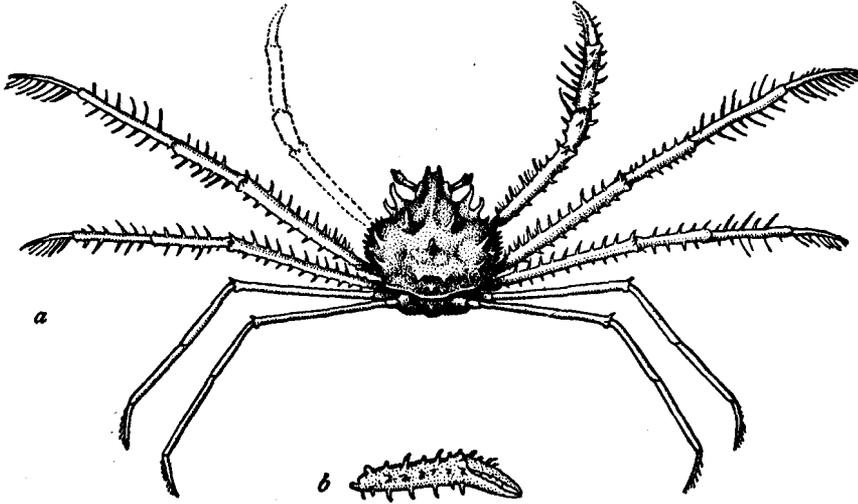


FIG. 36.—*Cyrtomaia lamellata*. a, Female, station 3838,  $\times 13$ . b, Chela of male, station 4046,  $\times 13$ .

Rostral spines very short; the median subrostral projection thin, laminar, upper surface longitudinally concave, tip broken off in all our specimens. Upper margin of orbit much thickened. Eye-stalks longer and slenderer than in the preceding. Basal antennal joint armed with three laminar branching spines; next two joints laminately expanded in three directions.

Chelipeds and legs much as in young of *C. smithi*.

*Dimensions*.—Male, station 4046, approximate length to median sinus 13, width 13.8 mm. Oviparous female, station 3838, length to median sinus 13.1, width 12.7 mm.

*Distribution*.—South coast of Molokai Island, 92 to 212 fathoms, station 3838 (type locality); west coast of Hawaii Island, 147 to 71 fathoms, station 4046; northeast coast of Hawaii Island, 83 to 113 fathoms, station 4062. Cat. No. of type, 29701.

The presence of two branchial spines and absence of a supraorbital spine easily separates the species from *C. smithi*.

*Oncinopus aranea* (de Haan).

*Oncinopus aranea* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 183, and synonymy.

*Ocinopus aranea* Borradaile, Fauna and Geogr. Maldives and Laccadive Arch., II, 685, text fig. 123, 1903.

*Distribution*.—Vicinity of Kauai Island, 68 to 179 fathoms, station 4128; vicinity of Modu Manu, 33 to 71 fathoms, stations 4149 and 4164.

*Sphenocarcinus carbunculus*, sp. nov.

(Pl. xiv, fig. 6.)

Posterior two-thirds of carapace covered with nine large raised, button-like protuberances, regularly disposed, three median, on the gastric, cardiac, and intestinal regions, and three on each branchial region, of which one is at the postero-lateral angle of the carapace; these buttons are a little convex above, constricted below, and of a crimson red color except near the edge, which is whitish. A similar protuberance is on the side of the hepatic region, its anterior end being hollowed out inwardly to form a postocular cup. On the gastric region are three tubercles arranged in a triangle base backward.

Rostrum divided nearly to its base; horns about one-fourth or one-fifth the length of the remainder of the carapace, slender, straight, moderately deflexed and divergent.

Supraocular eave moderately swollen, its anterior end not prominent.

Chelipeds of male a little stouter than legs and nearly as long as carapace; those of female no stouter than legs, and a little shorter than carapace minus rostrum; surface smooth; fingers narrowly gaping in both sexes.

Ambulatory legs slender, unarmed except for a spinule at the end of the merus.

The entire surface of the crab except the fingers is covered with a short dense coat of vesicular pubescence, which is thinner and more easily rubbed off from the top of the buttons. There are also long slender hairs except on the elevations.

*Dimensions*.—Female, type, median length 12.3, including horns 14.7, width 10.4 mm.; male, station 4081, median length 11.1, including horns 14, width 9 mm.

*Distribution*.—South coast of Molokai Island, 169 to 182 fathoms, station 3835 (type locality); west coast of Hawaii Island, 198 to 147 fathoms, station 4045; north coast of Maui Island, 143 to 220 fathoms, stations 4079, 4080, and 4081; northwest coast of Oahu Island, 195 to 241 fathoms, station 4115. Cat. No. of type, 29798.

This species in its horns and orbits approaches *S. simpsoni* (Miers), from which the difference in the excrescences will readily separate it, and should the genus *Oxypleurodon* Miers be maintained apart from *Sphenocarcinus*, our species should belong to the former. The orbits are truly Pisine, there being a deepish sinus above, between the supraocular eave and the postorbital cup; the inferior sinus is as deep as, but much narrower than, in *S. simpsoni* (see Miers, Challenger Brachyura, pl. vi, fig. 1 b).

#### **Huenia proteus** (de Haan).

*Huenia proteus* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 195, and synonymy. Borradaile, Fauna and Geogr. Maldives and Laccadive Arch., II, 686, text fig. 124, pl. XLVI, figs. 1 and 2, 1903.

*Distribution*.—South coast of Molokai Island, 73 to 43 fathoms, station 3849; Auau Channel, 43 to 32 fathoms, station 3872; vicinity of Laysan Island, 10 to 30 fathoms, stations 3955 and 3959; French Frigate Shoal, 14½ to 17½ fathoms, stations 3968, 3969, and 3970; vicinity of Modu Manu, 20 to 183 fathoms, stations 4146, 4158, 4161, and 4164. Hawaiian Islands, A. Garrett, 1 female, in Museum of Comparative Zoology.

#### **Simocarcinus simplex** (Dana).

*Simocarcinus simplex* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 196, and synonymy.

Hilo, H. W. Henshaw; Honolulu Reef; Waikiki Beach; Laysan; Hawaiian Islands, W. H. Pease, in Philadelphia Academy of Natural Sciences.

Oahu or Maui (Dana). Honolulu (Cano).

A lobule is present at either extremity of the posterior border of the carapace. The tip of the rostrum sometimes shows signs of bifurcation.

#### **Echinæcus pentagonus** Rathbun.

*Echinæcus pentagonus* Rathbun, Proc. U. S. Nat. Mus., XVII, 1894, 66.

Vicinity of Modu Manu, 26 fathoms, station 4147; 1 male. Male of same shape as female, anterior portion less deflexed; rostrum not emarginate; length 10.2, width 9.4 mm.

#### **Menæthius monoceros** (Latreille).

*Menæthius monoceros* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 197, and synonymy. Borradaile, Fauna and Geogr. Maldives and Laccadive Arch., II, 1903, 686.

*Distribution*.—Vicinity of Laysan Island, 10 to 16 fathoms, stations 3959 and 3962; French Frigate Shoal, 14½ to 16½ fathoms, station 3968; vicinity of Modu Manu, 21 to 46 fathoms, stations 3978 and 4162; Honolulu, 1901; reef in front of Honolulu, 1901; east and west coasts of Maui, A. Garrett, in Museum of Comparative Zoology.

Lahaina, Maui (Dana).

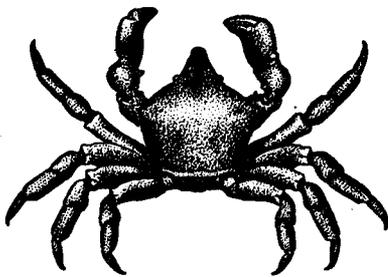


FIG. 37.—*Echinæcus pentagonus*, male, station 4147,  $\times 1\frac{1}{2}$ .

**Acanthonyx simplex** Dana.

*Acanthonyx simplex* Dana, Crust. U. S. Expl. Exped., I, 126, 1852; pl. v, fig. 4 *a-d*, 1855.  
Hawaiian Islands (Dana).

**Halimus hilgendorfi** (de Man).

*Hyastenus hilgendorfi* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 209, and synonymy.

Vicinity of Laysan Island, 16 fathoms, station 3962; one female bearing eggs. Total length, with horns, 14 mm.

The marginal hepatic projection is larger than represented by de Man. The submarginal tubercles, said to be behind the one which lies above the base of the cheliped, are not developed.

A young specimen is also in the collection without label of station.

**Halimus tenuicornis** (Pocock).

*Halimus tenuicornis* Rathbun, Bull. Mus. Comp. Zool., XXXIX, 1902, 133, and synonymy. Boradale, Fauna and Geogr. Maldive and Laccadive Arch., II, 687, 1903.

On the upper margin of the orbit, between the supraocular eave and postocular lobe, there is a small spine which is larger in smaller specimens.

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; Aua Channel, 43 to 32 fathoms, station 3872; vicinity of Laysan Island, 10 to 163 fathoms, stations 3936, 3939, 3940, 3955, 3959, and 3962; French Frigate Shoal, 14½ to 16½ fathoms, station 3968; vicinity of Modu Manu, 32 to 46 fathoms, station 3978; vicinity of Kauai Island, 68 to 179 fathoms, station 4128; vicinity of Modu Manu, 20 to 71 fathoms, stations 4146, 4149, 4158, 4159, and 4171.

**Halimus ovatus** (Dana).

*Lahaina ovata* Dana, Crust. U. S. Expl. Exped., I, 93, 1852; pl. II, fig. 1 *a-f*, 1855.

Lahaina, Maui (Dana).

**Perinea tumida** Dana.

*Perinea tumida* Dana, Crust. U. S. Expl. Exped., I, 114, 1852; pl. IV, fig. 1 *a-f*, 1855.

*Distribution*.—Kailua; Honolulu; Laysan.

Lahaina, Maui (Dana). Hawaii (Stimpson); one specimen labeled "Sandwich Islands, N. Pac. Expl. Exped." in Museum of Comparative Zoology.

The upper margin of the orbit is not so deeply hollowed out as in Dana's figure and the tubercle either side of the cardiac region is larger.

**Chlorinoides goldsboroughi**, sp. nov.

(Pl. XIV, fig. 7.)

Surface granulous; two median gastric spines, one intestinal, two cardiac side by side, two large branchial, one of which is much further in and a little behind the other; the outermost, which marks the postero-lateral angle, has a smaller spine in front of it; two flattened lobes on margins of hepatic and branchial regions.

Rostral horns about one-third as long as post-frontal portion of carapace. Supra-ocular eave with a subtruncate tooth at anterior and posterior angles, the latter less advanced than postocular spine; intermediate spine long.

Basal antennal joint with lateral margins very prominent, each terminating in a slender spine, otherwise unarmed.

Chelipeds of male nearly one and one-half times total length of carapace, stout; crests of arm and wrist irregularly dentate, a spine at distal end of arm; chelipeds of female very slender and only as long as postrostral portion of carapace.

Legs decreasing rapidly in length, first pair in male as long as cheliped less half of fingers, in female exceeding cheliped; meral, carpal, and propodal joints spinulous above, the meral joints each with three spines at distal end.

*Dimensions*.—Male, station 3859, length to median sinus 12.5, to tip of horns 16.4, width without spines 9.3 mm.

*Distribution*.—South coast of Molokai Island, 134 to 130 fathoms, station 3854; Pailolo Channel, 127 to 148 fathoms, stations 3856, 3859 (type locality), and 3886. Cat. No. of type, 29699.

In the arrangement of the dorsal spines this species resembles *C. spatulifer* (Haswell), but in the latter the spines of the posterior half are spatuliform, the supraocular eave is more projecting, the horns more spreading.

Named for Mr. E. L. Goldsborough, one of the Fish Commission collectors on the Hawaiian expedition of 1901.

With regard to *Chlorinoides* Haswell, 1880, vs. *Acanthophrys* A. Milne Edwards, 1865, both Alcock (Jour. Asiat. Soc. Bengal, LXIV, 1895, 241) and Miers (Challenger Brachyura, 52, 1886) have overlooked the fact that Miers himself designated the type of *Acanthophrys* (Jour. Linn. Soc. London, XIV, 1879, 657) as *A. cristimanus* A. Milne Edwards; the type therefore can not be changed and the important point yet to be determined is, not whether *C. tenuirostris* Haswell (the type of *Chlorinoides*) is congeneric with *A. aculeatus* A. Milne Edwards, but whether it is congeneric with *A. cristimanus* A. Milne Edwards. If this proves to be the case, then the name *Acanthophrys* must take the place of *Chlorinoides*.

#### *Schizophrys hilensis*, sp. nov.

A smaller species than *S. aspera*. Surface hairy except the chelipeds, which are nearly naked.

Carapace nongranulose, punctate; three gastric spinules in a narrow triangle, base forward; two

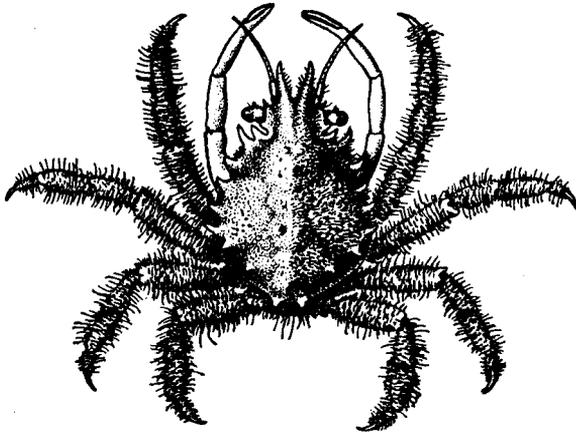


FIG. 38.—*Schizophrys hilensis*, female type,  $\times 1\frac{1}{2}$ .

cardiac tubercles side by side; a short intestinal spine; a branchial spinule on either side of it; two longer spines on posterior margin, either side of middle; five spines forming a marginal curve on each side, the first hepatic.

No accessory spines on rostrum; horns straight, sharp, one-sixth as long as post-frontal portion of carapace.

Supraocular eave thick, its posterior angle projecting as an acute tooth; post-ocular spine simple, broad at base; intermediate spine long.

Chelipeds smooth. Meral joints of legs ending in a sharp tubercle.

Otherwise much as in *S. aspera*.

Length of largest specimen, a female, on median line 17.3, length to tip of horns 19.8, width without spines 12.8 mm.

Hilo, Hawaii, H. W. Henshaw, 1 male,

4 females, types (Cat. No. 29794). West coast of Maui, A. Garrett, October 27, 1859, in Museum of Comparative Zoology. Hawaiian Islands, A. Garrett, April 25, 1860, in Museum of Comparative Zoology.

#### *Ophthalmias a cervicornis* (Herbst).

*Stenocnops cervicornis* Cano, Boll. Soc. Nat. Napoli (1), III, 1889, 102 and 177.

*Stenocionops cervicornis* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 248.

Honolulu (Cano).

#### *Micippa philyra* (Herbst).

*Micippa hirtipes* Dana, Crust. U. S. Expl. Exped., I, 90, 1852; pl. I, fig. 4 a-e, 1855.

*Micippa philyra* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 249, and synonymy.

Oahu, H. Mann, 1864, in Museum of Comparative Zoology.

**Micippa parca** Alcock.

*Micippa margaritifera* var. *parca* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 253; Illus. Zool. Investigator, Pt. VI, pl. xxxv, fig. 4, 1898.

*Micippa parca* Borradaile, Fauna and Geogr. Maldive and Laccadive Arch., II, 1903, 689.

*Distribution*.—French Frigate Shoal, 14½ to 17½ fathoms, stations 3968, 3970, and 3971; vicinity of Modu Manu, 23 to 26 fathoms, station 4146.

In our specimens the superior fissures of the orbit are more V-shaped than in the figure cited, the outer margin of the hepatic region more pronouncedly spinulose, the lower part of the front broader, being twice as wide as its height below the attachment of the basal joint of the antenna.

## Family PARTHENOPIDÆ.

**Parthenope (Platylambrus) nummifera**, sp. nov.

(Pl. xrv, fig. 4.)

Surface pubescent. Widest part of carapace in line with the anterior margin of the cardiac region. A hollow at the posterior corners of the mesogastric region and another between hepatic and branchial regions. Surface covered, but not closely, with tubercles of variable size which are somewhat mushroomlike, the stalks very short and thick, tops very finely and densely granulate; intermediate space more sparingly granulate; of these tubercles the largest are one median gastric, one median cardiac, a cluster on the anterior elevated portion of the branchial regions. Spines of surface granulated, blunt, not long, disposed as follows: One at rear end of the branchial region, one median at rear end of cardiac region; one marginal hepatic, a row of about six on the antero-lateral margin of the branchial region of which the posterior is the larger; between it and the dorsal branchial spine a row of two or three small but elevated tubercles; a spine on postero-lateral margin at end of broad depression which separates cardiac from elevated part of branchial region; from this spine a row of tubercles running along the depression. A row of small tubercles on posterior margin, the end one largest.

Beak small, prominent, trifid; upper margin of antennular cavities spinulose. Upper orbital border very thick, a large forward-projecting tubercle; edge crenulate.

Chelipeds of male 3¼, of female 2¼ times as long as carapace, covered with tubercles like those of the carapace, margins armed with very short stout spines or pointed tubercles, arms bluntly angular. In both sexes, the hands are notably unequal in stoutness, the fingers of the larger one widely gaping.

Legs very slender, armed with small stout spines.

*Dimensions*.—Male type, length 15.2, width 16.7, length of larger cheliped 55.5 mm.

*Distribution*.—South coast of Oahu Island, 51 to 238 fathoms, stations 3809 and 3811; south coast of Molokai Island, 23 to 212 fathoms, stations 3838, 3845, 3846, and 3847; north coast of Molokai Island, 66 to 96 fathoms, station 3906; vicinity of Kauai Island, 50 to 296 fathoms, stations 3987 and 3991; northeast coast of Hawaii Island, 63 to 113 fathoms, stations 4062 (type locality) and 4064; Aleunihana Channel, 49 to 176 fathoms, station 4066; vicinity of Modu Manu, 71 to 160 fathoms, station 4150. Cat. No. of type, 29826.

*Variations*.—The single specimen from station 3811 is a well-marked variety. All the spines are sharper and more prominent than in the typical form, and in place of the larger tubercles on the carapace of the latter there are sharp-pointed spines, as one on summit of gastric, of cardiac and of branchial regions.

In many examples the tubercles of the branchial elevation are more or less run together, forming large blister-like patches.

Near *P. (P.) echinata* (Herbst)<sup>a</sup> (pl. xv, fig. 8) of which a specimen from the Orissa coast has been kindly sent me by Major Alcock. Our species is smaller and narrower, genital region depressed, interspaces between elevations more granulated, chelipeds and legs longer, lower margin of distal end of larger cheliped convex. In *P. echinata* the median spine on the genital region is as elevated as the two on the gastric and cardiac regions.

Also very nearly related to *P. verrucosa* (Studer) (Abh. K. Akad. Wiss. Berlin, 1882, 9, pl. 1, fig. 2 a-b, 1883) which has fewer and larger tubercles on carapace and chelipeds, and less flattened and smoother legs.

<sup>a</sup> See *Lambrus (Platylambrus) echinatus* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 264, and synonymy.

*Parthenope (Platylambrus) stellata*, sp. nov.

(Pl. xv, figs. 1, 2, and 7.)

Carapace subtriangular, one and a half times as broad as long. A shallow post-hepatic constriction. Surface of carapace and chelipeds covered everywhere with flattened stellar granules, varying in size and densely placed. Branchio-cardiac and branchio-hepatic depressions not very deep. Protuberances surmounted by a tubercle disposed as follows: Three gastric in a triangle base forward, two median cardiac, the anterior much the more prominent, two branchial, the posterior on postero-lateral margin and both in line with one at end of posterior margin.

Front narrow, tip tuberculiform. The outer angle of the antennular fossette is a projecting tooth.

A small, blunt spine near posterior end of hepatic margin. Thirteen or fourteen similar spines on antero-lateral margin of branchial region, the last of which forms the lateral angle; near it, on the transverse portion of the postero-lateral margin, two or three spines.

Chelipeds massive, in the male three times as long as carapace; surface nodular; arm obscurely prismatic, margins armed with short, granulated spines, those of the posterior margin the larger, the row being continued proximally on the upper surface. One chela a little stouter than the other, marginal protuberances very nodular and irregular, the largest near middle of inner margin. Fingers of larger chela gaping. In the type the pollex of the smaller claw is entirely lacking, the propodus being truncate at the distal end, with the lower corner smoothly rounded.

Legs very rough, with spinulous borders and surface sharply granulate; lower surface of all the legs and upper surface of merus of the first to third pairs relatively smooth. Distal two-thirds of propodus and basal half of dactylus clothed with long, coarse hair.

*Variations.*—The above description applies to the type specimen only. A smaller male (station 4045) shows the tubercles and spines all sharp instead of blunt pointed, and lacks the hair near the ends of the legs.

Five of the other six specimens are so different from the type as almost to be declared an independent species. They may be known as *P. (P.) stellata lacunosa*. The branchio-cardiac depression is deep, and another depression runs along the outer side of the branchial region, adjacent to the marginal teeth. The elevated part of this region has a row of large pits through its middle, and similar lines of pits dividing the gastric region in three and roughening the chelipeds. The granules are in large part confluent and thus obliterated, especially on the higher parts of the carapace and the chelipeds. The legs have smooth surfaces, thin cristate margins which are somewhat crenate or dentate in the merus and are destitute of long hair. Along with two of this variety from station 4100 is one which is intermediate between the typical and varietal form, the stellate granules being everywhere fairly well shown, and also the lines of pits.

Still a third form seems worthy of a distinguishing name, *P. (P.) stellata complanata*. It differs from the type in the surface of carapace and chelipeds being smooth to the naked eye, though under the lens finely punctate and roughened; the elevations which in the other forms are crowned with a tubercle or spine are here low and smoothly rounded; the tubercle or spine at the inner third of the postero-lateral margin is represented by a triangular nodule; tubercle at each end of posterior margin large and round; antero-lateral teeth broader and more dentiform than in other forms; no teeth nor spines at outer end of postero-lateral margin, but a nodule on the dorsal surface at that point may represent them; marginal spines of chelipeds inclining to sharp; legs approaching the type in roughness; margins prominently spinate, without long hair.

*Distribution.*—South coast of Oahu Island, 238 to 52 fathoms, station 3811 (type locality), 1 male (Cat. No. 29839); south coast of Molokai Island, 169 to 182 fathoms, station 3835, 1 female *lacunosa*; west coast of Hawaii Island, 198 to 147 fathoms, station 4045, 1 male *lacunosa* type (Cat. No. 29842), 1 male sharp-spined variety; Pailolo channel, 130 to 151 fathoms, station 4100, 2 male *lacunosa*, 1 male intermediate; northwest coast of Oahu Island, 154 to 195 fathoms, station 4114, 1 small female *lacunosa*; vicinity of Kauai Island, 257 to 312 fathoms, station 4132, 2 male *complanata*, type (Cat. No. 29845).

This species can be told at once by its very broad form, stellate granulation, and in the variety by the lines of pits.

The type specimen has several stalked barnacles attached and also a worm tube adherent to the whole length of outer surface of right or larger cheliped. A much smaller individual from station 4045 representing the sharp-spined variety has also a barnacle on the carapace.

**Parthenope (Rhinolambrus) lamelligera (White).**

(Pl. xvii, fig. 1.)

*Lambrus lamelliger* White, List Crust. Brit. Mus., 12, 1847 (nomen nudum); Proc. Zool. Soc. London, XV, 1847, 58. Miers, Ann. Mag. Nat. Hist. (5), V, 1880, 230; Challenger Rept., Zool., XVII, 1886, 93 (?*L. rumphii* Bleeker).

*Lambrus lamellifrons* Adams & White, Voy. Samarang, Crust., 26, pl. v, fig. 1, 1848.

Carapace with rostrum a little longer than broad, its surface covered, though not closely, with granulated tubercles and cylindrical blunt spines. Five median spines, one gastric, three cardiac, one posterior marginal; two side by side on gastric in front of median; one large branchial spine forming the middle one of a longitudinal curve of three; on antero-lateral margin of branchial region a row of about eight small spines. Hepatic region prominent, with one noticeably long spine. Orbital region prominent, carapace distinctly constricted behind it. A spine on dorsal surface of each supraocular eave. Rostrum strongly deflexed, narrow, armed with two or three small spines on each side.

Chelipeds in adult female from two to two and two-fifths times as long as carapace; covered with sharp and granulated tubercles, and on the margins rough triangular spines. Anterior or inner margin of arm with about five long spines and at the distal end three or four smaller ones; above a row of about eight very uneven spines and on the outer margin two or three large ones. On inner margin of hand about six large spines, on outer margin five to seven large ones, and two or more on upper surface. Spines of lower margin of cheliped small, but fairly uniform and very jagged.

Legs almost smooth, armed only with a few rough tubercles; transversely banded in two colors.

There are only two large specimens (females) in the collection; the largest, which is laden with eggs, has the prominent spines much less developed—that is, lower, blunter, and more tuberculiform than in the specimen slightly smaller. The largest male is 14 mm. long, and its chelipeds are just as long in proportion to the carapace as in the adult female. Small specimens are much smoother than large ones, one the same size as that shown by Adams and White (loc. cit.) agreeing very well with the figure.

*Dimensions*.—Female, station 3861, length 51.2, width 49.5 mm.

*Distribution*.—South coast of Molokai Island, 23 to 66 fathoms, stations 3847 and 3850; Pailolo Channel, 30 to 52 fathoms, station 3861; Auau Channel, 13 to 43 fathoms, stations 3871, 3874, and 3876; vicinity of Kauai Island, 237 to 164 fathoms, station 3984; vicinity of Modu Manu, 23 to 56 fathoms, stations 4146 and 4164.

This species seems not to differ much from *P. (R.) longispina* Miers. (See Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 266.) The rostrum, however, is narrower and armed along the sides and there is only a single spine on the posterior border in the middle line.

**Parthenope (Aulacolambrus) hoplonotus (Adams & White).**

*Lambrus (Aulacolambrus) hoplonotus* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 273, and synonymy.

East coast of Maui, A. Garrett, 1 dried specimen, in Museum of Comparative Zoology.

**Parthenope (Aulacolambrus) whitei (A. Milne Edwards).**

(Pl. xv, fig. 5.)

*Lambrus (Aulacolambrus) whitei* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 274.

South coast of Molokai Island, 23 to 24 fathoms, station 3847; 1 male.

This specimen differs from the figure given by Adams and White (Voy. Samarang, Crust., pl. v, fig. 3) in the following particulars:

The median spines are much lower; the tubercles and granules of the carapace are more numerous; the large lateral spine extends further sideways; on its posterior base are two teeth; the submedian pair of spines on the posterior margin are very much smaller.

**Parthenope (Parthenolambrus) calappoides** (Adams & White).

(Pl. xv, fig. 6.)

*Lambrus (Parthenolambrus) calappoides* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 275, and synonymy. Borradaile, Fauna and Geogr. Maldive and Laccadive Arch., II, 1903, 690.

*Distribution.*—South coast of Molokai Island, 43 to 66 fathoms, stations 3845, 3846, and 3850; Auau Channel, 28 to 43 fathoms, station 3876; vicinity of Kauai Island, 40 to 233 fathoms, stations 3982, 3987, and 4002; northeast coast of Hawaii Island, 24 to 83 fathoms, station 4061; vicinity of Kauai Island, 68 to 179 fathoms, station 4128; vicinity of Modu Manu, 26 to 56 fathoms, stations 4148 and 4164.

This species, as Alcock has said, is very variable. In most specimens the regions are not carinated nor sharply raised; in some, however, notably those from stations 3982 and 4164, there is a very high nodule on the gastric and on the cardiac region, the branchial region has a rather strong carina, with a tubercle at its middle, the hepatic region is narrowed and thickened and in consequence widely separated from the branchial region, the supraocular lobes are extremely high. Between this form and the typical are gradations, even in individuals from a single station, as 4061.

Another remarkable variety is represented by an ovigerous female from station 4148. This form varies in a different way from the typical, and were it not for the extraordinary diversity which I have found in other species of *Parthenope*, e. g., *P. stellata* and *P. nummifera*, I should describe it as a distinct species. All the margins of the carapace are more spreading, the front is less vertical, the posterior margin forms a more produced lobe, the antero-lateral border is more limb-like, the lateral angles are strongly upcurved. A long gastric and cardiac spine. Surface of carapace and chelipeds crisply granular and margins of the latter sharply dentate. On the proximal half of upper margin of palm a very thin lamellar lobe with crenated edge. In other specimens this lobe is either absent altogether, as in the typical form, or represented by a thick blunt nodule, as in the nodular variety from station 3982 described above.

**Daldorfia horrida** (Linnæus).

(Pl. xiv, fig. 5.)

*Parthenope horrida* Alcock, Jour. Asiat. Soc. Bengal, LXIV, 1895, 279, and synonymy.

*Distribution.*—Auau Channel, 21 to 43 fathoms, stations 3872 and 3874; Hilo, Hawaii, H. W. Henshaw; Oahu, H. Mann, in Museum of Comparative Zoology.

Hawaiian Islands (Randall); one large male, J. K. Townsend, collector, in Philadelphia Academy of Natural Sciences. Laysan Island (Lenz).

In the two larger specimens the teeth of the legs are triangular except on upper margins of merus joints, where, in the male from station 3874, they are scythe-shaped, the point of each scythe touching or overlapping the convexity of the next, so as to leave orbicular interspaces; in the male from Hilo, the "scythes" have two points in opposite directions and the base of the sinuses is denticulate.

FIG. 39.—*Daldorfia horrida*, Hilo, first ambulatory leg,  $\times 1\frac{1}{2}$ .

The sternal hollow in the largest and smallest male is subtriangular with corners rounded; in the male from station 3874, it is transverse oblong with a shallow median partition. There is also a line of smaller cavities on either side of the male abdomen.

**Harrovia truncata**, sp. nov.

(Pl. xiv, fig. 8.)

Carapace hexagonal, a little broader than long; elevated portions finely granulate, depressions smooth. Three gastric elevations corresponding to the regional subdivisions; a transverse curved fold or elevation running across the cardiac and part way across the branchial region; smaller and lower nodules on the anterior branchial and hepatic areas.

Front slightly deflexed, truncate, divided into two feebly concave and oblique lobes by a small notch, and separated by a faint groove from the inconspicuous orbital angle; edge double, granulate. Two teeth of moderate size at lateral angle; at posterior base of the last one a much smaller tooth; a notch at middle of postero-lateral margin which is thick and coarsely granulate. A single line of granules on posterior margin.

Endostome with longitudinal ridges. Inflected portion of carapace and margin of maxilliped furnished with club-shaped setæ.

Only one cheliped, the right, present, shorter and more cancrroid than in other species; length about one and a half times that of carapace; surface granular; a broad tooth on upper and lower margins of arm near distal end; a triangular tooth at inner angle of wrist, outer face rough. Palm as high as its superior length, ridged longitudinally inside and out, there being four ridges outside, between upper and lower margins. Fingers stout, grooved, fitting close together.

Legs compressed, with sharp, cristiform borders; two teeth on upper border of carpal, one on same border of propodal joints; last three joints hairy below.

The single specimen, a male, is immature.

*Dimensions*.—Male, length 5.5, width 6.5 mm.

*Type locality*.—Vicinity of Kauai Island, 233 to 40 fathoms, station 3982, 1 male (Cat. No. 29804).

This species is distinguished by the absence of a supraorbital tooth, the short chelipeds and dentate carpal and propodal joints of legs.



FIG. 40.—*Harrovia truncata*, chela of type male,  $\times 44$ .

#### Family CALAPPIDÆ.

##### *Calappa calappa* (Linnæus).

*Calappa fornicata* Alcock, Jour. Asiat. Soc. Bengal, LXV, 1896, 142, and synonymy. Honolulu; Honolulu market; Oahu, H. Mann, in Museum of Comparative Zoology.

##### *Calappa hepatica* (Linnæus). Native name, *Papaki* (Owen).

*Calappa hepatica* Alcock, Jour. Asiat. Soc. Bengal, LXV, 1896, 142, and synonymy.

Honolulu; Honolulu reef; Honolulu market; Hilo.

Hawaiian Islands (Randall, Eydoux & Souleyet, Dana, Streets); 5 specimens collected by T. Nuttall and J. K. Townsend, in Philadelphia Academy of Natural Sciences. Oahu (Owen). Honolulu reefs (Miers). Pearl Harbor and Laysan (Lenz).

##### *Calappa gallus* (Herbst).

*Calappa gallus* Alcock, Jour. Asiat. Soc. Bengal, LXV, 1896, 146, and synonymy.

Hilo, in little tidal pool, and Keaukaha, Hawaii, H. W. Henshaw; Kauai, A. Garrett, in Museum of Comparative Zoology; northeast coast of Hawaii, 24 to 83 fathoms, station 4061; south coast of Molokai, 43 to 66 fathoms, station 3850; vicinity of Modu Manu, 30 to 31 fathoms, station 4159.

Maui (Dana).

Note on color of male, station 4061: "Carapace and chelipeds mottled yellowish, reddish, and grayish brown; under surface mottled yellow and white; legs yellow." Sea green (Henshaw).

##### *Mursia hawaiiensis* Rathbun.

(Pl. xviii, figs. 3 and 4.)

*Mursia hawaiiensis* Rathbun, Proc. U. S. Nat. Mus., XVI, 1893, 252.

*Distribution*.—Lat.  $21^{\circ} 12' N.$ , long.  $157^{\circ} 49' W.$ , 295 fathoms, station 3472 (type locality); south coast of Oahu Island, 53 to 264 fathoms, stations 3810, 3813, and 3919; vicinity of Kauai Island, 164 to 399 fathoms, stations 3984, 4021, and 4130; west coast of Hawaii Island, 233 to 198 fathoms, station 4044; north coast of Maui Island, 178 to 220 fathoms, stations 4080 and 4081; northwest coast of Oahu Island, 154 to 282 fathoms, stations 4114, 4115, 4116, 4120, and 4121; southwest coast of Oahu Island, 192 to 352 fathoms, station 4122.

This species was based on a single male in which the chelipeds are very unequal; a series of specimens shows that the right claw is abnormally reduced; in the normal individual the chelipeds are subequal in size, and similar except as to the fingers. Several examples larger than the type were secured in 1902; the largest, a male, station 4080, measures 40.1 mm. long and 55.2 mm. wide to tip of spines.

Two young, 11 mm. long and less, have proportionally much longer spines, each spine of the carapace being about one-fifth as long as the width of the carapace measured in front of the spine; the arm spine is stouter and as long as or longer than that of the carapace. The two teeth of the posterior margin are longer than in the adult, and the tubercles of the dorsal surface much stronger.

***Mursia spinimanus*, sp. nov.**

(Pl. xvi, fig. 1.)

Closely related to *M. bicristimana* Alcock (conf. Deep-Sea Brachyura Investigator, 23, pl. III, fig. 3). It differs as follows:

The posterior margin is armed with three, instead of two, blunt denticles.

The crest of the arm is three-spined, the innermost very small, the outermost longer than in *M. bicristimana*, and three-fourths as long as the spine of the carapace, in the young fully as long as the latter.



FIG. 41.—*Mursia spinimanus*, station 3856, lower view of orbit and antenna of male,  $\times 2\frac{1}{2}$ .

Lower margin of hand armed with slender spines directed more obliquely than in *M. curtispina* Miers (Challenger Rept., pl. xxiv, fig. 2). The inner surface has a band of felt-like hair above the lower margin. Thumb longer than in *M. bicristimana*, exceeding its greatest width.

The three lobes of the carina of the second abdominal segment are more nearly equal, the median only slightly wider than the lateral.

In the tridentate posterior margin, spinose inferior margin of hand, and elongate thumb, this species approaches *M. curtispina*, from which it is at once separated by the wider carapace, broader movable finger, and different shape of teeth on upper margin of palm.

*Dimensions*.—Male type, length 36 mm., width measured just in front of spines 46.1 mm., width between tips of spines 65.7 mm.

*Distribution*.—South coast of Oahu Island, 52 to 238 fathoms, stations 3810 and 3811; south coast of Molokai Island, 92 to 212 fathoms, stations 3838 and 3855; Pailolo Channel, 123 to 141 fathoms, stations 3856 (type locality) and 4104. Cat. No. of type, 29922.

I agree with Maj: Alcock that *Platymera* should be united with *Mursia*.

***Cycloës granulosa* de Haan.**

*Cycloës granulosa* de Haan, Fauna Japonica, Crust., p. 71, pl. xix, fig. 3, 1837.

*Cryptosoma granulatum* Alcock, Jour. Asiat. Soc. Bengal, LXV, 1896, 152.

*Distribution*.—South coast of Molokai Island, 43 to 73 fathoms, stations 3846, 3849, and 3850; vicinity of Kauai Island, 50 to 55 fathoms, station 3987.

**Family LEUCOSIIDÆ.**

***Tlos latus* Borradaile.**

*Tlos latus* Borradaile, Fauna and Geogr. Maldive and Laccadive Arch., I, pt. 4, 437, text fig. 115, 1903.

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; Auau Channel, 32 to 37 fathoms, station 3873.

These specimens are a little smaller than the type; the immature female shows the unevenness of the surface more distinctly than the mature female. Length of the latter 3.7 mm., width 5.6 mm.

**Tlos angulatus**, sp. nov.

(Pl. xvi, fig. 5.)

Near *T. latus* Borradaile, but larger and with more angular outline; granulation close and fine over the main part of the carapace, much coarser on the borders. The branchial humps are higher, the pterygostomian and intestinal humps more prominent, while the carapace is pronouncedly wider at the anterior of the lateral angles than at the posterior. The hand from the outside is broader at base and the immovable finger slenderer.

*Dimensions*.—Length of type female 7.8 mm., width 11.5 mm.

*Distribution*.—Vicinity of Kauai Island, 50 to 55 fathoms, station 3987 (type locality); Aleunihana Channel, 49 to 176 fathoms, station 4066. Cat. No. of type, 29854.

**Ebalia tuberculosa** (A. Milne Edwards).

*Persephona tuberculosa* A. Milne Edwards, Jour. Mus. Godeffroy, IV, 1873, 86 [10].

*Ebalia tuberculosa* Miers, Challenger Rept., Zool., XVII, 305 and 306, pl. xxv, fig. 1, 1886.

*Distribution*.—South coast of Oahu Island, 211 to 53 fathoms, station 3810; south coast of Molokai Island, 92 to 212 fathoms, stations 3835, 3838 and 3855; Pailolo Channel, 30 to 52 fathoms, station 3861; west coast of Hawaii Island, 198 to 147 fathoms, station 4045.

The largest specimens taken are about the size of the type; but most of them are smaller, averaging about 4 mm. Numerous examples were obtained by means of the tangles at stations 3835 and 4045.

**Ebalia jordani**, sp. nov.

(Pl. xv, fig. 3.)

Carapace suborbicular, a little longer than broad in the male, a little broader than long in the female. Surface of body and legs finely and closely granulate. Regions distinctly separated by grooves. A median ridge from the front to the intestinal region; a conspicuous gastric tubercle either side of the middle. A large hump marks the inner portion of each branchial region; on its summit three minor swellings can be made out. Two cardiac tubercles, the anterior the higher. Intestinal region much swollen and also partially divided into an anterior and a posterior swelling. Posterior margin prominent, bilobed. A small pterygostomian tubercle visible on antero-lateral margin. Behind hepatic region a broad but distinct emargination. Sometimes a small tubercle on margin at widest point. Front feebly bilobed, lobes truncate, outer angles rounded.

Palm swollen, about same length as dactylus. Terminal segment of male abdomen oblong-linear, a sharp tooth just behind it.

Named for Dr. D. S. Jordan, leader of the Hawaiian expedition, 1901.

*Dimensions*.—Length of male type 11.4 mm., width 11.2 mm., length of female (station 3857), 13 mm., width 13.8 mm.

*Distribution*.—South coast of Oahu Island, 211 to 53 fathoms, station 3810; south coast of Molokai Island, 130 to 127 fathoms, station 3855 (type locality); Pailolo Channel, 30 to 128 fathoms, stations 3856, 3857, and 3861. Cat. No. of type, 29865.

*Distribution*.—South coast of Oahu Island, 211 to 53 fathoms, station 3810; south coast of Molokai Island, 130 to 127 fathoms, station 3855 (type locality); Pailolo Channel, 30 to 128 fathoms, stations 3856, 3857, and 3861. Cat. No. of type, 29865.

**Nucia speciosa** Dana.

*Nucia speciosa* Dana, Crust. U. S. Exped., I, 397, 1852; pl. xxv, fig. 5, 1855.

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; vicinity of Laysan Island, 163 to 59 fathoms, station 3939.

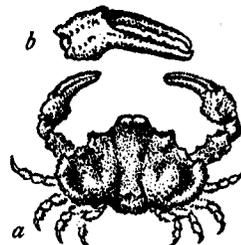


FIG. 42.—*Tlos angulatus*, type female. a, Dorsal view,  $\times 1\frac{1}{2}$ . b, Chela,  $\times 2\frac{1}{2}$ .

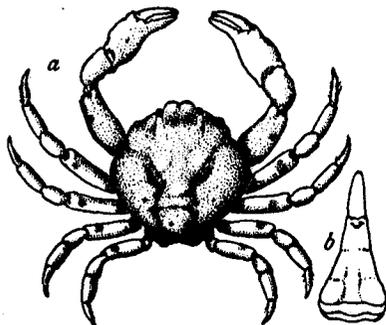


FIG. 43.—*Ebalia jordani*, type male. a, Dorsal view,  $\times 1\frac{1}{2}$ . b, Abdomen,  $\times 2\frac{1}{2}$ .

Length of ovigerous female 4.3 mm., width 5.2 mm. These specimens are much smaller than the type and the tubercles much less prominent, especially those of postero-lateral margin.

Hawaiian Islands, A. Garrett, in Museum of Comparative Zoology; determined by W. Faxon.  
Hawaiian Islands (Dana).

***Randallia distincta* Rathbun.**

(Pl. xvi, figs. 2 and 3.)

*Randallia distincta* Rathbun, Proc. U. S. Nat. Mus., XVI, 1893, 257.

A large number of specimens were taken by the *Albatross* in 1902, but most of them were immature. The few large specimens show somewhat different characters from those possessed by the type, an immature female.

Carapace of adult slightly longer than broad in male; slightly broader than long in female. Granules in male more elevated, but scarcely larger posteriorly than anteriorly; in female larger posteriorly than anteriorly. An ill-defined line of somewhat larger granules marks the lateral margin along the anterior half of the branchial region, but there are no projecting tubercles, as seen in the half-grown individuals. Posterior margin truncate, without the teeth which exist in the young; no spine on intestinal region; only a low tubercle. Pterygostomian region with rounded margin without tubercle.

Chelipeds in male two and a third times as long as carapace; in female slightly more than twice as long as carapace.

Abdomen of male narrow-triangular, granulous at base, a broad tubercle at end of penultimate segment, and two lower tubercles at end of the antepenultimate. Terminal segment almost linear. Terminal segment in female triangular with concave sides.

*Dimensions*.—Male, station 4044, length 43, width 41.5 mm.; female, station 4079, length 39.6, width 40 mm.

The smallest specimen with a tubercle on the intestinal region is an immature female, station 4115, 29.5 mm. long, while the largest specimen with a spine is also a female, station 4082, 32.2 mm. long. Both present two low blunt posterior teeth, and rudimentary tubercles on the branchial margin. In none of the examples of intermediate size is the intestinal spine partially developed; when present at all it is a strong recurved spine.

*Distribution*.—South coast of Oahu Island, 183 to 295 fathoms, stations 3813, 3818, and 3920; north-west coast of Oahu Island, 195 to 282 fathoms, stations 4115, 4116, 4117; southwest coast of Oahu Island, 192 to 352 fathoms, station 4122; south coast of Molokai Island, 238 to 266 fathoms, stations 3836 and 3839; Pailolo Channel, 256 to 284 fathoms, stations 3865 and 3883; vicinity of Kauai Island, 235 to 228 fathoms, station 3998; west coast of Hawaii Island, 233 to 198 fathoms, station 4044; north coast of Maui Island, 143 to 238 fathoms, stations 4079 and 4082.

***Randallia gilberti*, sp. nov.**

(Pl. xvi, fig. 4.)

Carapace about as broad as long; surface granulous, granules irregular, smallest on the lobules and on the fronto-orbital region. Anterior half of carapace lobulate. Median carina interrupted by two lobules; on either side five other lobules, three of which are gastric, forming a triangle, and two hepatic. Visible angle of pterygostomian region broadly triangular; marginal sinus between hepatic and branchial regions slight; a few low tubercles on the antero-lateral portion of the latter. Intestinal region swollen, rising to a point in the middle, unarmed. Posterior margin with two lobes separated by a broad sinus. Front with broad shallow emargination.

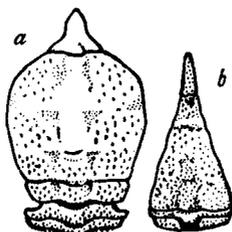


FIG. 44.—*Randallia distincta*, station 4079,  $\times \frac{1}{2}$ . a, Abdomen of female. b, Abdomen of male.

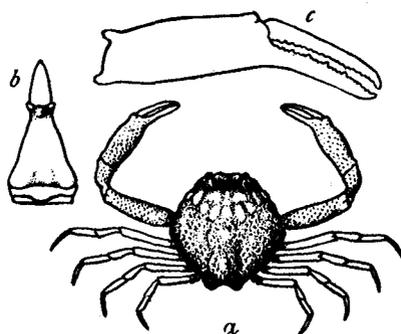


FIG. 45.—*Randallia gilberti*. a, Type female,  $\times 1\frac{1}{2}$ . b, Abdomen of male, station 4062,  $\times 4$ . c, Chela of type female,  $\times 4\frac{1}{2}$ .

Chelipeds and legs granulate all over. Chelipeds less than twice as long as carapace; palm longer than fingers. Legs slender.

Spine at end of penult segment of male abdomen relatively long and slender.

*Dimensions*.—Length of female type 8.8 mm., width 9.1 mm.; length of male, station 3855, 6 mm., width 5.8 mm.

Named for Dr. Charles H. Gilbert of the Hawaiian Expedition, 1902.

*Distribution*.—South coast of Molokai Island, 130 to 127 fathoms, station 3855; north coast of Molokai Island, 66 to 96 fathoms, station 3906; vicinity of Laysan Island, 163 to 59 fathoms, station 3939 (type locality); northeast coast of Hawaii Island, 83 to 113 fathoms, station 4062; Aleunihana Channel, 176 to 49 fathoms, station 4066. Cat. No. of type, 29869.

***Persephona brevimana* (Alcock).**

*Myra brevimana* Alcock, Journ. Asiat. Soc. Bengal, LXV, 1896, 206; Illus. Zool. Investigator, Crust., pl. xxix, fig. 8, 1897. Borradaile, Fauna and Geogr. Maldives and Laccadive Arch., I, 438, 1903.

*Distribution*.—Northeast coast of Hawaii Island, 77 to 75 fathoms, station 4057; north coast of Maui Island, 52 to 56 fathoms, station 4071; vicinity of Kauai Island, 68 to 179 fathoms, station 4128.

Length of largest specimen 14.5 mm.

Family DORIPPIDÆ.

***Ethusa mascarone hawaiiensis*, subsp. nov.**

(Pl. xv, fig. 4.)

This form is very near typical *E. mascarone*, yet differs from it in quite another direction than does the *americana* form. The submedian pair of frontal teeth are triangular, not acuminate, and are separated from each other by an emargination which is nearly rectangular at base; the outer pair are small, slender, acuminate, and situated midway on the outer slope of the inner pair. Distance between tips of teeth on one side only about one-third distance between tips of median pair.

The outer orbital tooth is smaller than in typical *mascarone* and is directed slightly outward.

There are two lobules side by side on the cardiac region; the propodi of the last two legs are more slender than in the species; the antennary flagellum bears a few hairs. In the only male, which is immature, the fingers of the large chela are longer and slenderer than in the male of the European form.

*Distribution*.—South coast of Oahu, 211 to 53 fathoms, station 3810; west coast of Hawaii Island, 198 to 147 fathoms, station 4045; Pailolo Channel, 143 to 122 fathoms, station 4101 (type locality). Cat. No. of type, 29930.

***Ethusina gracilipes* (Miers).**

*Ethusa* (*Ethusina*) *gracilipes* Alcock, Deep-Sea Brach. Investigator, p. 34, 1899, and synonymy.

*Distribution*.—Pailolo Channel, 284 to 290 fathoms, station 3867; south coast of Oahu, 308 to 322 fathoms, station 3909; vicinity of Kauai Island, 257 to 478 fathoms, stations 4028 and 4132.

These specimens have the spine at the antero-lateral angle of the carapace short, as in Miers's variety *robusta*, but not so strongly bent outward.

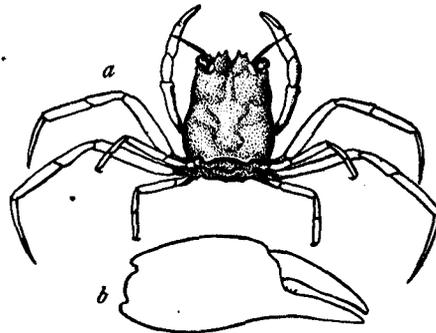


FIG. 46.—*Ethusa mascarone hawaiiensis*. a, Type female,  $\times 1\frac{1}{2}$ . b, Larger chela of male, station 4045,  $\times 9\frac{3}{4}$ .

## Family HAPALOCARCINIDÆ.

*Hapalocarcinus marsupialis* Stimpson.

*Hapalocarcinus marsupialis* Stimpson, Proc. Boston Soc. Nat. Hist., VI, 1859, 412. Calman, Trans. Linn. Soc. London (2), VIII, 1900, 43, pl. III, figs. 29-40, and synonymy. Borradaile, Fauna and Geogr. Maldive and Laccadive Arch., I, 271, 1902.

*Distribution*.—Hilo, Hawaii, 1 fathom (Stimpson); Hawaiian Islands (Verrill); Kailua, August, 1901, one female, without indication of habit.

Forms galls on certain species of branching coral (see Calman).

There is no reference to this species in the manuscript of Stimpson's unpublished report of the Crustacea of the North Pacific Exploring Expedition, but among the illustrations there is a figure of the dorsal aspect of the animal enlarged twice. With reference to the discrepancies in Stimpson's description pointed out by Calman (op. cit., p. 44), it may be said that "antennæ" should be read for "antennules," as the latter are represented of good size in Stimpson's figure. The general appearance of the figure is the same as that of our specimen; the front is truncated and a little concave, and there is no median tooth as represented by Calman.

The female from Kailua has the abdomen filled with eggs; the pouch is much more expanded than shown by Calman (op. cit., fig. 30), being about twice as wide as the carapace, and at the same time extending forward to the middle of the latter. Length of carapace 4, width 3.8, width of egg-pouch 7 mm.

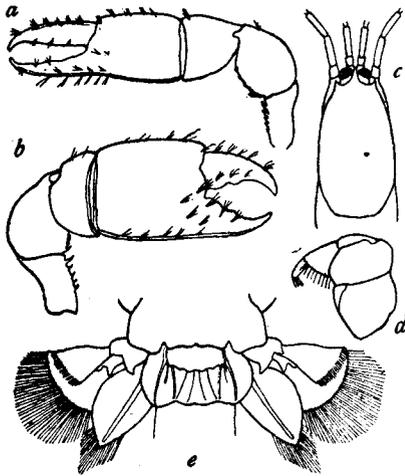


FIG. 47.—*Callianassa articulata*, station 4148. a, Left cheliped,  $\times 3\frac{1}{2}$ . b, Right cheliped,  $\times 3\frac{1}{2}$ . c, Anterior portion,  $\times 3\frac{1}{2}$ . d, Third maxilliped,  $\times 8$ . e, Tail-fan,  $\times 4\frac{1}{2}$ .

## MACRURA.

## Family CALLIANASSIDÆ.

*Callianassa articulata*, sp. nov.

Belongs to the group with three long frontal spines and a short telson.

Median rostral spine reaching end of eyes. Lateral spine just outside the eye, much shorter than the median, and articulated at its base.

Telson much broader than long, concave behind, uneven, sparingly setose.

Ophthalmopods not reaching end of first antennular segment, cornea large, hemispherical, occupying more than half length of stalk and reaching to end of it.

Third antennular segment one and a half times as long as second; outer flagellum much thicker and a little shorter than inner one and as long as peduncle.

Antepenult segment of antennal peduncle armed above with a distal terminal spine; last two joints subequal; flagellum twice as long as carapace.

Ischium and merus of outer maxilliped nearly twice as wide as propodus; ischium with an inferior comb of spinules; one spinule on anterior margin of merus.

First pair of chelipeds smooth, very unequal in width, of nearly same length; ischium and merus spined on lower margin. Wrist of larger cheliped more than twice as high as long, a small tooth at lower distal angle. Carpus, propodus, and dactylus margined above and below, and beset along the margins, and on distal portion of palm, as well as on the fingers, with tufts of a few hairs. Palm very little longer than high. Fingers shorter than palm, broad, not gaping, a low tooth near middle of prehensile edge of each, tips crossing.

Carpus of smaller cheliped longer than that of larger, but still higher than long; palm also longer; fingers not dentate.

*Dimensions*.—Length of carapace, ovigerous female, type, 6.4 mm., of abdomen 16 mm.

*Distribution*.—Vicinity of Modu Manu, 23 to 33 fathoms, stations 4146 and 4148 (type locality), 1 female at each. Cat. No. of type, 30532.

The lateral movable spine of the anterior margin and the large cornea distinguish this species.

*Callianassa*, sp.

One specimen of a *Callianassa* was taken on Honolulu Reef, 1902. It is too fragmentary for determination, as it lacks the last four abdominal somites and the right cheliped of the first pair, which was probably the larger. The front has three obtuse teeth and resembles that of *C. amboinensis* de Man (Arch. f. Natur., LIII, pt. 1, 1887, p. 480, pl. xx, fig. 4), but in that species the third joint of the antennula is three times as long as the second, while in our specimen it is only twice the second.

The left cheliped is smooth and unarmed, merus and carpus of equal length, carpus a little longer than broad and a little longer than the palm; fingers slender and subequal to palm, furnished with tufts of hair, tips crossing.

## Family AXIIDÆ.

*Axius pailoloensis*, sp. nov.

Carapace a little longer than first five segments of abdomen; granulate and pubescent. Rostrum long-pointed, reaching to end of second antennular segment; terminal spine upturned, two pairs of side spines. Gastric region with five carinæ, more or less serrated; median carina two-toothed near its middle; submedian carina not reaching to orbit or to cervical suture, irregularly serrate; between its anterior end and the median carina are two denticles; outer carina a continuation of rostral borders and extending halfway back on gastric region, armed with two spines, the anterior of which, just behind the orbit, is the largest of the dorsal spines.

Abdomen somewhat pubescent; pleura bluntly angular on the posterior half. Telson a little longer than wide, posterior margin convex; in front of this margin on either side are inserted two slender spines; two minute spinules on either side of the dorsal surface.

Eyes reaching to middle of rostrum, cornea terminal, almost black in alcohol.

Second and third antennular segments subequal; flagella equal, longer than carapace.

Acicular spine of antenna reaching middle of penult segment of peduncle; stylocerite not attaining end of that segment; peduncle exceeding that of antennula by length of last segment; flagellum as long as body.

Outer maxillipeds extended reach beyond antennal peduncle, by length of last segment and half of the penultimate. Lower margin of ischium and merus armed with spinules, with two larger spines on the merus.

Chelipeds equal, stout, upper margin spinulose; the part beyond the body long-hairy; a few long spines on lower border of ischium and merus; carpus higher than long, an infero-distal spinule, a spinule near upper distal angle. Propodus convex and margined below; two spines at distal end of palm, one between bases of fingers, one near upper margin. Palm a little longer than high; horizontal length of fingers equal to height of palm. Fingers irregularly toothed, narrowly gaping at base, tips crossing.

Merus of second and third pairs of feet spinulose below; propodus of second to fifth pairs slender.

Appendages of sixth segment of abdomen armed with a row of four spines on outer margin; a row of four similar spines on carina of inner appendage. Both branches, as well as telson, fringed with long hair.

*Dimensions*.—Female, length of carapace 11.7, of abdomen 17 mm.

One specimen only was dredged in Pailolo channel, in 138 to 140 fathoms, station 3859 (Cat. No. 30533).

The chelipeds of this species strongly resemble those of *Calastacus felix* Anderson, as does also the anterior part of the carapace.

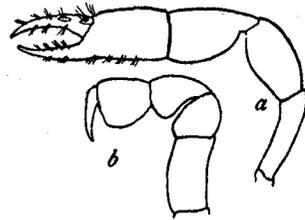


FIG. 48.—*Callianassa*, sp., Honolulu Reef. a, Left cheliped,  $\times 3\frac{3}{4}$ . b, Outer maxilliped,  $\times 4$ .

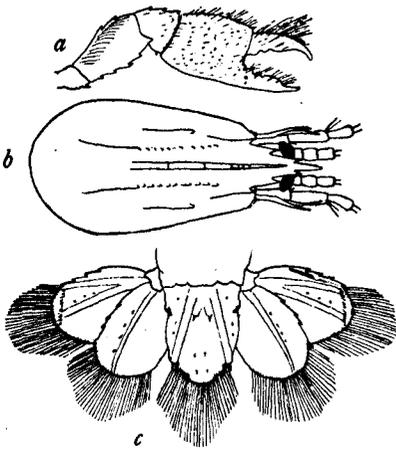


FIG. 49.—*Axius pailoloensis*, type. a, Right cheliped,  $\times 1\frac{1}{2}$ . b, Anterior portion,  $\times 4$ . c, Tail fan,  $\times 3\frac{3}{4}$ .

*Axius spinosissimus*, sp. nov.

Differs from the preceding, *A. pailoloensis*, as follows:

There is a row of spines along the posterior border of the cervical suture; three spines each side of rostrum; the five gastric carinae extend the full length of that region and bear numerous spines. In addition there are a hepatic spine and an antennal spine.

Abdomen marked with short longitudinal impressed lines. Instead of minute spinules there are four spines on middle of telson.

Eyes longer, reaching nearly to end of rostrum.

Lower margin of maxillipeds and thoracic legs more spinose. Besides a series of long spines on ischium and merus of maxilliped, there is a spine on the carpus.

Only the left of the first pair of chelipeds is present. It is very slender, only twice as wide as those of second pair; distal half pubescent; margins spinous, except of fingers and lower edge of wrist; palm and fingers subequal in length, palm more than twice as long as wide; fingers denticulate, not gaping.

Lower margin of ischium and merus of second to fifth pairs of feet spinous; third to fifth pairs very slender. A spine on lower surface of coxal joint of first to fourth pairs.

*Dimensions*.—Length of carapace 7.5, of abdomen 11 mm.

One specimen from south coast of Molokai Island, 23 to 24 fathoms, station 3847 (Cat. No. 30534).

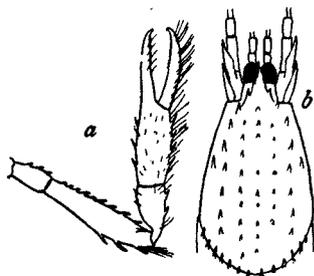


FIG. 50.—*Axius spinosissimus*, type. (a) Left cheliped,  $\times 4$ . b, Anterior portion,  $\times 5\frac{1}{2}$ .

*Axius rudis*, sp. nov.

A much less spiny species than the two preceding. The carapace granulate but nearly naked. Rostrum very slender, reaching to end of first antennular segment, armed with three or four spines and spinules on each side, diminishing anteriorly, basal spine large.

Five dorsal carinae, median unarmed, submedian three-spined, outer carina, a continuation of outer margin of rostrum, unarmed. Median carina longest, outer carina reaching only to middle of gastric region.

First abdominal pleuron narrow, falcate; second to fifth truncate; sixth bluntly angular, with a spinule at the angle, which is obsolete in the large specimen; four dorsal spines on telson; lateral margins spinulous.

Eye half as long as rostrum, cornea large, hemispherical, oblique. Second and third segments of antennae equal, flagella subequal and as long as the carapace and first three abdominal somites. Scaphocerite rather short, reaching only about one-third length of penult segment of antennal stalk; stylocerite reaching nearly to end of that segment, which is twice as long as last segment; flagellum twice as long as body.

First pair of chelipeds unequal, resembling much those of *Eiconaxius coronatus* Trybom.<sup>a</sup> Ischium and merus of larger one spined on lower margin, merus with three spines on distal half of upper margin; carpus cup-shaped, no longer than high; palm about one and a half times as long as high, narrowed a little at proximal end, a denticulated marginal line above, ending in a slender spine; a similar line on part of lower margin continued on the pollex; outer and inner surfaces covered except near the wrist with scaly granules, on a background of very minute granules visible only with a strong lens. Fingers two-thirds as long as palm, sparingly toothed, a large tooth near base of dactylus; gaping, hairy, tips crossing.

Smaller cheliped similar, but much narrower and a little shorter than the larger.

Second pair of legs with long spines on lower margin of merus.

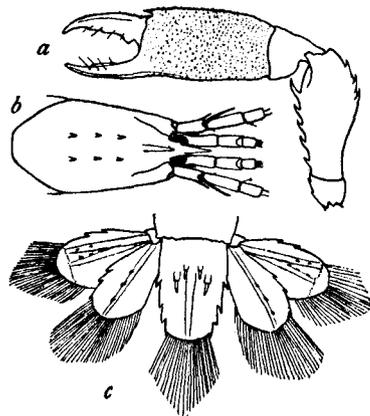


FIG. 51.—*Axius rudis*, type. a, Left cheliped,  $\times 3\frac{1}{2}$ . b, Anterior portion,  $\times 4\frac{1}{2}$ . c, Tail fan,  $\times 4\frac{1}{2}$ .

<sup>a</sup>Ark. f. Zool., Stockholm, I, 1904, 384, pl. xx, figs. 7-10.

Outer margin of appendages of sixth abdominal somite, as well as the dorsal carina of the inner branch, armed with spines.

*Dimensions*.—Female type, length of carapace 8, of abdomen 12 mm.

South coast of Molokai Island, 92 to 212 fathoms, station 3838 (type locality), 1 ovigerous female; vicinity of Kauai Island, 233 to 40 fathoms, station 3982, 2 small males. Cat. No. of type, 30535.

***Axius serratifrons* A. Milne Edwards.**

*Axius serratifrons* A. Milne Edwards, Jour. Mus. Godeffroy, IV, 1873, 87 [11].

Hawaiian Islands (A. Milne Edwards).

***Eiconaxius asper*, sp. nov.**

Near *E. acutifrons* Bate, *E. crista-galli* (Faxon) and *E. caribbaeus* (Faxon). It resembles the first and differs from the second in the presence of a larger basal tooth on dactylus of larger hand and a more prominent tooth not far from middle of pollex.

Resembles *E. crista-galli* and differs from *E. acutifrons* in having edges of rostrum distinctly denticulate, and median carina denticulate; in the abdominal pleura less sharply pointed; in the entire upper border of the hands, and the presence of a strong tubercle on the anterior border of the larger hand between the bases of the fingers.

The outer and inner surfaces of the manus of both chelipeds are granulate, sparingly, and unevenly, but rather coarsely so, and the palms are higher in proportion to their length than in either of the related species.

*E. caribbaeus* has also an elongate palm and a more rounded rostrum.

*Distribution*.—Vicinity of Kauai Island, 418 to 528 fathoms, stations 3992 (type locality) and 3997. Found in sponge cavities. Cat. No. of type, 30536.

*Color*.—Lemon-yellow.

***Paraxius tridens*, sp. nov.**

Carapace smooth, sloping abruptly down behind the front; a short median carina on the slope. Rostrum triangular, short, barely reaching end of eyes, a tuberculiform tooth either side. The three projections of the rostrum are much sharper in the male, and the lateral teeth form short carinae.

Abdomen smooth, with scattered hairs; pleura of first segment little developed, of second to fifth segments truncate, of sixth broadly rounded; sides of telson converging, four-spined, tip rounded.

Eye-stalks short, stout; corneae large, black.

Three joints of antennular peduncle subequal, flagella half as long as carapace.

Antennal peduncle twice as long as the antennular, unarmed; penult segment twice as long as last segment; flagellum as long as body.

Outer maxillipeds stout, exceeding the rostrum by their last three joints; lower margin hairy, two spines on merus.

First pair of chelipeds unequal in width, smooth, unarmed; merus of larger one about one-third longer than high; carpus higher than long; palm one and a half times longer than high, tapering very slightly toward the fingers, rimmed above and below, fringed with long fine hairs; fingers stout, blunt-pointed, not gaping. Narrower cheliped similar; carpus just as long as high; palm twice as long as high; fingers slenderer.

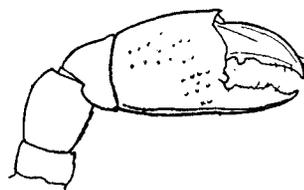


FIG. 52.—*Eiconaxius asper*, station 3992, right cheliped,  $\times 2\frac{1}{2}$ .

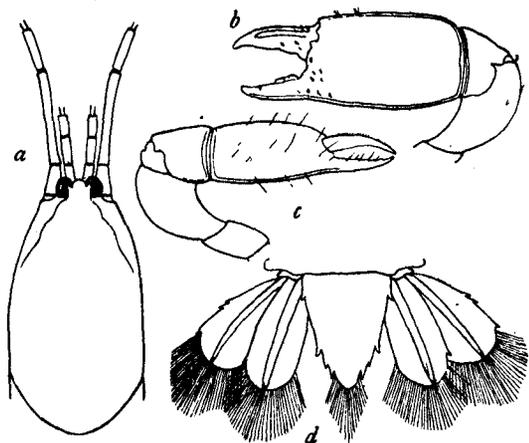


FIG. 53.—*Paraxius tridens*, type. a, Anterior portion,  $\times 5\frac{1}{2}$ . b, Left cheliped,  $\times 2\frac{1}{2}$ . c, Right cheliped,  $\times 2\frac{1}{2}$ . d, Tail-fan,  $\times 4\frac{1}{2}$ .

Propodus and carpus of second pair of feet subequal and three-fifths as long as merus; fingers as long as palm, tips dark-colored. Last three pairs subchelate, the propodus being widened at the extremity by an infero-distal spine or tooth, against which the dactylus folds.

First somite of pleon provided with appendages in female only.

Outer branch of swimming-fan with outer margin armed with two or three spinules; no transverse carina near distal end. Inner branch with a terminal spine on outer margin and on longitudinal carina.

*Dimensions*.—Female, length of carapace 10, of abdomen 14.6 mm.

*Distribution*.—French Frigate Shoal, 17 to 17½ fathoms, station 3970; vicinity of Modu Manu, 20 to 33 fathoms, stations 4147, 4148 (type locality), 4158, and 4162. Cat. No. of type, 30537.

### Family SCYLLARIDÆ.

#### *Scyllarus martensi* Pfeffer.

(Pl. xviii, fig. 2.)

*Scyllarus arctus* de Haan (second var.), Fauna Japon., 154, pl. xxxviii, fig. 2, 1841. Not *S. arctus* (L.).

*Arctus arctus* de Haan, op. cit., 238, 1849 (part).

*Scyllarus martensi* Pfeffer, Verh. Naturw. Vereins Hamburg-Altona, V, 1880, p. 48 (1881).

*Arctus martensi* Ortmann, Zool. Jahrb., Syst., VI, 1891, 44; X, 1897, 272.

*Distribution*.—South coast of Molokai Island, 43 to 66 fathoms, station 3850; Auau Channel, 45 to 32 fathoms, station 3872; vicinity of Kauai Island, 230 to 53 fathoms, station 4002; Japan (de Haan); Kagoshima (Ortmann).

In the Philadelphia Academy of Natural Sciences is the abdomen 80 mm. long of a dried specimen of *Scyllarus*, labeled "Sandwich Islands, T. Nuttall." This is not mentioned in Randall's list (1840). It has the size and sculpture of the European *S. arctus* (L.), and the locality label is probably an error.

#### *Scyllarides squammosus* (Milne Edwards).

*Scyllarus squammosus* Milne Edwards, Hist. Nat. Crust., II, 284, 1837. Mauritius.

*Scyllarus latus* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 137. Not *Scyllarus latus* Latreille, 1803.

*Scyllarus sieboldi* de Haan, Fauna Japon., 152, pl. xxxvi and xxxvii, fig. 1, 1841. Nagasaki.

*Scyllarus haanii* de Siebold, MS., de Haan, Fauna Japon., 152, pl. xxxviii, fig. 1, 1841.

*Scyllarus luridus* Stimpson, MS. label in Museum of Comparative Zoology.

The Hawaiian specimens resemble most nearly de Haan's figure of *S. sieboldi*; *S. haanii* has the elevations of the surface more prominent, and is probably only a variety.

Honolulu; Honolulu market; Honolulu Reef, Dr. W. H. Jones; northeast coast of Hawaii, 29 to 26 fathoms, station 4053.

Hawaiian Islands (Randall), one specimen in Philadelphia Academy of Natural Sciences (vide Ortmann, 1897). Honolulu (Lenz).

#### *Parribacus antarcticus* (Lund).

*Scyllarus antarcticus* Lund, Skrivter af Naturhistorie-Selskabet, Copenhagen, II, 1793, 2, p. 22.

*Parribacus antarcticus* Dana, Crust. U. S. Expl. Exped., I, 517, 1852; pl. xxxii, fig. 6, 1855.

*Ibacus antarcticus* Dana, op. cit., p. 517.

Hilo; Honolulu; Honolulu market; Oahu, H. Mann, 1864, in Museum of Comparative Zoology; lee coast of Oahu, A. Garrett, in Museum of Comparative Zoology; Waiawa, Kauai, V. Knudsen.

Hawaiian Islands (Randall, Stimpson); 2 specimens (one female, one juv.) collected by Nuttall and Townsend are still in Philadelphia Academy of Natural Sciences. Honolulu (Lenz).

***Parribacus papyraceus*, sp. nov.**

(Pl. XVIII, fig. 5.)

A small species closely related to *P. antarcticus*.

Carapace with sides convex, widest at tip of fourth tooth (counting from the front). Regions of carapace distinctly separated by smooth grooves. Tubercles raised, spaced, larger and more scanty in the middle and anterior portion. Median ridge armed with a tubercle on the rostral tooth, a second just in front of the posterior line of the orbits, a row of three on the gastric region, a row of six on the cardiac region. Dentation of margin of carapace and antennæ as in *P. antarcticus*.

Sternum of male with a median spine, between the intervals separating second and third and third and fourth pairs of feet; two spines side by side between feet of last pair; also a spine at base of each foot close to the articulation.

On coxa of last pair is a long curved spine directed down and back, beside the outward-projecting spine which is present in *P. antarcticus*.

The two specimens collected are not only of small size but of thin papyraceous texture, and may possibly be an immature stage of *P. antarcticus* or an allied species.

*Dimensions*.—Male, station 3821; length of body 58.2, length of carapace 21.4, width of carapace 32.3 mm.

*Distribution*.—South coast of Molokai Island, surface, station 3821 (type locality), one male (Cat. No. 30265). Hilo, Hawaii, H. W. Henshaw, one male.

## Family PALINURIDÆ.

***Panulirus japonicus* (de Siebold).**

(Pl. v.)

*Panulirus japonicus* de Siebold, Spicilegia Faunæ Japonicæ, 1824, p. 15. De Haan, Fauna Japon., Crust., p. 158, pls. xli and xlii, 1841.

*Panulirus longipes* A. Milne Edwards, Nouv. Arch. Mus. Hist. Nat. Paris, IV, 1868, 87, pl. xxi (not *P. (Senex) longipes* Pfeffer, 1881).

*Senex femoristriga* Ortmann, Zool. Jahrb., Syst., VI, 1891, 23, and synonymy.

*Senex japonicus* Ortmann, op. cit., p. 25, and synonymy.

Honolulu, 1901, 1 female; 1902, 1 male (red variety). Honolulu market, Aug. 15, 1902; 1 male (figured), 1 juv., north coast of Maui, 69–78 fathoms, station 4073, 1 large male.

Laysan (Lenz); Hawaiian Islands (Pfeffer).

I think that *P. japonicus* and *P. longipes* (= *femoristriga*) can scarcely be regarded as distinct. We have in the Hawaiian series specimens in which the violet and yellow predominate, as in plate IV, and others that are red all over, except for yellow spots, spines, and abdominal stripes. Some have the anterior part of the carapace as hairy as in Japanese specimens. There remains only the character of the greater or lesser development of the spinules on the antennal segment as a distinguishing feature between the form as it exists in Japan and in the Indo-Pacific.

***Panulirus penicillatus* (Olivier).**

*Astacus penicillatus* Olivier, Enc. Méth., Hist. Nat., Insectes, VI, 343, 1791.

*Panulirus penicillatus* Bate, Challenger Macrura, 82, pl. xii, fig. 2, 1888.

*Senex penicillatus* Ortmann, Zool. Jahrb., Syst., VI, 1891, 28.

Honolulu, 1891, 2 specimens; 1901, 1 specimen; 1902, 1 male. Kailua, 1901, 1 female. Hilo, Hawaii, 1901, 1 small female. Waiawa, Kauai, V. Knudsen, 1 specimen. Hawaiian Islands, Dr. W. H. Jones, U. S. N., 1 male, 1 female, in Museum of Comparative Zoology.

***Panulirus marginatus* (Quoy and Gaimard).**

*Panulirus marginatus* Quoy and Gaimard, in Freycinet, Voyage autour du Monde, Zoologie, p. 537, 1824 (1825), atlas, pl. 81. Dict. Class. d'Hist. Nat., atlas, pl. [63]. Milne Edwards, Hist. Nat. Crust., II, p. 301 (footnote), 1837.

This species has not been observed since Quoy and Gaimard. It seems to be related to *Panulirus burgeri* (de Haan), and *P. dasypus* (Latreille); according to the figure, there are four large spines and

no small spines on the antennal segment, and the abdominal furrows are uninterrupted. The original description is almost entirely of the color, and is here reproduced:

"*Palinurus birostratus; pedibus cyaneis albo maculatis; segmentis abdominalibus violaceis flavo marginatis.*

"Ce crustacé a le corselet brun, couvert de petites aspérités et d'aiguillons, dont deux plus considérables sont dirigés en devant; dans leur intervalle on en voit quatre plus petits. Les antennes, d'un rouge violacé à leur base, sont aussi, dans cette partie, armées de fortes épines; elles sont jaunâtres et couvertes d'aspérités dans le reste de leur longueur. Les antennules, bifurquées, très longues et verdâtres, ont des taches rougeâtres aux articulations.

"Les pattes sont bleu de ciel tacheté de blanc et velues à leur extrémité. Un beau violet bordé de jaune colore les anneaux de la queue; le crochet qui les termine de chaque côté est rougeâtre à la pointe. Les cinq plaques de la nageoire de la queue sont verdâtres, avec du jaune au milieu. Leur limbe est denticulé et bordé d'une bandelette noire avec un liséré blanc."

### Family ERYONIDÆ.

#### *Polycheles phosphorus* (Alcock).

*Pentacheles phosphorus* Alcock, Ann. Mag. Nat. Hist. (6), XIII, 1894, 240; Illus. Zool. Investigator, Crust., Part II, pl. VIII, fig. 2, 1894.

*Polycheles phosphorus* Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., Calcutta, p. 168, 1901.

The large series of specimens exhibits additional variations to those given by Alcock. The lateral marginal spines of the carapace may be more numerous; there are frequently seven in front of the first sinus, sometimes five between the sinus and the cervical groove, and behind the groove there may be as many as ten; there may be five median spines between the anterior spine and the cervical groove.

The carpus and manus of the first pair of feet are usually finely spinulose above, while in one large specimen (station 3824) the merus is unarmed except for the terminal spine.

Color note attached to male, station 3816: Dorsum pale opaque rose madder, darkest on abdomen; ridges of carapace opaque white; swimmerets, thoracic legs and mouth parts deeper madder yet still pink.

*Distribution.*—Kaiwi channel, 298 to 470 fathoms, stations 3467, 3476, 4109, 4110, 4111, and 4112; south coast of Oahu Island, 228 to 337 fathoms, stations 3816, 3907, 3910, 3911, 3917, and 3920; south coast of Molokai Island, 222 to 498 fathoms, stations 3824, 3836, and 3839; Pailolo Channel, 277 to 684 fathoms, stations 3867, 3868, 3883, and 3884; north coast of Molokai Island, 328 to 809 fathoms, stations 3887 and 3892; vicinity of Modu Manu, 222 to 800 fathoms, stations 3979 and 4166; vicinity of Kauai Island, 55 to 703 fathoms, stations 3986, 3988, 3995, 3998, 4015, 4028, 4130, 4132, 4134, 4135, 4137, 4138, and 4187; between Honolulu and Kauai Island, 508 to 557 fathoms, station 4007; north coast of Maui Island, 253 to 283 fathoms, stations 4084 and 4085; northeast approach to Pailolo channel, 286 fathoms, station 4097; northwest coast of Oahu Island, 241 to 282 fathoms, stations 4116 and 4117.

#### *Polycheles snyderi*, sp. nov.

(Pl. XXIV, fig. 9.)

Carapace elongate-quadrate, depressed, lateral borders parallel except toward the extremities, its length equaling the abdomen less half the telson. Frontal border concave, armed with two spines at middle, one at each angle of orbit, and two or three between the outer orbital spine and the anterolateral angle. Orbital notches deep, narrow-triangular; a spine at frontal end of eyestalk. Lateral borders armed with small spines, which are larger and fewer anteriorly; they number 10-6 to 8-30. Upper surface covered with rough granules from which hairs arise. Median carina double, spinulose, similar carinae following both branches of the cervical groove. On either side of the branchial region a fine, oblique and sinuous line of spinules; an ill-defined line of larger spinules extending backward from the orbital sinus. The two longitudinal ridges of the side wall crenulate, the upper posteriorly obliterated.

The first to fifth abdominal terga and also the base of the seventh are bluntly carinated in the middle line, the carina not projecting nor spinous.

Antennular scale a little larger than antennal scale, one-fifth as long as carapace, acute, upper margin spinose for its distal three-fifths, a single spine at outer distal angle. Antennal scale acute, tipped with a spinule, and reaching to end of antennular peduncle.

External maxilliped barely reaching end of antennular peduncle, and furnished with an epipod.

First thoracic leg a little longer than body; arm and palm with a distal spine above, wrist with a distal spine below. Upper and lower margin of arm and upper margin of palm spinulous. Propodus longer than merus, carpus longer than manus, digits one-third again as long as palm.

Second and fifth pairs of legs diminish in length and stoutness, the second pair more than one-third the length of the first pair; last pair imperfectly chelate in male.

*Dimensions*.—Male, length of carapace 35, entire length of abdomen 46.5, length of first pair of legs 85.2.

A single specimen only was taken at station 4151, vicinity of Modu Manu, 800 to 313 fathoms. (Cat. No. 30322.)

In shape the species resembles *P. phosphorus* (Alcock), but is at once distinguished by the uniform roughness of the carapace, the absence of true spines from the dorsal surface of carapace and abdomen and by the finer and more numerous spinules of the margin.

Named for Mr. J. O. Snyder, who accompanied the Fish Commission party in 1902.

#### ***Polycheles granulatus* Faxon.**

*Polycheles granulatus* Faxon, Bull. Mus. Comp. Zool., XXIV, 1893, 197; Mem.

Mus. Comp. Zool., XVIII, 1895, 123, pl. xxxii, fig. 1, pl. xxxiii, fig. 2, 2a.

*Pentacheles Beaumontii* Alcock, Ann. Mag. Nat. Hist. (6), XIII, 1894, 236; Illus.

Zool. Investigator, Crust., pt. II, pl. viii, fig. 3; Desc. Cat. Indian Deep-Sea

Crust. Dec. Macr. Anom., Calcutta, p. 175, 1901.

In Hawaiian specimens the number of lateral spines is 8 to 10-3 (or 4)-15 (14 or 16).

On the gastric region there are from 3 to 5 larger median spines behind the front, of which 1, 2, or more may be double.

Most of the specimens are small; the largest, a male, station 4111, measures 111.6 mm. long, length of carapace 50.8.

*Color*.—"Light opaque madder pink."

*Distribution*.—Vicinity of Kauai Island, 385 to 550 fathoms, stations 3989, 4019, 4028, and 4138; north coast of Molokai Island, 552 to 809 fathoms, station 3887; between Honolulu and Kauai Island, 508 to 557 fathoms, station 4007; Kaiwi channel, 460 to 470 fathoms, station 4111.

#### ***Polycheles asper*, sp. nov.**

(Pl. xxiv, fig. 11.)

Carapace nearly as long as exposed part of abdomen; strongly convex from side to side and also fore and aft; oval; surface covered with spinules and short hairs. Frontal margin concave, armed with two spines at the middle, one at inner angle of orbit; outer margin of orbital notch bordered with spines which are continued along the frontal margin halfway to lateral margin. Orbital notch narrow U-shaped; a large outward-pointing spine at extremity of eye. Lateral margins armed with spinules which diminish posteriorly and become almost obliterated. They number 15-8 or 10-28 or 29. Median carina double, armed with spinules larger than those of the general surface, and larger in front of than behind the cervical suture. Similar ridges of spinules follow the cervical suture along its posterior branch to the lateral margin and part way along the anterior branch; the longitudinal ridge of the branchial region is similar in position to that of *P. granulatus*. Longitudinal ridges of side wall finely granulate or denticulate, continuous.

Abdomen tuberculate; first to fifth terga bluntly carinate, as is also the anterior end of the sixth and seventh; the seventh carina only has a short backward-pointing spine.

Antennular scale subacute, not reaching beyond penult segment of peduncle, inner margin spined, a row of spinules at distal outer angle. Antennal scale suboval, reaching to distal third of last segment of peduncle.

The outer maxilliped reaches to middle of antennal scale, and is provided with an epipod.

First pair of thoracic legs missing; second pair two-thirds as long as carapace.



FIG. 54.—*Polycheles granulatus*, station 4111, left antennal scale,  $\times 2\frac{1}{2}$ .

*Dimensions*.—Female, length of carapace 32.3, entire length of abdomen 38 mm.

*Type locality*.—Vicinity of Niihau Island, 735 to 865 fathoms, station 4174; 1 female (Cat. No. 30323).

This species has the form of *P. granulatus* Faxon, but the dorsal surface is much rougher, the carapace more convex, its side margins more finely and obscurely cut, abdominal carinæ, except the seventh, nonprojecting, antennal scale rounded at tip instead of pointed.

***Eryoneicus indicus hawaiiensis*, subsp. nov.**

The differences between this specimen and *E. indicus* Alcock and Anderson<sup>a</sup> seem scarcely worthy of specific separation. On the posterior branch of the cervical ridge near its bifurcation there are two transversely placed spinules. On the left side the outer of these spinules is double. The longitudinal dorsal branchial ridge extends farther forward than in Alcock's figure, and is armed with numerous ill-defined spinules, except the posterior, which is a good sized spine. On the lower of the two ridges below the lateral carina there are about twelve spines of fair size. The second to fourth abdominal terga have each three median spines, of which the middle one is the largest; the fifth and seventh terga have two median spines.

*Color*.—Light or bleached poppy red shading to pale madder pink on inside of chelæ.

Vicinity of Kauai Island, 577 to 480 fathoms, station 4005; one female 41 mm. long. (Cat. No. 30324.)

**Family HOMARIDÆ.**

***Enoplometopus occidentalis* (Randall).**

(Pl. xvii, fig. 2.)

*Nephrops occidentalis* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 139. Gibbes, Proc. Amer. Assoc. Adv. Sci., III, 1850, 195. Stimpson, Jour. Boston Soc. Nat. Hist., VI, 1857, 495. Kingsley, Bull. Essex Inst., XIV, 1883, 131, pl. II, fig. 1.

*Enoplometopus pictus* A. Milne Edwards, Faune Carcinologique, in Maillard, Notes sur l'Île de la Réunion, p. 14, pl. XIX, figs. 1, 1<sup>a</sup>, 1<sup>b</sup>, 1<sup>c</sup>, 1862. Miers, Ann. Mag. Nat. Hist. (5), V, 1880, 380. De Man, Arch. f. Naturg., LIII, 1887, pt. 1, 488, pl. XXI, fig. 4. Ortmann, Jena. Denks., VIII, 1894, 21.

*Enoplometopus occidentalis* Ortmann, Zool. Jahrb., Syst., X, 1897, 274. (See Holmes, Occas. Papers Cal. Acad. Sci., VII, 1900, 167.)

Honolulu market, 1902, 1 male. Maui (Kingsley), in Museum Boston Society Natural History. Hawaiian Islands (erroneously labeled "N. W. coast of North America"), T. Nuttall, one male type, dried, in Museum of Philadelphia Academy.

*Notes on the type specimen*.—Length of carapace to orbit (rostrum broken off), 42.2 mm.; abdomen about 99.5 mm. Six median spines behind orbit; anterior one broken off and was probably the smallest; posterior one behind cervical suture. Four spines in next row, and outside the anterior of these and close to it, another spine. Posterior spine of the lateral row a little behind antepenult spine of the median row. No color marks remain. Telson a little longer than its basal width. Abdominal segments with a few low squamose tubercles, from which hairs have arisen. Antennal scale more elongate than represented in the figure by A. Milne Edwards, the postero-internal margin shorter. Left chela distinctly larger than right, 52.6 mm. long, 18 wide, dactyl 26 long; right chela 45.7 mm. long, 15.5 wide, dactyl 22.6 long. Arm and wrist substantially as shown by A. Milne Edwards; about eight or nine spines on upper surface of arm arranged in a double row; a single row of spines on each of the lower margins; in addition, two spines on distal margin of outer surface. Wrist irregularly spined around the distal margin; a few spines scattered on upper surface. Tubercles of palm larger through the middle of upper and lower surfaces, but all the tubercles smaller than in A. Milne Edwards's figure. Upper surface of palm covered with fine short pubescence except for a narrow strip through the center which is almost bare; lower surface less pubescent.

In size and general appearance our specimen agrees with A. Milne Edwards's figure; it measures 13.8 mm. in length. Of the five median spines, one is behind the cervical suture; the posterior of the

<sup>a</sup> *Eryoneicus indicus* Alcock and Anderson, Ann. Mag. Nat. Hist. (7), III, 1899, 290. Alcock, Illus. Zool. Investigator, Crust., pt. IX, pl. I, fig. 3, 1901; Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., Calcutta, 1901, 176.

lateral dorsal row is opposite the antepenultimate of the middle row. The transverse row of large light-colored spots on the second to fifth abdominal segments contains six instead of five spots, there being two submedian, none median. Telson a little longer than its basal width. Right chela a little longer than left; its dactylus is a little shorter, that of the left chela a little longer, than its palm. Median rows of tubercles of palm small but distinct; other tubercles of upper and lower surface minute, set in a very short coat of pubescence.

#### Family STENOPIDÆ.

##### *Stenopus hispidus* (Olivier). *Bandana Prawn*.

*Stenopus hispidus* Brooks and Herrick, Mem. Nat. Acad. Sci., V, 1892, 326 and 339, pls. v-xiii. Rathbun, Bull. U. S. Fish Comm., XX, 1900, (1901) 99, pl. II, and synonymy.

Young specimens about 20 mm. long, are slenderer than the adult, with relatively longer rostrum, about three-fifths as long as remainder of carapace and devoid of lateral spines. Abdomen strongly bent at the third segment, which has a prominent median tubercle near posterior end; sixth abdominal segment very elongate, three or four times as long as fifth.

*Distribution*.—Honolulu; Honolulu Reef and market; Hilo, Hawaii, U. S. Fish Commission and H. W. Henshaw; Puako Bay, Hawaii, 1902; south coast of Oahu Island, station 5021, surface; between Honolulu and Kauai Island, station 3980, surface.

##### *Spongiicola henshawi*, sp. nov.

(Pl. xxiv, fig. 8.)

Rostrum dorsally serrate with six spines besides one rudimentary, one spine below; over half as long as rest of carapace, reaching beyond antennular stalk. A spine below the orbit, and one on each side behind the base of the rostrum. Anterior margin below the orbit armed with spinules; a little farther back and parallel, a row of three or four larger spinules. Telson with two longitudinal rows of four spines each dorsally, edges spinulous, not reaching end of swimmerets, which are serrulate on outer margin. Eyes light olive in alcohol; a few spinules border the corneal margin and arm the anterior and dorsal surface of the stalk. Outer margin of acicle finely serrate. Outer maxillipeds stout, setose; second pair of legs equal in female, about twice as long as first pair and stouter; both pairs smooth; third pair sparingly setose, unequal (in female), much stouter than second pair, only the larger one longer than the second leg. Ischium with distal spine. Arm spinulous, a spine near distal end on upper and on outer side; wrist not much longer than broad, cup-shaped, distally spinulous above; hand broad, compressed, margins finely serrate, fingers bent down, narrow; a triangular tooth on the dactyl fits between one similar tooth and an obliquely truncate basal tooth on the thumb; fourth and fifth pairs very long, subequal; dactylus short, bifid; propodites posteriorly setose.

Length of egg-laden female 26.2 mm.

One specimen only from south coast of Molokai Island, 169 to 182 fathoms, station 3835. (Cat. No. 30538.) Named for Mr. H. W. Henshaw, formerly of Hilo, who has contributed much to our knowledge of the Hawaiian fauna.

Near *S. andamanica* Alcock, <sup>a</sup> but differs in longer rostrum, posterior position of spine at base of rostrum, longer, slenderer fingers, shorter telson.

#### Family PENÆIDÆ.

##### *Penæus canaliculatus* (Olivier).

*Palæmon canaliculatus* Olivier, Encyc. Méth., Hist. Nat., Insectes, VIII, 1811, 660.

*Penæus canaliculatus* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 146 (part).

*Penæus marginatus* Randall, loc. cit. (part).

*Penæus canaliculatus* Kishinouye, Jour. Fisheries Bureau, Tokyo, VIII, 1900, 11, pl. I, pl. VII, figs. 1, 1A, 1B, 1C, and synonymy.

Hawaiian Islands, Nuttall and Townsend, 5 specimens, in Museum of the Academy of Natural Sciences, Philadelphia. (See below under *P. marginatus*.)

***Peneus marginatus* Randall.**

(Pl. XIX, fig. 2.)

*Peneus canaliculatus* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 146 (part).*Peneus marginatus* Randall, loc. cit. (part).

*Notes on the type specimens.*—In the museum of the Philadelphia Academy of Natural Sciences are eight specimens labeled "*Peneus canaliculatus* Oliv., Sandwich Islands, Nuttall and Townsend." These were doubtfully named "*canaliculatus*" by Randall, therefore he suggested in print at the same time "*marginatus*" in case the species should prove to be new. The specimens are now in very bad condition, and have never been carefully examined. There are two species represented—five specimens of the true *P. canaliculatus* (Olivier), and three specimens which it seems proper to consider the types of *P. marginatus* Randall. All are half grown.

In the specimens of the well-known *P. canaliculatus*, the median ridge of the carapace is deeply grooved. The distance behind its posterior spine is from one and three-fourths to one and four-fifths times the distance in front of it measured to the posterior margin of the orbit. Only one individual now has a complete rostrum; its teeth are 9/1.

In the three examples of *P. marginatus* the median ridge is not grooved; the distance behind its posterior spine is one and two-thirds times the distance from the spine to the orbit. Two specimens have the rostrum intact, with 10/2 teeth.

*Description of mature specimens in the U. S. National Museum.*—Size and general appearance same as that of *P. canaliculatus*. Dorsal crest 9-10 toothed, inferior rostral teeth 2-3. Dorsal keel continued nearly to posterior margin of carapace, itself not grooved, but bordered on either side by a broad furrow which extends posteriorly as far as the keel. Flagella of antennulæ as long or nearly as long as peduncle. Pereiopoda and abdomen much as in *P. canaliculatus*.

Petasma and thelycum similar to those of *P. ashika* Kishinouye and *P. monodon* Fabricius, the longitudinal median fissure of the latter bordered on either side by the much-thickened inner margin of the lateral plate.

Dimensions of largest specimen, a female, station 3857, 163 mm.

*Description of young specimens.*—Specimens 40 mm. in length and smaller, were taken in numerous hauls of the surface net. They are relatively slenderer than the more adult; the median carina and lateral grooves fade out before reaching as far back as in the

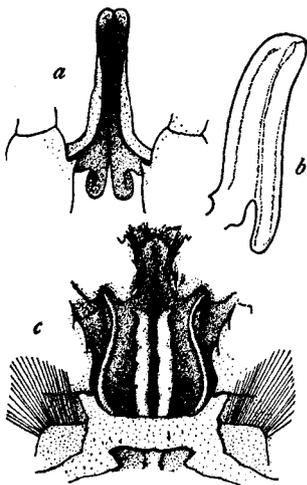


FIG. 55.—*Peneus marginatus*. a, Petasma, ventral view, station 3832,  $\times 4$ . b, Same, side view,  $\times 4\frac{1}{2}$ . c, Thelycum, station 4070,  $\times 3\frac{1}{2}$ .

adult, that is to say, about half way between the gastric spine and the posterior margin; the antennal scale is longer; the fourth abdominal segment is noncarinate, the sixth is noticeably longer than in the adult, the telson is armed close behind the small spines of the third pair with a pair of long spines. The color of this form is said to be French blue, and traces of it remain in the alcoholic specimens. It is possible that I am mistaken in attributing this young form to *P. marginatus*, but the general make-up, the rostral formula, and the probability of the existence of the young of that species in so large a collection, all tend to prove their identity.

*Distribution.*—The large and mature specimens are found only in deep water; medium and smallish specimens are restricted to shallow water along shore, while the very young occur at the surface.

*Specimens 125 mm. and upward in length.*—South coast of Molokai Island, 153 to 142 fathoms, station 3832; Pailolo Channel, 122 to 141 fathoms, stations 3857, 3858, 3897, 4102, and 4103. Vicinity of Laysan, 173 to 182 fathoms, station 3958; north coast of Maui, 45 to 52 fathoms, station 4070.

*Specimens 40 to 95 mm. in length.*—Honolulu, 1901; Pearl Harbor, April 23, 1902; Honolulu market, 1902; Hanalei, Kauai, June 23, 1902; Kaunakāki Harbor, Molokai, shallow water, station 3844; Hilo, Hawaii, 1901; Hilo, Hawaii, H. W. Henshaw.

*Specimens 40 mm. and under in length.*—Between Erben Bank and Kaiwi Channel, surface, station

3807; south coast of Oahu Island, surface, stations 3810, 3811, 3812, 3813, 3814, 3815, 3907, 3908, 3912, and 3921; south coast of Molokai Island, surface, stations 3821 and 3837; Pailolo Channel, surface, stations 3860, 3861, 3864, 3867, 3886, and 3901; south of Lanai Island, surface, 3880; north coast of Molokai Island, surface, station 3889; vicinity Laysan Island, surface, station 3932; between Honolulu and Laysan Island, surface, stations 3926 and 3930; vicinity of Kauai Island, surface, stations 3981 and 4018; between Kauai Island and Oahu Island, surface, station 4009; west coast of Hawaii Island, surface, station 4037; north coast of Maui Island, surface, station 4086; Honolulu, March 30, 1902, surface; Honolulu market, May 8, 1902; Hanalei, Kauai, June 21, 1902, surface.

***Metapenæus affinis* (Milne Edwards).**

*Penæus affinis* Kingsley, Bull. Essex Inst., XIV, 1882, 105.

*Parapenæus affinis* Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, 38, and synonymy.

Hawaiian Islands (Kingsley).

***Metapenæus velutinus* (Dana).**

(Pl. xx, fig. 5.)

*Penæus velutinus* Dana, Crust. U. S. Expl. Exped., I, 604, 1852; atlas, pl. xl, fig. 4, 1855. Bate, Challenger Macrura, 253 (part), pl. xxxiii, fig. 1 (probably not figs. 1'' and 1'''), 1888.

*Distribution*.—South coast of Molokai Island, 23 to 134 fathoms, stations 3845, 3846, 3847, 3848, 3849, 3850, 3853, and 3855; Pailolo Channel, 122 to 143 fathoms, stations 3857, 3858, 3859, 3897, 4101, and 4102; Auau Channel, 21 to 28 fathoms, station 3874; vicinity of Laysan Island, 16 fathoms, station 3962; vicinity of Kauai Island, 40 to 233 fathoms, stations 3982, 3987, and 4002; northeast coast of Hawaii Island, 63 to 107 fathoms, station 4064; Aleunihana Channel, 176 to 49 fathoms, station 4066; north coast of Maui Island, 52 to 152 fathoms, stations 4071, 4077, and 4098.

Dredged at Lahaina (Dana).

Our specimens are all of medium to small size (58 mm. and under).

Body pubescent. Rostrum reaching to middle of second antennular segment, with usually seven spines and, some distance behind, a gastric spine, behind which there is no carina; gastric spine at a point three-elevenths or a little more than one-fourth from the orbit to posterior margin of carapace. Rostrum slightly ascending, straight above and convex below as is usual in the female, or convex above and straight below as is usual in the male. Hepatic spine in line with gastric spine and almost in a longitudinal line with antennal spine.

Eyes very large, their greatest diameter just half as long as outer margin of acicle. This last three-fourths of length of carapace. Antennular flagella scarcely equaling last two joints of peduncle.

Outer maxillipeds reaching just to end of acicle. Second pair of feet exceeding antennal peduncle by length of fingers; third pair exceeding second by length of chela.

Basis and ischium of first pair each armed with distal spine; second pair unarmed. All the pereopods are furnished with an exopod, while the last two pairs as well as the outer maxillipeds are destitute of an epipod.

Second to sixth abdominal somites carinate, carina increasing in strength posteriorly. Telson falling short considerably of the inner uropod; armed on either side with three movable spines, which increase rapidly in size posteriorly, and a fixed spine which is next to the terminal spine and is intermediate in size between the first and second pairs.

Petasma asymmetrical, the left branch longer and forming a hood which at the tip locks over the right branch; each branch with a small curved spine at extremity.

Length of carapace of female (station 4102) 21; of abdomen 37 mm.

Color, mottled with yellowish pink.

This species has not the abdominal hump or angle shown in Dana's figure, neither does the telson reach as near the end of the inner branch of the tail-fan as represented by Bate.

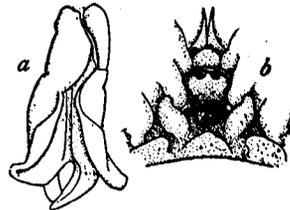


FIG. 56.—*Metapenæus velutinus*. a, Petasma, station 3897,  $\times 44$ . b, Thelycum, station 3859,  $\times 34$ .

**Metapenæus mogiensis** (Rathbun).

(Pl. xx, fig. 3.)

*Parapenæus mogiensis* Rathbun, Proc. U. S. Nat. Mus., XXVI, 1902, 39, text figs. 6-8.

South coast of Molokai Island 6½ fathoms, station 3851, 1 male and 1 female of medium size.

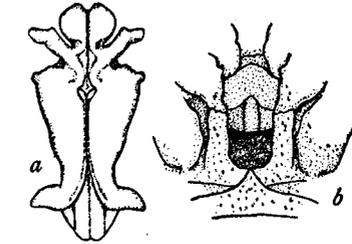
Superficially has great resemblance to *M. velutinus*, but the carapace is relatively shorter; sixth abdominal segment shorter, eyes smaller, less than half as long as acicle.**Metapenæus richtersii** (Miers).

(Pl. xx, fig. 2.)

*Penæus richtersii* Miers, Zool. Alert, 564, pl. LII, fig. A, 1884.

South coast of Oahu Island, surface, electric light, station 3812, 1 male and 1 female; Pailolo Channel, surface, electric light, station 3860, 1 female.

The rostral teeth may be five or six, and in our specimens only one of them lies behind the orbit. The gastric tooth is about at anterior fourth of carapace. Rostrum higher, less acuminate than shown in Miers's figure. The posterior half of the fourth abdominal segment, as well as the fifth and sixth segments, is carinate; sixth segment terminating in a small spine.

FIG. 57.—*Metapenæus richtersii*, station 3812. a, Petasma, × 10. b, Thelycum, × 6.

Antennal flagellum as long as body exclusive of telson. Outer maxillipeds very much flattened and reaching only to end of antennal peduncle.

A spine on basis of first pair of legs but none on ischium; no spines on second or third pairs. Fifth pair of legs exceeding the fourth by the length of the dactylus.

The petasma is symmetrical, similar to that of *M. affinis* (Milne Edwards).<sup>a</sup> In a ventral view the terminal lobe on each side is followed on the outer margin by two lobes instead of one.

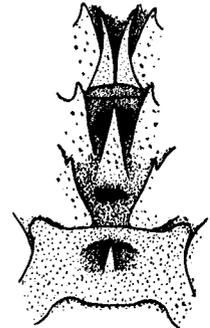
Our largest specimen, female, measured 42.8 mm. long, carapace 12.4.

**Metapenæus evermanni**, sp. nov.

(Pl. xx, fig. 1.)

A stout, pubescent species, with general appearance of *M. lamellatus* (de Haan), from which it differs in a less arched and lower rostrum, only one of whose eight teeth is situate behind the orbit; the gastric spine farther forward at the anterior two-fifths (rostrum exclusive) instead of at the middle of the carapace; a longer outer maxilliped, which exceeds the acicle by length of dactylus; the sternum of the female, while possessing a pair of spines between the bases of the feet of the second pair, and a single spine between those of the fourth pair, has also a spine between the feet of the fifth pair.

All the legs are provided with exopods, only the first to third pairs with epipods.

*Dimensions of female type*.—Length of carapace and rostrum 18.5, of abdomen 40 mm.*Type locality*.—One specimen only was obtained on the south coast of Molokai Island, 73 to 43 fathoms, station 3849 (Cat. No. 30539).FIG. 58.—*Metapenæus evermanni*, station 3849, thelycum, × 4.**Solenocera lucasii** Bate.

(Pl. xx, fig. 9.)

*Solenocera Lucasii* Bate, Ann. Mag. Nat. Hist. (5), VIII, 1881, 185.*Philonicus lucasii* Bate, Challenger Macrura, 277, pl. XLII, fig. 4, 1888.*Pleoticus lucasii* Bate, Challenger Macrura, p. lxii and 939, 1888.*Distribution*.—South coast of Molokai Island, 73 to 43 fathoms, station 3849, 1 male; vicinity of Kauai Island, 55 to 50 fathoms, station 3987, 1 male.<sup>a</sup> Kishinouye, Jour. Fisheries Bureau, Tokyo, VIII, 1900, pl. VII, fig. 5.

I think that this species should not be removed from *Solenocera*, the antennular flagella not differing essentially from those of *S. siphonoceros* (Philippi), a species which *S. lucasi* strongly resembles. In our largest specimen, 45 mm. long, the median carina is not continued behind the gastric region; dorsal spines 6-7, three of which stand behind the orbit (none behind the gastric region), no branchiostegal spine, though the carina leading to that point is strongly developed; eyes reaching beyond rostrum; the flagella of the antennula as long as the carapace less the rostrum, the larger one hollowed or longitudinally folded, and in the groove thus formed rests the more slender flagellum.

The carina of the third abdominal segment is less sharp than on the succeeding segments. The telson is sharp-pointed (Bate describes it as truncate, but in his single specimen the tip was probably broken off), falling short considerably of the end of the inner branch of the tail-fan.

The petasma is narrower than in *S. siphonoceros*, its distal half is trilobed on the ventral edge, the two most distal lobes ciliated.

Length of carapace, male (station 3849), 14 mm., of abdomen 31 mm.

The type specimen was 100 mm. long, which may account for the difference of some of its characters.

#### *Haliporus equalis* Bate.

*Haliporus equalis* Bate, Challenger Macrura, 285, pl. xli, fig. 1, 1888.

*Haliporus aequalis* Wood-Mason, Ann. Mag. Nat. Hist. (6), VIII, 1891, 277; Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 23, 1901.

*Distribution*.—Kaiwi Channel, 335 to 460 fathoms, stations 3470, 3471, 3474, 3475, 4106, 4107, 4108, 4110, and 4112; vicinity of Kauai Island, 165 to 500 fathoms, stations 3988, 3989, 3997, 4022, 4028, and 4029; vicinity of Modu Manu, 293 to 1,059 fathoms, stations 4153, 4157, and 4166.

The median carina of the carapace is fairly distinct until near the posterior border; a low tubercle just in front of this border.

In some of the specimens the telson equals or somewhat exceeds the endopod of the tail-fan.

#### *Haliporus modestus* (Smith).

(Pl. xx, fig. 4.)

*Hymenopenæus modestus* Smith, Proc. U. S. Nat. Mus., VIII, 1885, 183.

*Distribution*.—South coast of Oahu Island, 183 to 280 fathoms, stations 3813 and 3920; vicinity of Laysan Island, 97 to 163 fathoms, stations 3938 and 3947; west coast of Hawaii Island, 198 to 147 fathoms, station 4045; north coast of Maui Island, 143 to 220 fathoms, stations 4079 and 4081; Pailolo Channel, 122 to 143 fathoms, stations 4101, 4102, and 4103; northwest coast of Oahu Island, 154 to 251 fathoms, stations 4114 and 4121.

I have not seen the type of *H. modestus* (Smith) from off Delaware Bay, 156 fathoms, but the description agrees in all essentials with the Hawaiian specimens.

The rostrum averages one-third the length of the carapace proper; of the seven dorsal spines, four may be on the carapace and three on the rostrum, or vice versa.

The upper of the antennular flagella equals in length the carapace (including rostrum) and the first two abdominal somites; the lower one equals the carapace and rostrum.

The antennal flagellum may attain three times the length of body.

The inner lamella of the tail-fan, though shorter than the telson, reaches perceptibly beyond it.

The leaves of the petasma are very broad, extremity oblique and three-lobed; a longitudinal plait divides the middle lobe.

*Dimensions*.—The largest specimen, a female (station 4101), measures 26.3 mm. on the carapace and 53.5 along the abdomen.

**Aristeus semidentatus** Bate.

(Pl. XIX, fig. 1.)

*Aristeus semidentatus* Bate, Ann. Mag. Nat. Hist. (5), VIII, 1881, 189; Illus. Zool. Investigator, Crust., pl. XLIX, fig. 3, male, 1901.

*Hemipeneus semidentatus* Bate, Challenger Macrura, 305, pl. XLIX, fig. 1, female, 1888.

*Aristeus semidentatus* Wood-Mason, Ann. Mag. Nat. Hist. (6), VIII, 1891, 280; Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 31, 1901.

*Distribution*.—Kaiwi Channel, 295 to 442 fathoms, stations 3470, 3472, 3474, 3475, 4105, 4106, and 4108; south coast of Oahu Island, 228 to 337 fathoms, stations 3815, 3910, 3911, 3916, and 3917; vicinity of Kauai Island, 165 to 500 fathoms, stations 3988, 3989, 4015, 4016, 4020, 4021, 4022, and 4025; west coast of Hawaii Island, 382 to 253 fathoms, station 4041; north coast of Maui Island, 267 to 283 fathoms, station 4085; northeast approach to Pailolo Channel, 308 to 306 fathoms, station 4088; north coast of Molokai, 328 to 809 fathoms, stations 3887 and 3892.

The rostrum of the female in Hawaiian specimens is usually shorter than the carapace, varying from about eight-ninths to just the length of the carapace. The acicle, on the other hand, runs somewhat longer than in the Indian form, its length being contained about one and a half times in the length of the carapace of the female, one and a fourth times or less in the male.

*Color* (from notes by the collector).—Rostrum, basal parts of antennæ, legs and sides of thorax, vermilion to orange vermilion. Legs punctate with burnt carmine. Dorsum of carapace, Payne's gray to purple, the viscera showing through. Eyes black, showing iridescent yellow. Abdomen light opaque pink except joints (articulations), which are yellowish salmon pink. Telson carmine or yellowish carmine.

**Benthesicymus investigatoris** Anderson.

*Benthesicymus investigatoris* Anderson, in Alcock and Anderson, Ann. Mag. Nat. Hist. (7), III, 1899, 282; Illus. Zool. Investigator, Crust., pl. XLII, fig. 2, 1899; Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 44, 1901.

*Distribution*.—South coast of Molokai Island, 222 to 498 fathoms, station 3824; north coast of Molokai Island, 552 to 809 fathoms, station 3887; vicinity of Modu Manu, 222 to 1,059 fathoms, stations 3977, 3979, 4153, and 4166; vicinity of Kauai Island, 339 to 703 fathoms, stations 3985, 3989, 3997, 4013, 4014, 4019, 4022, 4028, 4029, 4137, 4139, 4140, 4141, and 4187; Kaiwi Channel, 395 to 470 fathoms, stations 4109, 4110, 4111, 4112, 4113.

There are two teeth on the dorsal margin of the rostrum, besides the acuminate tip; behind the posterior tooth, there is a very small rudiment of a movable spine.

The carina of the fifth as well as of the sixth abdominal segment ends posteriorly in a small spine. Sixth segment twice as long as fifth.

*Color*.—Carmine.

Length of largest specimen, female (station 4110), 86 mm., carapace 32.2 mm.

**Benthesicymus laciniatus**, sp. nov.

(Pl. XIX, fig. 3.)

Allied to *B. crenatus* Bate (Challenger Macrura, 329, pls. LIV and LV, 1888).

Two, instead of three, teeth on the dorsal surface of the rostrum. Median carina of carapace not evident behind gastric region. No hepatic spine.

Fourth segment of abdomen spinulose or lacinate on posterior margin; the spinules irregular, but increasing in size toward the middle; a short, transverse groove across middle of segment; behind it a median groove terminating in

a prominent but short spine.

Telson armed with three spines on each side on the posterior half, besides the pair at the extremity.

First joint of antennula longer than eye-stalk; upper flagellum at least as long as carapace, including rostrum and first segment of abdomen; lower flagellum still longer. These flagella are incomplete in all the specimens.

Acicle less pointed than in *B. crenatus*; flagellum one and a half times as long as body.



FIG. 59.—*Benthesicymus laciniatus*, type, posterior half of telson,  $\times 2\frac{1}{2}$ .

*Dimensions*.—Female, length of carapace 48 mm., of abdomen 103 mm.

*Distribution*.—Vicinity of Kauai Island, 724 to 1,314 fathoms, stations 4018 (type locality), 4183, and 4185. Cat. No. of type, 30540.

***Benthescicymus moratus* Smith.**

*Benthescicymus*? sp. indet., Smith, Rept. U. S. Fish Commr. for 1882, 397 [53], pl. x, figs. 3, 4, 5, 1884.

*Benthescicymus*? *moratus* Smith, Rept. U. S. Fish Commr. for 1885, 694 [90], 1886.

Vicinity of Kauai Island, 1,000 to 1,314 fathoms, station 4185, one male and one female, in poor condition. They agree very well with Smith's description (I have seen no Atlantic specimens) excepting that in the larger, a male about 95 mm. long, the third pleonic segment is not carinate, although in the small female (about 55 mm. long) it is obscurely so in the posterior half.

***Benthonectes filipes* Smith.**

*Benthonectes filipes* Smith, Proc. U. S. Nat. Mus., VII, 1885, 509; Rept. U. S. Fish Commr. for 1885, 692 [88], pl. xviii, figs. 1, 1a; pl. xix, figs. 1, 1a, 1b, 1886.

Vicinity of Kauai Island, 508 to 703 fathoms, station 4187; one male.

In this specimen the rostrum has only one well-developed dorsal spine. In place of the posterior one in the figure there is a minute spinule which may represent an aborted spine.

***Gennadas parvus* Bate.**

*Gennadas parvus* Bate, Ann. Mag. Nat. Hist. (5), VIII, 1881, 192; Challenger Macrura, 340, pl. LIX, 1888. Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 46, 1901.

Vicinity of Modu Manu, 636 to 850 fathoms, station 4154, one female.

This specimen has the characteristic thelycum described by Alcock.



FIG. 60.—*Gennadas parvus*, station 4154, thelycum,  $\times 68$ .

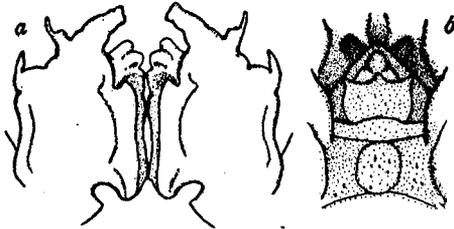


FIG. 61.—*Gennadas propinquus*, type. a, Petasma,  $\times 12$ . b, Thelycum,  $\times 28$ .

***Gennadas propinquus*, sp. nov.**

Between Erben Bank and Kaiwi Channel, two specimens, male and female, were taken in the intermediate tow-net at 100 fathoms, which are very close to *G. parvus* Bate, but the thelycum of the female is different from that described by Alcock (loc. cit.).

A small species (about 32 mm. long), with the rostral and the gastric spine very slender, the oph-

thalmic spine slender, the antennular peduncle with surface pubescent.

The thelycum shows a large subtriangular shield between the bases of the feet of the third pair, followed by a narrow transverse plate and then by a subcordate disk between feet of fifth pair.

The petasma in general form is similar to that of *G. parvus* Bate (op. cit., pl. LIX, fig. pp.), but is differently lacinated across the distal end.

A mutilated female from vicinity of Kauai Island, 478 to 453 fathoms, station 4029, is probably the same species. Cat. No. of type, 30541.

***Gennadas*, sp.**

One very soft and damaged male from vicinity of Kauai Island, 1,000 to 1,314 fathoms, station 4185, might pass for *G. borealis* Rathbun, but the petasma is larger than in that species, and the truncate lobe seen at the middle of its distal end (Harriman Alaska Exped., X, 1904, 148, fig. 89a) is replaced by a convex margin. The antennal scale appears to be narrower, but is incomplete.

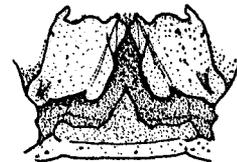


FIG. 62.—*Gennadas*, sp., station 4185, petasma,  $\times 4$ .

***Sicyonia lævis* Bate.**

(Pl. xx, fig. 7.)

*Sicyonia lævis* Bate, Challenger *Macrura*, 298, pl. XLIII, fig. 5, 1888.*Distribution*.—Pailolo Channel, 138 to 140 fathoms, station 3859; vicinity of Kauai Island, 233 to 40 fathoms, station 3982; three specimens in all.Bate's single specimen was taken by the *Challenger* north of New Guinea in 150 fathoms. Our specimens agree fairly well with his description and figure. There is, however, no acute tooth below the orbit, but a very rounded one. The rostrum of only one is perfect, and that is a little different shape from Bate's figure—the tip is more broadly rounded and there are four teeth above and three terminal.***Sicyonia longicauda*, sp. nov.**

(Pl. xx, fig. 6.)

Surface covered with very short setæ, easily rubbed off.

Rostrum reaching beyond the eye-stalks, as far as the end of the first antennular segment; strongly ascending; armed with three spines above, the posterior of which lies a little behind margin of orbit; tip oblique truncate, with three projections, a tooth between two spines. Dorsal carina prolonged nearly to posterior margin of carapace, armed with two strong teeth, one gastric and one cardiac, about as far distant from each other as the anterior one is from the spine at base of rostrum. A strong hepatic spine.

Abdomen sparingly sculptured; a strong sharp dorsal carina which forms an acute tooth on the first segment and ends in a similar tooth on the sixth segment; this segment unusually long, nearly twice as long as fifth. Telson longer than sixth segment, channeled above, a pair of lateral spines not far from the tip.

Eyes very large, horizontally flattened. Basal segment of antennule armed with two slender spines on its outer border. Flagella no longer than the second segment of the peduncle.

The peduncle of the antenna scarcely reaches the middle of the scale; flagellum, to last three segments of abdomen; basal segment armed with a strong outer spine.

Sternum armed with a flattened spine which arises between the bases of the legs of the fourth pair, but extends forward in advance of the bases of the third pair.

Both branches of swimming fan shorter than telson; outer branch shorter than inner.

Length 78; carapace 28 mm.

This species can be distinguished by its elongate sixth abdominal segment.

*Distribution*.—No species of *Sicyonia* has hitherto been found in a depth of more than 200 fathoms. Kaiwi Channel, 295 to 351 fathoms, stations 3467, 3472, 3475, 3476, and 4105; south coast of Oahu Island, 228 to 330 fathoms, stations 3815, 3907, 3908, 3909, 3914, 3916, 3917, 3918, and 3920; Pailolo Channel, 256 to 311 fathoms, station 3865 (type locality), 3866, 3867, 3883, 3884, 3898, 3899, 3900, and 3901; vicinity of Kauai Island, 53 to 324 fathoms, stations 4002, 4130, 4132, and 4134; north coast of Maui Island, 202 to 267 fathoms, stations 4081, 4082, 4083, and 4084; northeast approach to Pailolo Channel, 272 to 290 fathoms, stations 4095, 4096, and 4097; southwest coast of Oahu Island, 192 to 352 fathoms, station 4122. Cat. No. of type, 30823.**Family SERGESTIDÆ.*****Sergestes tenuiremis* Krøyer.***Sergestes tenuiremis* Krøyer, Kongel. Danske Vidensk. Selsk. Skr., 5 Raekke, naturvidensk. math. afd., IV, 1859, 255 and 278, pl. iv, fig. 11a-b. Hansen, Proc. Zool. Soc. London, 1896, 949 and 951.

Between Erben Bank and Kaiwi Channel, station 3803, 50 fathoms, in open intermediate tow-net, one specimen.

***Sergestes robustus* Smith.**

(Pl. xviii, fig. 1.)

*Sergestes*, sp., Smith, Proc. U. S. Nat. Mus., III, 1881, 445.*Sergestes robustus* Smith, Bull. Mus. Comp. Zool., 1882, X, 97, pl. xvi, figs. 5-8b; Rept. U. S. Fish Commr. for 1882, 416 [72], pl. viii, figs. 3-6b (1884); Rept. U. S. Fish Commr. for 1885, 697 [93], pl. xx, fig. 6 (1886). Hansen, Proc. Zool. Soc. London, 1896, 949.*Sergestes bisulcatus* Wood-Mason, Ann. Mag. Nat. Hist. (6), VII, 1891, 190; (6) VIII, 1891, 353. Faxon, Mem. Mus. Comp. Zool., XVIII, 1895, 210, pl. lii. Hansen, Proc. Zool. Soc. London, 1896, 949. Alcock, Illus. Zool. Investigator, Crust., pl. I, figs. 1-1b, 1901; Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 49, 1901.*Sergestes phorcus* Faxon, Bull. Mus. Comp. Zool., XXIV, 1893, 217.*Distribution*.—Kaiwi Channel, 313 to 460 fathoms, stations 3470, 3471, 3473, 4106, and 4110; vicinity of Kauai Island, 275 to 368 fathoms, stations 4025; west coast of Hawaii Island, 382 to 253 fathoms, station 4041.

Of the above specimens two only from stations 4106 and 4110 correspond to the typical form; the others differ only in having a small but distinct hepatic spine; the presence or absence therefore of this spine can not be considered a specific character.

There is no indication on the labels that the specimens did not come from the depths cited.

***Sergestes edwardsii* Kröyer.***Sergestes Edwardsii* Kröyer, Kongel. Danske Vidensk. Selsk. Skr., 5 Række, naturvidensk. math. afd., IV, 1859, 246, 277, pl. iv, fig. 9a-k.*Sergestes edwardsii* Faxon, Mem. Mus. Comp. Zool., XVIII, 1895, 212, pl. li, figs. 1-1e. Perhaps not *S. hallia* Faxon. (See Hansen, p. 962.)*Sergestes edwardsi* Hansen, Proc. Zool. Soc. London, 1896, 950 and 961.

Two small specimens were taken in 50 fathoms in the open intermediate tow-net at station 3806, between Erben Bank and Kaiwi Channel.

***Sergestes oculatus* Kröyer.***Sergestes oculatus* Kröyer, Kongel. Danske Vidensk. Selsk. Skr., 5 Række, naturvidensk. math. afd., IV, 1859, 243 and 277, pl. iii, fig. 5a-f. Bate, Challenger Macrura, 406, pl. lxxiv, fig. 1, 1888. Hansen, Proc. Zool. Soc. London, 1896, 950 and 963.*Distribution*.—Between Honolulu and Laysan, surface, station 3929; vicinity of Kauai Island, surface, station 3981; west coast of Hawaii Island, surface, station 4037; 4 specimens in all.

Specimens about 12 and 13 mm. long.

Recorded by Bate from 5° south of Hawaiian Islands, and near the Hawaiian Islands.

According to Hansen this is the *Mastigopus* of *S. edwardsii*.***Sergestes parvidens* Bate.***Sergestes parvidens* Bate, Challenger Macrura, 409, pl. lxxiv, fig. 3, 1888. Hansen, Proc. Zool. Soc. London, 1896, 950 and 964.

North of Hawaiian Islands (Bate).

According to Ortunann and Hansen a young stage of *S. vigilax* Stimpson.***Sergestes armatus* Kröyer.***Sergestes armatus* Kröyer, Kongel. Danske Vidensk. Selsk. Skr., 5 Række, naturvidensk. math. afd., IV, 1859, 260 and 279, pl. iii, figs. 6a-e. Bate, Challenger Macrura, 401, pl. lxxiii, fig. 1, 1888. Hansen, Proc. Zool. Soc. London, 1896, 950 and 966.

Between Erben Bank and Kaiwi Channel three specimens, taken in surface tow-net. The largest, about 17 mm. long, bears a spine on each of the first five abdominal segments, while the other two specimens, each about 10 mm. long, have spines on the second to fifth segments.

Recorded by Bate, north of Hawaiian Islands, latitude 30° 22' north, longitude 154° 56' west, and also between Honolulu and Japan.

***Sergestes ventridentatus* Bate.**

*Sergestes ventridentatus* Bate, Challenger Macrura, 431, 1888. Hansen, Proc. Zool. Soc. London, 1896, 951.

North of Hawaiian Islands (Bate).

***Leucifer acestra* (Dana).**

*Lucifer acestra* Dana, Crust. U. S. Expl. Exped., I, 671, 1852; atlas, pl. XLIV, fig. 9a-i, 1855. Faxon, Mem. Mus. Comp. Zool., XVIII, 1895, 214 and synonymy.

*Distribution.*—Between Erben Bank and Kaiwi Channel, 50 fathoms, station 3803; between Honolulu and Laysan Island, surface, station 3926; vicinity of Kauai Island, surface, station 3981; Hawaii (Bate).

**Family CRAGONIDÆ.*****Pontophilus gracilis* Smith.**

*Pontophilus gracilis* Smith, Bull. Mus. Comp. Zool., X, 1882, 36, pl. VII, figs. 2-3a; Rept. U. S. Fish Commr. for 1885, 654 [50], pl. XI, figs. 1-2, 1886. Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 115, 1901, and synonymy.

*Distribution.*—South coast of Molokai Island, 430 to 371 fathoms, station 3826; between Honolulu and Kauai Island, 508 to 557 fathoms, station 4007; vicinity of Kauai Island, 286 to 804 fathoms, stations 4018, 4021, and 4137; west coast of Hawaii Island, 670 to 697 fathoms, stations 4036 and 4039; vicinity of Modu Manu, 762 to 1,059 fathoms, stations 4153 and 4157.

The specimens do not exceed 30 mm. in length.

***Pontophilus modumanuensis*, sp. nov.**

A small species, represented by only one specimen from vicinity of Modu Manu, 293 to 800 fathoms, station 4166 (Cat. No. 30543).

Carapace with rostrum as long as first three and a half segments of abdomen.

Rostrum long, slender, spiniform, exceeding eyes a little but not nearly reaching end of first antennular segment; armed on basal half with two spines on each side.

Two median spines just behind the rostrum, the anterior the smaller. Median carina stopping short of posterior margin of carapace. Two lateral carinae; the upper unarmed and continuous with the side margins of the rostrum; lower carina very short, terminating anteriorly in a spine which is slightly behind the posterior median spine. A small antennal, a long branchiostegal spine.

Abdomen almost smooth, punctate, telson wanting.

Eyes light reddish-brown in alcohol.

Basal spine of antennula very slender and reaching nearly to end of first antennular segment; peduncle not reaching middle of acicle; third segment half as long as second; flagella half as long as carapace (rostrum inclusive); outer flagellum a little thicker and shorter than inner. Scale of antenna also about half as long as carapace, its spine exceeding blade. A small spine on outer side of second antennal segment; peduncle reaching to middle of second antennular segment; flagellum nearly as long as body.

The maxillipeds overreach the acicle by one-fourth length of their last segment.

The first pair of legs reach just to end of acicle; the second pair halfway along merus of first pair; third pair exceed acicle with last two joints; fourth pair reach just to end of acicle; fifth pair about same length, tip broken.

Length of carapace and rostrum 5.3 mm., length of abdomen, telson excluded, 10.5 mm.

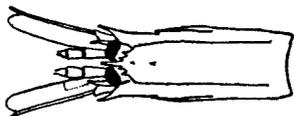


FIG. 63.—*Pontophilus modumanuensis*, type, carapace and antennal region,  $\times 4\frac{1}{2}$ .

***Egeon orientalis* Henderson.**

(Pl. XXIII, fig. 3.)

*Egeon orientalis* Henderson, Trans. Linn. Soc. London (2), Zool., V, 1893, 446, pl. XL, figs. 16, 17.*Distribution*.—Vicinity of Kauai Island, 286 to 399 fathoms, station 4021, 2 females; vicinity of Modu Manu, 293 to 300 fathoms, station 4166, 1 female.

The rostrum is distinctly bispinose, with a smaller spine either side at base. Median carina with five spines, of which the middle one is somewhat smaller. First or upper lateral carina 7-spined, second row 8 to 10-spined, lower row 6-spined, including the antero-lateral spine. The spines of the two lower rows diminish in size posteriorly, and the spines of the lowest row end halfway back on the carapace.

The first, fifth, and sixth abdominal somites have each a pair of submedian carinæ; the second, third, and fourth somites have each one median carina; the first, second, third, and fifth somites have two lateral carinæ on each side; the fourth somite three lateral carinæ on each side; the sixth somite one carina on each side. The six carinæ of the first somite and the median carina of the second somite end anteriorly in a spine; the median carina of the fourth somite and the submedian pair of the fifth and sixth somites terminate posteriorly in a spine, while the submedian keels of the sixth somite have also a spine at their posterior third.

Henderson describes the second, third, and fourth segments with only a single lateral keel; but his figure contradicts this. No rostral spines or teeth are shown in the figure.

***Egeon habereri* (Doflein).***Pontocaris habereri* Doflein, Abh. math.-phys. Cl. k. bayer. Akad. Wiss., München, XXI, 1902, 620, pl. I, figs. 4 and 5, text fig. A.*Distribution*.—Pailolo Channel, 127 to 138 fathoms, stations 3857 (1 male) and 3858 (1 female).

Female larger than male; carapace 11.8 mm. long, abdomen about 32 mm.

The median carina of the male is four-toothed, of the female five-toothed. Besides the two main rostral teeth, there is a very small one on either side at the base.

Of the antennular flagella in the female, the outer is not more than half as thick as the inner.

## Family RHYNCHOCINETIDÆ.

***Rhynchocinetes rugulosus* Stimpson.***Rhynchocinetes rugulosus* Stimpson, Proc. Phila. Acad. Nat. Sci., XII, 1880, 36 [105].? *Rhynchocinetes typus* Borradaile, in Willey, Zool. Results New Britain, etc., pt. IV, 415, 1900.

French Frigate Shoal, 17 to 17½ fathoms, station 3970, one small specimen about 16 mm. long.

Rostral formula  $\frac{4+4}{11}$ . Stimpson's type from Port Jackson, Australia, was 2 inches long, and had three instead of four teeth near tip of rostrum above and twelve teeth below. The last two segments of the abdomen of the Hawaiian specimens are noticeably longer than in the Chilean specimens of *R. typus* collected by the U. S. Exploring Expedition. Owing to the very great difference in the size, it is impossible to compare the rugæ of the carapace. It may appear that the Hawaiian form represents an undescribed species.

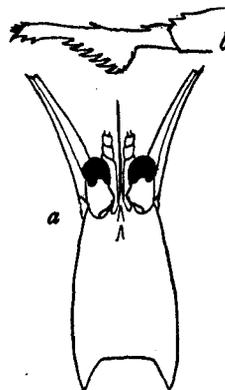


FIG. 64.—*Rhynchocinetes rugulosus*. a, Carapace and antennal region,  $\times 5\frac{1}{2}$ . b, Rostrum,  $\times 4\frac{1}{2}$ .

## Family LYSMATIDÆ.

**Processa processa** (Bate).

(Pl. xxii, fig. 6.)

*Nika processa* Bate, Challenger Macrura, 527, pl. xcvi, 1888.

*Distribution*.—Honolulu Reef, May 8, 1902; Auau Channel, 21 to 43 fathoms, stations 3872 and 3874. Six specimens in all.

The rostrum is compressed, carinate, as long as eye, extremity oblique, bispinose, a shorter spine above, longer one below, a few hairs between.

The eyes are very large, flattened, and have a small but distinct and dark-colored ocellus on the border of the cornea and mainly outlined against the peduncle. The antennular peduncle is as long as the acicle; the antennal peduncle reaches just to end of basal joint of antennular peduncle.

The outer maxilliped and the simple foot of the first pair exceed the acicle by length of their last segment, while the cheliped of the first pair is barely as long as the acicle.

Feet of second pair unequal; right foot exceeding acicle by half its merus besides carpus and chela, merus feebly subdivided, carpus with about 65 segments; left foot exceeding acicle by length of chela and nearly all the carpus, merus also feebly segmented, carpus with thirty subdivisions.

A specimen from station 3876 presents a curious variation; the small upper spine of the rostrum is found much farther back, at the middle of the rostrum, which from that point tapers anteriorly in a long acuminate spine.

**Processa hawaiiensis** (Dana).*Nika hawaiiensis* Dana, Crust. U. S. Expl. Exped., I, 538, 1852; atlas, pl. xxxiii, fig. 7a-h, 1855.

Lahaina, Maui (Dana).

According to Dana the rostrum is shorter than the eyes and broader than long; the antennular peduncle longer than acicle; antennal peduncle nearly as long as acicle. Carpus of feet of second pair with eleven joints.

## Family HIPPOLYTIDÆ.

**Hippolyte acuta** (Stimpson).

(Pl. xxiv, fig. 3.)

*Virbius acutus* Stimpson, Proc. Acad. Nat. Sci. Phila., XII, 1860, 104 [35].

Reef in front of Honolulu, August 16, 1901, one ovigerous female; one additional ovigerous female without label was taken in 1901.

These agree very well with Stimpson's description, except that the telson is armed dorsally with only two pairs of aculei.

**Hippolysmata acicula**, sp. nov.

(Pl. xxiv, fig. 6.)

Differs from *H. vittata* Stimpson, of which I have seen no examples, in the longer antennal scale, which exceeds considerably the antennular peduncle and is nearly as long as the carapace, rostrum excluded; in the outer maxilliped exceeding the acicle by only the half of its terminal joint; in the greater number of segments (29) of the carpus of the second pair of feet.

The rostral formula is  $\frac{5-6}{2-5}$ , the rostrum reaching to the distal third, as in the largest specimen, or to the end, as in smaller specimens, of the penult segment of the antennular stalk; two teeth are on the carapace, the posterior in front of middle. The antennal flagellum is sometimes nearly twice as long as body; in the largest specimen it is broken off.

*Dimensions*.—Female type, length 27.8, length of carapace with rostrum 9.8, without rostrum 6.8, length of acicle measured on outer margin 5.8 mm.

*Distribution*.—Vicinity of Kauai Island, 7 to 148 fathoms, station 3999, 1 female type (Cat. No. 30544); Honolulu, from bottom of tugboat, July 3, 1902, 4 specimens.

**Hippolysmata paucidens**, sp. nov.

(Pl. xxiv, fig. 4.)

A smaller species than the last.

Rostral formula  $\frac{4}{1-3}$ ; teeth smaller, two behind the orbit, the posterior one at the anterior third of the carapace or farther forward than in preceding species. Rostrum barely reaching end of first antennular segment. Acicle shorter than in *H. acicula*, not two-thirds length of carapace, rostrum excluded. Outer maxilliped exceeds acicle by three-fourths of its terminal joint. Twenty-three segments in carpus of second pair of feet. From *H. vittata* our species is distinguished by its shorter rostrum and fewer teeth.

*Dimensions*.—Female type, length 18, length of carapace with rostrum 6.2, without rostrum 4.5, acicle (outer margin) 2.6 mm.

*Distribution*.—Honolulu, 1901; Waikiki beach, August 14, 1901 (type locality); Laysan, May, 1902; 10 specimens in all. Cat. No. of type, 25411.

**Spirontocaris marmorata** (Olivier).

*Palaemon marmoratus* Olivier, Encycl. Méth., Hist. Nat., Insectes, VIII, 665, 1811; atlas, XXIV, pl. 319, fig. 3, 1818.

*Alpheus marmoratus* Lamarck, Hist. Anim. sans Vert., V, 205, 1818.

*Hippolyte marmoratus* Milne Edwards, Hist. Nat. Crust., II, 379, pl. xxv, figs. 8 and 9, 1837.

*Hippolyte gibberosus* Milne Edwards, Hist. Nat. Crust., II, 378, 1837.

*Hippolyte gibbosus* Streets, Bull. U. S. Nat. Mus., No. 7, 1877, 119, and synonymy.

*Hippolyte gibberosa* de Man, Arch. f. Natur., LIII, 1887, pt. 1, 533.

*Hippolyte marmorata* de Man, loc. cit.

Honolulu, 1901; Honolulu Reef, May 8, 1902; Oahu, Dr. T. H. Streets, U. S. Navy; Oahu, Sharp. Hawaiian Islands (Randall, Gibbs); 3 fragmentary specimens, T. Nuttall, collector, in Philadelphia Academy of Natural Sciences. Hawaiian Islands (Dana).

The difference between the species *marmorata* and *gibberosa* seems to consist solely in the length of the outer maxilliped, which I am inclined to think is dependent on maturity. In the limited series before me, specimens about 57 mm. long have the terminal joint of the maxilliped greatly elongate, exceeding the acicle by half its length. In a specimen 41.5 mm. long (Oahu), the maxillipeds reach just to end of acicle; in specimens about 22 mm. long, a little past middle of acicle.

Specimens of a very young hippolytid were taken at the surface on the south coast of Oahu at stations 3812 and 3921. They average about 7 mm. in length and are probably the young of *S. marmorata*.

**Spirontocaris kauaiensis**, sp. nov.

(Pl. xxiv, fig. 5.)

Dorsal carina occupying three-fourths of the carapace, armed with three large spines, of which one is behind the orbit and two above the eyes. The anterior one may stand in front of eyes. Rostrum one and two-thirds times as long as carapace, curved strongly upward, armed with 8 spines below; one subterminal above. A strong antennal spine. Pleon smooth; sixth more than twice as long as fifth segment and a little longer than telson, which has two pairs of lateral spinules. Eyes large. Second and third antennular segments very short, subequal; basal scale not exceeding first segment; peduncle reaching to middle of acicle; longer flagellum at least as long as pleon. Acicle just as long as carapace; antennal peduncle reaching to end of second antennular segment. The outer maxillipeds reach past middle of acicle; first pair of trunk legs, to end of antennal peduncle; second pair end half-way between tip of maxilliped and tip of scale. The outer maxilliped is provided with an exopod and epipod; the first and second trunk legs only with an epipod, all destitute of exopods.

*Dimensions*.—Female, length of carapace 8.7, rostrum 17, abdomen (telson excluded) 26 mm.

*Distribution*.—Vicinity of Kauai Island, 55 to 362 fathoms, stations 3986 and 3998 (type locality); northwest coast of Oahu Island, 216 to 251 fathoms, station 4121; 4 specimens in all. Cat. No. of type, 30545.

This species, by having three teeth at the base of the rostrum and in the elongate sixth segment of pleon, resembles *S. tridens* Rathbun, but that species has the rostrum shorter and more horizontal and the third abdominal segment subcarinate.

**Spirontocaris profunda**, sp. nov.

(Pl. xxiv, fig. 10.)

Carapace stout, carinated in its anterior two-thirds. Rostrum slender, about one-third as long as carapace, not reaching end of first antennular segment, horizontal; dorsal spines two, the posterior one in line with the supraorbital spine and just in advance of the line of the orbit; one spine below, near the tip, which is acuminate. Anterior margin armed with three spines, one supraorbital, one antennal, one much smaller at the antero-lateral angle.

Antennular peduncle two-thirds as long as carapace, first segment twice as long as second, which is three times as long as third; basal scale reaching nearly to end of first segment, which last has on its distal margin a spine at the outer angle and two very slender ones above; antero-external angle of second segment armed with a slender spine, of third segment with two spines. Flagella about as long as peduncle.

The antennal scale exceeds the antennular peduncle, its blade is oblique and overreaches the spine; the peduncle reaches to the end of the second antennular segment. Flagellum as long as the body less the telson.

Outer maxillipeds stout and very long, extending beyond aciculae by length of last joint and nearly half of the penult. They are without exopod, but have an epipod as have also the first three pairs of trunk legs. The stout first pair extend to middle of terminal joint of maxilliped; the second pair are a little longer than the first; carpus of nine segments.

Fifth and sixth abdominal somites armed with a postero-lateral spine; fifth one and a half times as long as sixth segment; telson as long as fifth and sixth together, with four spinules on one side and five on the other.

*Dimensions*.—Female, length 46, of carapace and rostrum 15, of rostrum 4.3 mm.

*Type locality*.—Vicinity of Modu Manu, 762 to 1,000 fathoms, station 4157; 1 female (Cat. No. 30546).

This species is near *S. washingtoniana* Rathbun, found in deep water off the State of Washington, but has a much shorter rostrum and longer maxillipeds.

## Family PANDALIDÆ.

**Pandalus martius** A. Milne Edwards.

*Pandalus martius* A. Milne Edwards, Recueil Planches Expéd. "Travailleur," pl. xxi, 1883.

*Plesionika Martia* Caullery, Ann. Univ. Lyon., 1896, "Caudan" Crust., p. 378, pl. xv, figs. 1-6.

*Pandalus (Plesionika) martius* Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 95, 1901 and synonymy.

This is the common sword shrimp of deep water about the islands, over 700 specimens having been taken by the *Albatross* in fifty hauls.

*Color*.—Carapace translucent, showing anatomy. Whole body covered with fine vermilion dots, including rostrum, eyestalks, antennal scale and swimmerets. Joints of abdomen brighter red. Legs and antennæ bright Chinese vermilion. Eyes gray, showing yellow by reflected light. Eggs opaque cobalt blue.

*Distribution*.—Kaiwi Channel, 295 to 351 fathoms, stations 3467, 3471, 3472, 3473, 3474, 3475, 3476, 4105, and 4106; south coast of Oahu, 228 to 337 fathoms, stations 3815, 3817, 3818, 3907, 3908, 3909, 3910, 3911, 3912, 3914, 3916, 3917, 3918, and 3925; Pailolo Channel, 256 to 684 fathoms, stations 3865, 3866, 3867, 3868, 3883, 3884, 3898, 3899, 3900, and 3901; vicinity of Kauai, 165 to 469 fathoms, stations 3988, 4015, 4016, 4021, 4025, 4130, 4134, 4135, and 4136; west coast of Hawaii, 382 to 253 fathoms, station 4041; north coast of Maui, 253 to 283 fathoms, stations 4084 and 4085; northeast approach to Pailolo Channel, 286 to 308 fathoms, stations 4089, 4091, and 4095; northwest coast of Oahu, 282 to 253 fathoms, station 4117; vicinity of Niihau Island, 319 to 378 fathoms, station 4178.

**Pandalus ensis** (A. Milne Edwards).

*Acanthephyra ensis* A. Milne Edwards, Ann. Sci. Nat., Zool. (6), XI, 1881, art. 4, p. 14.

*Pandalus ensis* A. Milne Edwards, Recueil Planches Expéd. "Travailleur," pl. xviii, 1883.

*Pandalus (Plesionika) ensis* Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 96, 1901.

This species can be most readily distinguished from the preceding, *P. martius*, by the median spine on the posterior border of the third abdominal segment and the greater length of the sixth segment, which is longer than the telson. The last three pairs of legs are also appreciably shorter.

Less abundant than *P. martius*, only 128 specimens having been taken in twenty-eight hauls.

*Color*.—Ground tint pearly or milky semiopaqueness, the viscera clearly showing through the thorax. End of rostrum, tips of legs and abdomen at edges of joints vermilion. Spots of same color along sides of abdomen; terminal half of abdomen finely dotted, and telson marked with vermilion.

*Distribution*.—Kaiwi Channel, 220 to 346 fathoms, stations 3467, 3472, 3473, and 3893; south coast of Oahu, 228 to 369 fathoms, stations 3815, 3914, 3920, and 3922; Pailolo Channel, 256 to 684 fathoms, stations 3865, 3868, 3883, 3884, and 3901; vicinity of Laysan, 351 to 347 fathoms, station 3952; vicinity of Kauai, 55 to 469 fathoms, stations 3986, 3988, 3990, 3998, 4130, 4131, 4132, 4134, and 4135; north coast of Maui, 253 to 283 fathoms, stations 4084 and 4085; northeast approach to Pailolo Channel, 290 to 286 fathoms, station 4095; northeast coast of Oahu, 282 to 253 fathoms, station 4117; vicinity of Niihau Island 319 to 378 fathoms, station 4178.

† *Pandalus ocellus* (Bate).

(Pl. XXI, fig. 1.)

*Nothocaris ocellus* Bate, Challenger Macrura, 657, pl. CXIV, fig. 3, 1888. Not ?*Pandalus* (*Plesionika*) *ocellus* Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 97, 1901.

I am in doubt as to the identity of this form with Bate's; it seems much nearer to his figure and description than does the Andaman specimen placed here hesitatingly by Alcock.

The only discrepancy of any consequence is this, that the feet of the second pair are equal and similar, while, according to Bate, the left carpus is nearly twice as long as the right. Whether this has been correctly reported or not remains to be seen.

In the Hawaiian specimens the two posterior dorsal spines are small, close together, and movable; then follow about six larger and more separated fixed spines, and then from four to six very small fixed and still more distant spines which reach to the tip; below are seven or eight small fixed spines which begin a little in front of the antennular peduncle, which is farther back than Bate describes them. It must be remembered that he had only two specimens, and only one with rostrum.

The second pair of feet overreach the maxillipeds by the length of the chela and seven or eight joints of the carpus. The third, fourth, and fifth pairs of feet diminish in length in the order named; the third exceeds the maxilliped by the dactylus, propodus, and three-fourths of the carpus; the fifth reaches to end of proximal third of propodus of third.

*Distribution*.—South coast of Molokai Island, 115 to 134 fathoms, station 3853; Pailolo Channel, 122 to 143 fathoms, stations 3856, 3858, 4101, 4102, 4103, and 4104; Auau Channel, 126 to 130 fathoms, station 3896; vicinity of Kauai Island, 230 to 53 fathoms, station 4002; north coast of Maui Island, 45 to 52 fathoms, station 4070.

*Pandalus sindoi*, sp. nov.

(Pl. XXI, fig. 4.)

Near the preceding, *P. ocellus*. Differs in having the posterior four (instead of two) dorsal spines small, subequal and close together, although only the posterior two or three are movable. Eyes considerably larger. Antennular peduncle not reaching to end of second segment of antennular peduncle. Second pair of feet overreaching tip of maxilliped very slightly, not more than length of chela. Sixth abdominal segment longer, twice as long as fifth segment; telson correspondingly elongate.

Named for M. Sindo, of the Fish Commission party of 1901.

Only three adult specimens were taken, all fragmentary; two male (type, Cat. No. 30547) from station 3998, vicinity of Kauai Island, 235 to 228 fathoms, and one female, station 3953, vicinity of Laysan Island, 347 to 264 fathoms; also one young from station 3846, south coast of Molokai Island, 64 to 60 fathoms.

*Dimensions*.—Length of male 58, length of carapace 10.4, rostrum 16.2, abdomen 32.4, sixth abdominal segment 7.6, telson without terminal movable spines 7.5 mm. Length of larger male, exclusive of rostrum which is broken, 52.5 mm.

This may be *Pandalus* (*Plesionika*) *ocellus* Alcock non Bate (Desc. Cat., p. 98) of which there was only a single specimen, lacking the right leg of the second pair.

**Pandalus brevis**, sp. nov.

(Pl. XXI, fig. 3.)

Nearest to the European *P. brevirostris* Rathke. Although the dorsal carina arises behind middle of carapace, the spines begin at the anterior fifth. Rostrum short, as in the allied species, reaching to middle of second segment of antennula, armed with eleven to twelve spines above (five behind the orbit and none near the tip) and one below.

Surface microscopically pitted, the punctæ forming short transverse rows on the carapace.

Eyes very short and stout, cornea covering nearly whole of stalks; ocellus marginal, projecting a little from the cornea.

Last two antennular segments of equal length; peduncle two-thirds as long as antennal scale; the latter a little more than half as long as carapace (rostrum excluded); antennal peduncle extending to middle of last segment of antennular peduncle.

Outer maxilliped with exopod. First thoracic foot reaching nearly to end of acicle. Feet of second pair equal, stretching to a little beyond acicle, carpus 11-segmented. Fourth foot exceeding acicle by last segment and over half of penult segment. Epipods absent from last pair of legs only.

Sixth segment of pleon nearly twice as long as fifth; telson broken off.

*Dimensions*.—Length of carapace proper 7.8, rostrum 2.7, abdomen, exclusive of telson, 16 mm. The specimen from station 4139 is very much mutilated but considerably larger, about 50 mm. long.

*Distribution*.—Vicinity of Kauai Island, 512 to 339 fathoms, station 4139, 1 female; vicinity of Niihau Island, 426 to 417 fathoms, station 4180, 1 male (type, Cat. No. 30548).

**Pandalus exiguus**, sp. nov.

(Pl. XXI, fig. 2.)

A small species; body bent at a right angle at the third abdominal segment.

Rostrum about one and three-fourths as long as the carapace, bent strongly downward in front of eyes, terminal half ascending; spines of dorsal crest beginning at distal third of carapace, six or seven in number, the posterior one minute, then increasing anteriorly for four or five spines and becoming more horizontal; rostrum in front of eyes unarmed except near the tip, where there are two small spines, lower margin armed with eight to ten spines.

Abdomen nearly four times as long as carapace, slightly compressed but scarcely cristate at third segment, which is moderately produced at middle of posterior margin. Sixth segment twice as long as fifth and just as long as telson, which is armed with three pairs of side spines; inner uropods intermediate in length between telson and outer uropods. Eyes large, but transverse diameter not exceeding axial. Ocellus very large, extra-corneal. Antennular peduncle reaching to middle of acicle; second and third joints subequal. Acicle nearly as long as carapace, rounded at end which is in line with tip of spine. Antennal peduncle nearly reaching end of second segment of antennular peduncle. Maxillipeds reaching just beyond the tip of acicle; first pair of pereopods same length. The left leg of the second pair exceeds the rostrum, its carpus composed of about 40 segments; the right leg does not reach end of acicle, its carpus with 12 segments. The last three legs vary little in length; the last pair exceeds acicle by length of dactylus and a small bit of the propodus; the spines of the merus are of good size.

*Dimensions*.—Length of carapace of type, ovigerous female, 4.3, length of rostrum 7.5, length of abdomen 17 mm.

*Distribution*.—Vicinity of Kauai, 233 to 40 fathoms, station 3982 (type locality); northeast coast of Hawaii, 63 to 113 fathoms, stations 4062 and 4064. Cat. No. of type, 30549.

This species is nearest to *Nothocaris rostricrescentis* Bate, which is considerably larger, its rostrum curved more strongly upward, its sixth abdominal segment shorter.



FIG. 65.—*Pandalus brevis*, type, rostrum,  $\times 5\frac{1}{2}$ .



FIG. 66.—*Pandalus exiguus*, station 4062, left eye,  $\times 4\frac{1}{2}$ .

*Pandalus spinidorsalis*, sp. nov.

(Pl. XXI, fig. 5.)

Near *P. bifurca* (Alcock and Anderson). Surface microscopically rugose. Rostrum from three-fourths to four-fifths as long as rest of carapace, gastric carina reaching two-thirds length of carapace, armed with  $\frac{13}{4-6}$  spines, of which about 7-9 are on the carapace, the posterior spines smaller and closer. Telson as long as the fifth and sixth segments combined, the sixth short. Outer pair of terminal spines more than twice as long as inner pair. Ocellus indistinct. Antennular peduncle reaching about two-thirds the length of the antennal scale, the latter being half the length of the carapace proper. The outer maxillipeds reach end of acicle, while the first pair of legs reach as far as the distal third of the terminal joint of the maxilliped. They are provided with a minute dactylus but no chela. Of the second pair, the left leg is the longer and slenderer, with a carpus of thirteen to fourteen joints and reaches almost to end of maxilliped, while the right scarcely reaches end of antennal peduncle and has a five to six-jointed carpus. The third, fourth, and fifth pairs of feet diminish in the order named, the fourth being nearer the length of the third; the third exceeds the acicle by the dactylus and one-third of the propodus, while the fifth foot reaches middle of acicle; meral and carpal joints spiny below; succeeding joints setose.

*Dimensions*.—Female, station 3986, length (exclusive of movable spines of telson) 47, length of carapace 13.5, of rostrum 9.8, of abdomen 23, of telson 6.5, of sixth segment 3.8 mm.

This small species can be distinguished from most other species of *Pandalus* by the extension of the dorsal spines on the posterior half of the carapace.

*Distribution*.—Kaiwi Channel, 295 to 310 fathoms, stations 3467 and 3472; south coast of Oahu, 183 to 330 fathoms, stations 3813, 3914, and 3916; south coast of Molokai Island, 169 to 182 fathoms, station 3835; Pailolo Channel, 277 to 684 fathoms, stations 3868, 3883, 3899, and 3900; vicinity of Kauai Island, 55 to 362 fathoms, stations 3984, 3986 (type locality), 3998, 4001, 4130, and 4132; west coast of Hawaii Island, 147 to 232 fathoms, stations 4045 and 4047; north coast of Maui Island, 202 to 253 fathoms, stations 4081 and 4083; northwest coast of Oahu Island, 241 to 282 fathoms, stations 4116 and 4117; north-east approach to Pailolo Channel, 290 to 286 fathoms, station 4095. Cat. No. of type, 30550.

*Heterocarpus ensifer* A. Milne Edwards.

(Pl. XXI, fig. 7.)

*Heterocarpus ensifer* A. Milne Edwards, Ann. Sci. Nat., Zool. (6), XI, 1881, art. 4, p. 4; Rec. Pl.

Expéd. Travailleur, pl. xxvii, 1883. Bate, Challenger Macrura, 638, pl. cxii, fig. 4, 1888.

Borradaile, Stomatopoda and Decapoda of Willey's Exped., p. 413. Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 107, 1901.

?*Pandalus carinatus* Smith, Bull. Mus. Comp. Zool., X, 1882, 63, pl. X, figs. 2-2f and pl. xi, figs. 1-3.

*Heterocarpus carinatus* Wood-Mason, Ann. Mag. Nat. Hist. (6), IX, 1892, 369.

The specimens which have been referred to this species by different authors vary much in the dorsal surface of the first two abdominal segments. Bate describes and figures a low, thick carina on these segments, Alcock has the first carina faint, the second sharp, while according to Smith his *P. carinatus* has the segments evenly rounded above. A. Milne Edwards does not mention those segments, but in a fair-sized specimen from the Caribbean Sea (station 2359, *Albatross*) there is a feeble blunt carina visible on both segments. The Hawaiian form resembles the typical or West Indian in this regard. The carinae of the third and fourth segments are more prominent and their posterior spine longer.

This is one of the most abundant of the deep-water shrimps taken about the Hawaiian Islands.

*Distribution*.—Kaiwi Channel, 220 to 375 fathoms, stations 3467, 3470, 3471, 3472, 3474, 3475, 3476, 3893, 4105, and 4106; south coast of Oahu Island, 42 to 337 fathoms, stations 3810, 3811, 3813, 3814, 3815, 3817, 3818, 3909, 3910, 3911, 3912, 3914, 3917, 3918, 3919, and 3920; south coast of Molokai Island, 259 to 266 fathoms, station 3839; Pailolo Channel, 31 to 290 fathoms, stations 3865, 3866, 3867, 3883, 3884, 3898, 3899, 3900, and 3901; vicinity of Laysan Island, 264 to 351 fathoms, stations 3952 and 3953; vicinity of Kauai Island, 55 to 469 fathoms, stations 3986, 3988, 3998, 4001, 4016, 4017, 4130, 4131, 4132, 4134, 4135, and 4136; west coast of Hawaii Island, 382 to 253 fathoms, station 4041; north coast of

Maui Island, 178 to 267 fathoms, stations 4080, 4081, 4082, 4083, and 4084; northeast approach to Pailolo Channel, 272 to 290 fathoms, stations 4095, 4096, and 4097; northwest coast of Oahu Island, 195 to 282 fathoms, stations 4115, 4117, 4120, and 4121; southwest coast of Oahu Island, 352 to 357 fathoms, station 4123.

*Color*.—Carapace translucent, showing anatomy, dark dirty crimson lake in front, very pale behind. Abdomen pale rose madder pink. Swimmerets and thoracic legs bright Chinese vermilion tending to carmine. Eyes black, iridescence yellow.

#### ***Heterocarpus lævigatus* Bate.**

*Heterocarpus lævigatus* Bate, Challenger Macrura, 636, pl. cxii, fig. 3, 1888; Anderson, Ann. Mag. Nat. Hist. (7), III, 1899, 285. Illus. Zool. Investigator, Crust., pl. xlii, figs. 1, 1a, 1899. Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 105, 1901.

The Hawaiian specimens show the following variations from the description of Alcock (loc. cit.):

In four of the largest specimens, regardless of sex, the rostrum is shorter than the carapace. In many cases there are seven dorsal teeth, including the one or two on the rostrum; in one specimen there are eight teeth.

Dimensions of largest specimen, an egg-bearing female: Length of rostrum, 40 mm.; of carapace, 48.5 mm.; of abdomen, 91 mm.

*Distribution*.—Kaiwi Channel, 314 to 460 fathoms, stations 3470, 3474, 3475, 4105, 4106, 4109, 4110, 4112, and 4113; Pailolo Channel, 256 to 311 fathoms, stations 3865 and 3901; south coast of Oahu Island, 308 to 337 fathoms, stations 3909 and 3910; French Frigate Shoal, 395 to 397 fathoms, station 3973; vicinity of Kauai Island, 165 to 632 fathoms, stations 3988, 3992, 4013, 4021, 4028, 4137, and 4141; southwest coast of Oahu Island, 357 to 350 fathoms, station 4124; vicinity of Niihau Island, 319 to 426 fathoms, stations 4178 and 4179.

#### ***Heterocarpus signatus*, sp. nov.**

(Pl. xxi, fig. 6.)

This species is represented by only two small and soft-shell specimens, which resemble the young of *H. vicarius* Faxon.

Rostrum a little longer than carapace. Dorsal crest reaching nearly to posterior margin, armed with six large spines followed anteriorly by six or seven small ones; four or five spines on the carapace proper, the posterior one at its middle. Lower margin with ten small spines. Upper lateral carina of carapace much straighter than in *H. vicarius*; a very short carina leading from the antennal spine; the branchiostegal spine much longer and more advanced than the antennal, and its carina extending two-thirds the length of the carapace. Abdomen similar to that of *H. vicarius*, only the third segment being crested and that bluntly; at the posterior third of the crest in both specimens a small, oval depression resembling a scar. The inner branch of the uropods is distinctly longer than the telson; in *H. vicarius* just as long. Acicle nearly two-thirds length of carapace, longer than in *H. vicarius*, the antennular peduncle extending no farther than the middle of it. Maxilliped provided with an exopod and reaching nearly to end of acicle. The first pair of feet reach to same point and have a microscopic dactylus. The second foot on the right extends nearly to end of antennal peduncle, its carpus with eight joints. The second foot on the left extends beyond the peduncle by the length of the chela and three segments of the carpus, which has twenty-one joints. The third foot exceeds the acicle by length of its dactylus and two-fifths of the propodus; the fifth foot just attains end of acicle. These legs are considerably longer in *H. vicarius*.

*Dimensions*.—Largest specimen, length of carapace 12.8 mm., of rostrum 13.5 mm., of abdomen 25 mm.

*Type locality*.—West coast of Hawaii Island, 382 to 253 fathoms, station 4041 (Cat. No. 30551).

#### ***Heterocarpus alexandri* A. Milne Edwards.**

*Heterocarpus alexandri* A. Milne Edwards, Rec. Pl. Expéd. Travailleur, pl. xxviii, 1883.

Vicinity of Kauai Island, 811 to 671 fathoms, station 4181; one specimen.

## Family ATYIDÆ.

*Atya bisulcata* (Randall).

*Atyoida bisulcata* Randall, Jour. Acad. Nat. Sci. Phila., VIII (1839) 1840, 140, pl. v, fig. 5. See Bouvier, Comptes Rendus Acad. Sci. Paris, CXXXVIII, 1904, 446, and Ann. Mag. Nat. Hist. (7), XIII, 1904, 377.

*Distribution*.—Kaiwika, Hilo, Hawaii, 1,800 feet altitude, 3 miles from sea, H. W. Henshaw. Pepeekeo, 10 miles from Hilo, H. W. Henshaw; "fresh-water rivulet directly over the sea but having no connection with it." Lahaina, Maui, U. S. Fish Commission; "fresh-water stream in canyon 5 miles east of Lahaina, April 12, 1902; inhabits a cool, swift mountain stream and is found back under the rocks, usually where there is a little fall. Species common."

Hawaiian Islands (Randall). Fragments of type in Museum of Philadelphia Academy of Natural Sciences. Hawaii (Stimpson). Oahu (Dana, Sharp). Honolulu (Bate).

Color "mottled grayish olive, tinges of red on lateral lappets of carapace."

*Ortmannia henshawi* Rathbun.

*Atya bisulcata* Sharp, Proc. Acad. Nat. Sci. Phila., 1893, 111 (part, Cat. No. 162).

*Atyoida bisulcata* Ortmann, Proc. Acad. Nat. Sci. Phila., 1894, 407.

*Ortmannia henshawi* Rathbun, Bull. U. S. Fish Com., XX, 1900, 2, 120, 1901.

An atavic form of *Atya bisulcata*. (See Bouvier, loc. cit.)

*Distribution*.—Kaiwika, Hilo, Hawaii, 1,600 to 1,800 feet altitude, 3 to 5 miles from the sea, H. W. Henshaw. Pepeekeo, 10 miles from Hilo (with the preceding). Hilo, R. C. McGregor. Mountains of West Maui, near Wailuku, Iao Valley, 100 feet altitude, R. C. McGregor. Lahaina, Maui (with the preceding species).

*Caridina brevisrostris* Stimpson.

*Caridina brevisrostris* Stimpson, Proc. Acad. Nat. Sci. Phila., XII, 1860, 29 [98].

A small species, length about 13.4 mm.

Rostrum short, triangular, sharp-pointed, not reaching end of first antennular segment. No antennal spine on carapace. Eyes transversely placed, scarcely exceeding peduncle of antennulæ. Antennular segments very short, second shorter than first, third shorter than second; basal scale reaching end of first segment. Antennal peduncle extending to end of second antennular segment; scale oblong, its outer spine more advanced than the antennular peduncle. Wrist of first pair of feet shorter than propodus and attached

near middle of palm. Wrist of second pair as long as propodus and nearly as long as merus and ischium together, widening distally, extremity hollowed out similar to that of the first pair. Chelæ of both pairs very broad and similar; fingers shorter than palm, tips transparent, fringed with stout hair.

"Color vermilion."

*Distribution*.—Five miles south of Puako Bay, Hawaii, July 13, 1902; "taken in small fresh or slightly brackish water pools in lava flow, near sea. The shrimps were found in some numbers on the rocks in the bottom of these pools." Hilo, Hawaii, H. W. Henshaw.

I have referred these specimens to the species which Stimpson describes very briefly from Loo Choo, although I have seen no other specimens.

In the hollowing of the carpus of the second foot, the species approaches the genus *Ortmannia*.

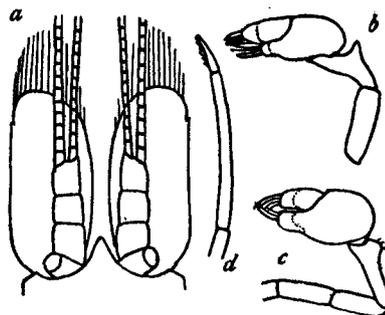


FIG. 67.—*Caridina brevisrostris*, Puako Bay. a, Antennal region, much enlarged. b, First foot,  $\times 16$ . c, Second foot,  $\times 16$ . d, Portion of one of last three pairs,  $\times 16$ .

## Family PONTONIIDÆ.

**Harpilius depressus** Stimpson.

(Pl. xxiv, fig. 12.)

*Harpilius depressus* Stimpson, Proc. Acad. Nat. Sci. Phila., XII, 1860, 38 [107].*Anchistia spinigera* Lenz, Zool. Jahrb., Syst., XIV, 1901, 434 (?*A. spinigera* Ortmann).

Honolulu, 1901; reef in front of Honolulu, 1901; Waikiki Beach, 1901.

Island of Hawaii among madrepores (Stimpson). Laysan (Lenz).

Rostral formula in our specimens  $\frac{6-7}{4}$ . Rostrum deeper than in Savigny's figure of *H. beaupresi* Audouin. Telson with either one or two pairs of dorsal aculei.The antepenult joint of the third maxilliped is much narrower than in *H. lutescens* Dana; the terminal joint of the second maxilliped is suboval and articulated at the end of the penult joint. In these respects, it approaches the genus *Anchistus* Borradaile.FIG. 68.—*Harpilius depressus*, Honolulu, 1901, rostrum,  $\times 4\frac{1}{2}$ .**Coralliocaris quadridentata**, sp. nov.

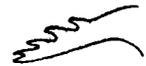
(Pl. xxiv, fig. 1.)

Body subcylindrical. Rostrum laterally compressed, narrow, reaching just to end of first antennular segment, directed slightly downward, armed above with four teeth, below entire. A strong spine at outer angle of orbit. Eyes stout, reaching about three-fourths length of rostrum. Second and third antennular segments very short, together shorter than the first, which has an outer distal spine. Antennal scale reaching to end of second antennular segment, blade rounded and fringed with hair, outer spine small and less advanced; peduncle reaching to end of first antennular segment; flagellum at least half as long as body.

Antepenult segment of third maxilliped only a little wider than the following joints and nearly as long as their combined length. First pair of feet as long as antennules; carpus equal in length to merus; propodus two-thirds of carpus; palm and fingers subequal. Second pair very unequal, but similar in form. Right or larger nearly as long as body; carpus very short, triangulate; propodus very stout, palm twice as long as high, crossed transversely by very fine rugæ; fingers about one-third as long as palm; pollex curved, with two basal teeth on prehensile edge; dactyl strongly enlarged distally, a deep sinus near the base. Left cheliped only about half as long as body and correspondingly narrow; dactylus more orbicular. Dactyli of last three pairs short, curved, thickened at base, and with an accessory spinule. Telson with two pairs of lateral spinules.

A small species, measuring 10 mm. long.

One specimen only from Anau Channel, 28 to 43 fathoms, station 3876 (Cat. No. 30552).

This species comes nearest to *C. tridentata* Miers, but the eyes are longer, the palm is not carinated below, and the pollex is dentate.FIG. 69.—*Coralliocaris quadridentata*, type, rostrum,  $\times 17\frac{1}{2}$ .**Coralliocaris truncata**, sp. nov.

(Pl. xxiv, fig. 2.)

Body shaped as in the preceding (*C. quadridentata*). Rostrum half as long as carapace, reaching barely to end of antennular peduncle; inclined slightly downward; superior crest armed with six small spines, the first and second separated by the greatest distance; extremity truncate, armed with three small spines, one of which is the terminal one of the upper margin; in dorsal view rostrum broad at base, flanked on either side by a strong supra-ocular spine. A strong antennal spine also. Eyes very stout, cylindrical. Second and third joints of antennular peduncle very short, subequal, and together not so long as the first; flagella short. Antennal peduncle reaching end of first antennular segment; scale extending with about one-third its length beyond antennular peduncle, very broad, outer margin straight, inner very convex, antero-external spine very slender and exceeding the blade. Two last joints of third maxilliped distinctly narrower than antepenult joint, and together about equaling the

latter. First pair of chelipeds very slender; if extended, the chela would overreach the acicle; merus and carpus subequal in length, chela three-fourths as long as carpus, palm and fingers subequal. Legs of second pair stout, extending beyond the acicle by the chela and half the carpus; merus of right or larger foot nearly as high as long, two small teeth on the outer distal margin; carpus cyathiform, distal margin very thin; propodus a little more than twice as long as wide, inner margin nearly straight; outer convex, surface granulate; fingers about two-thirds as long as palm, with a few teeth on prehensile margin. Left cheliped similar except for smaller size; fingers slenderer and longer than palm, edges subentire.

The dactylus of the remaining legs is short, broad at base, and has a supplementary spine. Telson one and two-thirds times as long as sixth segment, with two pairs of longish lateral spines, and three pairs of terminal spines, of which the intermediate pair are half as long as the segment.

Length 8.5 mm., carapace 3.5 mm.

South coast of Molokai Island, 23 to 24 fathoms, station 2847, one specimen (Cat. No. 30553).

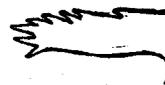


FIG. 70.—*Coralliocaris truncata*, type, rostrum,  $\times 20$ .

***Periclimenes pusillus*, sp. nov.**

(Pl. xxiv, fig. 7.)

A small *Periclimenes* very close to *P. parvus* Borradaile,<sup>a</sup> but differing as follows:

The rostrum is as long as, not shorter than, the carapace; its upper outline is ascending before descending; dental formula, in the four specimens,  $\frac{6}{2}$  instead of  $\frac{7}{1}$ . The carapace has a short antennal, but no hepatic spine. The second pair of feet overreach the antennal scale by the length of the propodite, as in the figure of *P. parvus*. The dactyli of the third to fifth pairs are shorter and uniunguiculate. Otherwise the description of *P. parvus* applies to this species.

Four specimens, each about 9 mm. long, from south coast of Oahu, surface, station 3921 (Cat. No. 30554).



FIG. 71.—*Periclimenes pusillus*, type, rostrum,  $\times 12$ .

***Periclimenes*, sp.**

*Distribution*.—South coast of Molokai Island, 23 to 24 fathoms, station 3847; vicinity of Kauai Island, 68 to 179 fathoms, station 4128.

Two specimens lacking rostrum and feet of second pair do not agree entirely with any species described, but come nearest to *P. ensifrons* (Dana), from which they differ chiefly in the greater length of the feet of the first pair, which in the smaller example exceed the antennal scale by the length of the chela and half the carpus, in the larger example by length of chela and nearly whole of carpus. Length of larger specimen, station 3847, without rostrum, 10.5 mm.

**Family OPLOPHORIDÆ.**

***Oplophorus gracilirostris* A. Milne Edwards.**

*Oplophorus gracilirostris* A. Milne Edwards, Ann. Sci. Nat., Zool. (6), XI, 1881, Art. 4, p. 6; Recueil Planches Exped. "Travailleur," pl. xxx, 1883.

*Hoplophorus gracilirostris* Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 73, 1901, and synonymy.

*Distribution*.—Kaiwi Channel, 295 to 433 fathoms, stations 3470, 3472, 4105, and 4113; south coast of Oahu Island, 228 to 322 fathoms, stations 3815, 3908, 3909, 3914, 3918, and 3920; south coast of Molokai Island, 222 to 498 fathoms, station 3824; Pailolo Channel, 256 to 284 fathoms, stations 3865 and 3899; vicinity of Kauai Island, 257 to 326 fathoms, stations 3990, 4130, and 4131; northeast approach to Pailolo Channel, 306 to 308 fathoms, station 4092; northwest coast of Oahu Island, 282 to 253 fathoms, station 4117.

*Color*.—Bright carmine pink.

<sup>a</sup> Ann. Mag. Nat. Hist. (7), II, 1898, 384; Willey, Zool. Results New Britain, etc., Pt. IV, 407, pl. xxxvi, figs. 3a-3c, 1900.

**Oplophorus foliaceus**, sp. nov.

(Pl. xx, fig. 8.)

Rostrum slender, upcurved, one and a half times as long as the rest of the carapace, produced as a sharp carina to the posterior border of the carapace; with  $\frac{1}{2}$  teeth; its sides continued back by a very short post-orbital carina. No tooth at post-lateral angle of carapace. Second, third, and fourth abdominal segments terminating in a spine, that of the second segment much the longest.

In the female the pleuron of the first segment is oblong, not incised; of the second longer than high; of the third to fifth segments broadly rounded, not toothed. Telson longer than caudal swimmerets, armed with three spinules on each side, followed by a very long spine. Antennular peduncle with basal joint the longest; flagella nearly as long as rostrum. Antennal scale the length of carapace; four serrations on outer margin. Outer maxillipeds similar to those of *O. gracilirostris*. Second pair of feet a little shorter than first pair. Third pair longer than maxillipeds by length of last article, this article in both third and fourth pairs longer than the propodus; lower border of ischium and merus spined. The exopods of all the trunk legs are foliaceous, but not rigid; those of fifth pair much reduced in length. The two



FIG. 72.—*Oplophorus foliaceus*, station 4108. a, Telson,  $\times 34$ . b, Exopod of second foot (enlarged).

females carry nine and ten large oval eggs, respectively.

*Dimensions*.—Ovigerous female, length of carapace 8.4, rostrum 13.8, abdomen 32, greatest diameter of egg 2.5 mm.

*Distribution*.—Kaiwi Channel, 337 to 442 fathoms, stations 3471 (type locality), 1 female (Cat. No. 30555), and 4108, 1 female.

This species differs from all previously described in having a long spine on the second abdominal tergum, and in the foliaceous exopods of all the trunk legs.

**Acanthephyra eximea** Smith.

*Acanthephyra eximea* Smith, Rept. U. S. Fish Commr. for 1882, p. 376 (1884); Rept. for 1885, 667, pl. xiv, fig. 1 (1886).

*Acanthephyra eximia* Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 76, 1901 and synonymy.

*Distribution*.—North coast of Molokai Island, 552 to 809 fathoms, station 3887; vicinity of Modu Manu, 876 to 1,059 fathoms, stations 3977 and 4153; vicinity of Kauai Island, 339 to 773 fathoms, stations 3985, 4004, 4005, 4018, 4019, 4028, 4029, 4137, 4140, 4141, and 4187; Kaiwi Channel, 433 to 470 fathoms, stations 4110, 4111, and 4112.

In these specimens the rostral spines are  $\frac{5-6}{3-4}$ , except in the large individual from station 3887, where they are  $\frac{4}{3}$ , the rostrum not reaching end of acicle and its terminal half unarmed. The spine of the third abdominal segment reaches about to the middle of the fourth segment as in the type.

*Color*.—Bright carmine, nearly uniform; or scarlet vermilion.

**Acanthephyra debilis** A. Milne Edwards.

*Acanthephyra debilis* A. Milne Edwards, Ann. Sci. Nat., Zool. (6), XI, 1881, Art. 4, p. 13. Faxon, Mem. Mus. Comp. Zool., XVIII, 1895, 163.

*Miersia gracilis* Smith, Bull. Mus. Comp. Zool., X, 1882, 70, pl. xi, figs. 4-4d.

*Acanthephyra debilis* var. *Europaea* A. Milne Edwards, Rec. Pl. Travailleux, pl. xxxiii, 1883.

*Acanthephyra gracilis* Smith, Rept. U. S. Fish Commr. for 1882, 672 (1884).

Vicinity of Kauai Island, 478 to 453 fathoms, station 4029; one specimen.

## Family PALÆMONIDÆ.

*Bithynis grandimanus* (Randall).

(Pl. xxii, fig. 5.)

*Palemon grandimanus* Randall, Jour. Acad. Nat. Sci. Phila., VIII, 1839 (1840), 142.*Palemon gracilimanus* Randall, op. cit., p. 143.*Palemon grandimanus* Dana, Crust. U. S. Expl. Exped., I, 588, 1852; pl. xxxviii, fig. 12a-b, 1855; Ortmann, Zool. Jahrb., Syst., V, 1891, 736 and 740. Lenz, Zool. Jahrb., Syst., XIV, 1901, 436, pl. xxxii, figs. 4 and 5.*Palemon acutirostris* Dana, op. cit., p. 590, 1852; pl. xxxix, fig. 1a, a', b, 1855. Streets, Bull. U. S. Nat. Mus., No. 7, 1877, 119.*Bithynis grandimanus* Bate, Challenger Macrura, 793, pl. cxxix, figs. 2 and 3, 1888.

*Notes on the type specimens.*—Hawaiian Islands, type locality (Randall). Two male specimens collected by Messrs. Nuttall and Townsend are preserved in the Museum of the Philadelphia Academy of Natural Sciences. They are 67 and 63 mm. in length. Both claws of the smaller specimen are extant, but only the smaller claw of the larger specimen; in both, the rostral teeth number  $\frac{1}{4}$ . Rostrum a little less than two-thirds the length of rest of carapace, not reaching end of acicle; dorsal crest convex, extending backward one-third the length of the carapace. Body stout; antennal tooth strong; hepatic tooth (or one behind antennal) very small in comparison; antero-lateral angle rounded, unarmed. Telson with two pairs of dorsal spinules; a spiniform median tip, outside of which are two pairs of movable spines, the inner pair long and stout and extending half their length beyond the median spine; the outer pair small and reaching only half as far as median spine; underneath the latter is a bunch of long bristles which reach as far as the longest spines.

Acicle oblong, truncate, outer spine not exceeding blade. Merus of first pair of feet reaching just to end of antennal peduncle; carpus, when extended, to end of acicle; chela slightly more than twice length of carpus.

The larger claw is 80 mm. long, the smaller one on same individual 43 mm. long. Carpus of larger claw a little longer than merus, increasing in diameter to the distal end; manus one and a half times as long as carpus, compressed; greatest width a little more than one-third length, upper margin convex, forming a single curve to the end of the dactylus; this last slender, nearly as long as palm, strongly curved down, prehensile teeth irregular, the largest at the middle, three somewhat smaller near the base; pollex broken off near its base. Carpus of smaller claw has same shape and same length in relation to its merus as in the larger claw; palm a little over two-thirds as long as the carpus, compressed but not dilated, only a little more than twice as long as wide. Dactylus two and a third times as long as palm; both fingers slender and curved so that their concave surfaces are presented to each other, tips crossing; fingers furnished along their prehensile edges with long bristles. Both claws rough with spinules and hairy.

Remaining appendages a good deal broken, but the feet of fourth pair reaching to distal fourth of acicle.

The types of *P. gracilimanus* Randall (op. cit., p. 143), from the Hawaiian Islands, were not to be found in the museum of the Philadelphia Academy June 17, 1904, although noted by Sharp in 1893. I think it is probable that this species is synonymous with *P. grandimanus*, and represents a variation.

*Distribution.*—Taken by the Fish Commission in 1901 at Waianae, Oahu; Opae Oehaa; Hilo; Honolulu; run at Mauna Loa; Heeia; Kaneoke Cove, Heeia; in 1902 at Hanalei River at Hanalei, Kauai; Hauapepe River, Kauai; Huleia River, Nawiliwili, Liliue district, Kauai; Waimea River, Kauai; Honolulu market.

Oahu, Dr. T. H. Streets, U. S. Navy; Hilo, Hawaii, H. W. Henshaw; Waiakla River, near Hilo, H. W. Henshaw.

Hawaiian Islands (Dana, Streets). Honolulu (Bate); a few specimens taken by the *Challenger* are in the U. S. National Museum. Kalihi, Oahu (Lenz).

Very young specimens have the rostrum concave above, the tip slender and inclined upward; with age the rostral crest becomes more convex for its posterior two-thirds and toward the tip may be horizontal or even inclined downward.

*P. acutirostris* as figured by Dana represents a female. There are egg-laden females only 39 mm. long in the Fish Commission collection.

*Hippolyte gracilipes* Randall (Proc. Acad. Nat. Sci. Phila., 142, 1840); according to Gibbes (Proc. Amer. Assoc. Adv. Sci., III, 1850, 197 [33]) is a *Palæmon*; Sharp, in his list of *Macrura* in the Museum of the Philadelphia Academy (Proc. Acad. Nat. Sci. Phila., 1893, 115-117) does not mention *Hippolyte gracilipes*. I did not find the type in the summer of 1904.

**Palæmon debilis Dana.**

(Pl. xxii, fig. 1.)

*Palæmon debilis* Dana, Crust. U. S. Expl. Exped., I, 585, 1852; pl. xxxviii, fig. 6, 1855.

*Palæmon debilis* var. *attenuatus* Dana, op. cit., 585, pl. xxxviii, fig. 7.

*Leander debilis* Stimpson, Proc. Acad. Nat. Sci. Phila., XII, 1860, 40 [109]. Ortmann, Zool. Jahrb., Syst., V, 1890, 515. Lenz, Zool. Jahrb., Syst., XIV, 1901, 435.

Rostral formula  $\frac{4-6}{7-10}$ , tip bifid; terminal half unarmed above. Sixth abdominal segment two-thirds as long as carapace. Carpus of second pair of feet longer than propodus.

Taken by the Fish Commission in 1901, at Opaë; Mauna Loa in coral pools; Pearl Harbor; in 1902, at Honolulu Reef; Kealakekua Bay, Hawaii; Puako Bay, Hawaii; south coast of Molokai Island, station 3844. Hilo, Hawaii, H. W. Henshaw.

Hawaiian Islands (Dana, Stimpson); var. *attenuatus*, Hilo (Dana). Lahaina, Maui, brackish pond; Oahu; Kaliki, fresh water lake, Oahu (Lenz). Oahu (Sharp).

**Palæmon pacificus (Stimpson).**

(Pl. xxii, fig. 3.)

*Leander pacificus* Stimpson, Proc. Acad. Nat. Sci. Phila., XII, 1860, 40 [109]. Ortmann, Zool. Jahrb., Syst., V, 1890, 515.

Less abundant than the preceding. Rostral formula  $\frac{7-8}{4-5}$ , tip obliquely trifid; sometimes the accessory subterminal teeth rather remote from tip, so that there appear to be nine or ten dorsal teeth. Sixth abdominal segment half as long as carapace. Carpus of second pair of feet shorter than propodus.

Taken by the Fish Commission in 1901 off pier, Moana Hotel, in 1902 at Honolulu Reef and at Hilo. Hilo, Hawaii, H. W. Henshaw.

Hawaii (Stimpson).

**Palæmon pandaloides, sp. nov.**

(Pl. xxii, fig. 4.)

Median carina extending halfway back on the carapace. Rostrum from one and a half to nearly twice as long as rest of carapace; slender, ascending; armed above with seventeen movable overlapping spines, of which five are behind the orbit, the remainder on the basal two-fifths of the rostrum, distal portion unarmed above except for subterminal spine; thirteen fixed spines below, which diminish in size distally, the last one remote from tip.

A long antennular spine and a somewhat shorter antennal spine on the anterior margin of carapace. Sixth pleonic segment twice as long as fifth, and nearly as long as telson, which has two pairs of lateral spines.

No distinct ocellus on the eye. Antennular peduncle extending to middle of antennal scale; basal spine overlapping second segment a little, third segment slightly shorter than second; flagella at least as long as rostrum. Basal segment of antenna with an outer distal spine; scale nearly as long as carapace, extremity very oblique, outer spine less advanced than end of blade; peduncle reaching just to end of second segment of antennular peduncle. Outer maxillipeds very slender, exceeding antennal peduncle by over half the terminal segment.

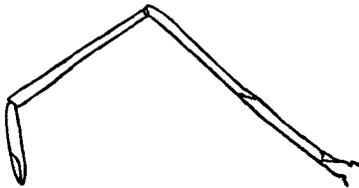


Fig. 73.—*Palæmon pandaloides*, type, foot of second pair,  $\times 34$ .

The first pair of trunk feet reach to distal third of acicle, carpus one and a half times merus, enlarged distally; propodus same length as merus, not larger than distal end of carpus, fingers half as long as palm. The left foot of the second pair exceeds the scale by the length of half the propodus; it is similar in form and thickness to the first; merus three-fourths as long as carpus, which is twice as long as propodus; palm twice as long as fingers. The right foot of second pair in type specimen is missing, but the basal joint appears somewhat stouter than that of the left foot. Both feet of second pair are missing from second specimen. The third foot reaches end of acicle, the fifth extends only to distal third of acicle; in the second specimen these feet are a little longer.

*Dimensions*.—Male, length of carapace, 9.5; rostrum, 15.7; abdomen, 31 mm.

Vicinity of Kauai Island, 528 fathoms, station 3992; 1 male, 1 female (Cat. No. 30556).

This species in its long rostrum and acicle has great resemblance to a *Pandalus*.

#### *Palæmonella tenuipes* Dana.

*Palæmonella tenuipes* Dana, Crust. U. S. Expl. Exped., I, 582, 1852; atlas, pl. xxxviii, fig. 3 a-d, 1855.

South coast of Molokai Island, 8 fathoms, station 3834, one specimen about 11 mm. long, rostral formula  $\frac{7}{3}$ ; second pair of feet as long as body exclusive of rostrum.

One imperfect specimen of *Palæmonella* from northeast coast of Hawaii Island, 77 to 75 fathoms, station 4057, has much resemblance to *P. tridentata* Borradaile.<sup>a</sup> The rostrum and antennal joints are similar; rostral formula  $\frac{8}{3}$ , rostrum more ascending. Only feet of the first and fourth pairs are present, both very slender, the fingers of the first pair thin, blade-like, and quite as long as the palm. The outer uropod is longer than the inner.

#### *Palæmonella orientalis* Dana.

*Palæmonella orientalis* Dana, Crust. U. S. Expl. Exped., I, 583, 1852; atlas, pl. xxxviii, fig. 4 a-d, 1855.

South coast of Oahu, surface, stations 3812 and 3921; north coast of Molokai, surface, station 3889. Four specimens in all.

This species has a hepatic as well as an antennal spine; it is not shown in Dana's figure, but in his description of the genus (p. 582, op. cit.) he says: "In both species of the genus here described the carapax has two spines below the eye in nearly the same horizontal line."

The rostral formula in our specimens is  $\frac{6-7}{3}$ , with one spine behind the orbit; in Dana's type  $\frac{7}{3}$ .

In the second pair of feet the carpus is shorter than half the propodus, not shorter than half the palm, and the fingers are nearly or quite as long as the palm. The last three pairs of feet have biunguiculate dactyli, as in *P. biunguiculata* Nobili.

#### *Palæmonella laccadivensis* Alcock and Anderson.

(Pl. xxii, fig. 2.)

*Palæmonella laccadivensis* Alcock and Anderson, Jour. Asiatic Soc. Bengal, LXIII, 1894, 157; Ann. Mag. Nat. Hist. (7), III, 1899, 4; Illus. Zool. Investigator, Crust., part iv, pl. xxvi, fig. 4, 1896.

Vicinity of Kauai Island, 500 to 385 fathoms, station 3989, 1 female. The rostrum is longer than in the type, exceeding the acicle, and has thirteen instead of nine spines above, two of them being behind the orbit, and three spines below instead of two. Length, 33.2 mm.

Vicinity of Laysan Island, 222 to 100 fathoms, station 3943. One female laden with eggs is very much smaller than the preceding (15 mm. long); its rostral formula is  $\frac{5}{3}$ , the rostrum scarcely reaching beyond antennular peduncle.

<sup>a</sup> Proc. Zool. Soc. London, 1898, 1007, pl. LXIV, figs. 8-8c.

## Family GNATHOPHYLLIDÆ.

*Gnathophyllum fasciolatum* Stimpson.

*Gnathophyllum fasciolatum* Stimpson, Proc. Acad. Nat. Sci. Phila., XII, 1860, 97 [28].

Twelve small specimens, each about 7 mm. long, were taken at the surface at station 3921, south coast of Oahu Island. In alcohol they are colorless.



FIG. 74.—*Gnathophyllum fasciolatum*, station 3921, second foot,  $\times 12$ .

The rostrum does not quite reach the end of the first antennular segment, and has five or six teeth above and a small one subterminal below.

The eyes are relatively larger than in *G. elegans* (Risso), the sixth abdominal segment more elongate, and the caudal spines not so near the extremity, the anterior pair being at the middle of the telson.

The palm of the second pair of chelipeds is one and a half times as long as the fingers.

An examination of more Indo-Pacific material might prove this to be a new species. Stimpson's description is too brief to permit of certain identification.

## Family NEMATOCARCINIDÆ.

*Nematocarcinus ensiferus* (Smith).

*Eumiersia ensifera* Smith, Bull. Mus. Comp. Zool., X, 1882, 77, pl. XIII, figs. 1-9.

*Nematocarcinus ensiferus* Smith, Rept. Commr. Fish and Fisheries for 1882, 368 [24], pl. VII, fig. 1, 1884; Rept. Commr. Fish and Fisheries for 1885, 664 [60], pl. XVII, fig. 2, 1886.

*Nematocarcinus tenuipes* Bate, Challenger Macrura, 812, pl. CXXXII, fig. 6, 1888; Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 87, 1901.

*Nematocarcinus ensifer* Faxon, Mem. Mus. Comp. Zool., XVIII, 1895, 156.

The specimens are all rather small and the rostrum ranges from one-half in the larger to one-fourth in the smaller individuals of the length of the carapace, and the dorsal crest bears from twenty-three to twenty-six spines and one or none below.

*Distribution*.—Vicinity of Modu Manu, 293 to 1,059 fathoms, stations 4153 and 4166; vicinity of Niihau Island, 735 to 865 fathoms, station 4174; vicinity of Kauai Island, 1,000 to 1,314 fathoms, station 4185; 6 specimens in all.

*Nematocarcinus tenuirostris* Bate.

(Pl. XXIII, fig. 6.)

*Nematocarcinus tenuirostris* Bate, Challenger Macrura, 817, pl. CXXXII, fig. 10, 1898; Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 88, 1901.

This is the most abundant of the Hawaiian species of *Nematocarcinus*. The rostrum is from two-thirds to one-half as long as the rest of the carapace; in young specimens still shorter, between one-third and one-fourth of remainder of carapace. Rostrum usually horizontal, its lower margin straight as far as the subterminal spine; upper margin slightly convex, tip spiniform. Dorsal teeth nine to thirteen, from two to five behind the orbit, a few of the posterior teeth nearer together than the rest; ventral spines one or two.

Third abdominal tergum moderately produced and bluntly rounded; sixth twice as long as fifth.

The antennular peduncle reaches halfway along the acicle. The outer maxillipeds reach to or nearly to the distal fourth of the acicle. The first pair of feet exceed the acicle by length of chela and about one-fifth of carpus. The three last pairs are very elongate, being considerably longer than the body, and if extended would reach beyond the acicle by length of chela, carpus, and two-thirds of merus. A few distant spines arm the merus and distal end of ischium.

*Color*.—Bright pink.

This species, as Alcock has indicated, differs from *N. ensiferus* chiefly by the fewer rostral teeth and longer legs.

*Distribution.*—Kaiwi channel, 313 to 470 fathoms, stations 3470, 3473, 3474, 3475, 4106, 4108, 4109, 4110, 4111, 4112, and 4113; south coast of Molokai Island, 222 to 498 fathoms, station 3824; north coast of Molokai Island, 328 to 414 fathoms, station 3892; vicinity of Kauai Island, 165 to 881 fathoms, stations 3985, 3988, 3989, 3997, 4013, 4014, 4015, 4019, 4020, 4021, 4028, 4029, 4137, 4138, 4140, 4141, 4142, and 4187; between Honolulu and Kauai Island, 508 to 557 fathoms, station 4007; west coast of Hawaii Island, 382 to 253 fathoms, station 4041; vicinity of Modu Manu, 293 to 800 fathoms, station 4166; vicinity of Niihau Island, 672 to 417 fathoms, stations 4176 and 4180.

Although 275 specimens were taken, only a small number are provided with any legs.

#### *Nematocarcinus gracilis* Bate.

*Nematocarcinus gracilis* Bate, Challenger Macrura, 815, pl. cxxxii, fig. 8, 1888. Alcock, Desc. Cat. Indian Deep-Sea Crust. Dec. Macr. Anom., 90, 1901.

Rostrum one-third as long as carapace, teeth  $\frac{16-22}{1}$ , about seven of the dorsal spines on the carapace proper. Telson with its long terminal spines exceeds outer uropods. The antennular peduncle reaches a little beyond middle of acicle. Three-fifths of carpus of first pair of feet extend beyond acicle. Three hind pairs much longer than body, exceeding the latter by nearly one-fourth their length.

This species differs from *N. cursor* A. Milne Edwards much as *N. tenuirostris* Bate does from *N. ensiferus* (Smith); that is, in its more numerous and more closely set rostral teeth, and much longer legs.

*Distribution.*—South coast of Molokai Island, 430 to 371 fathoms, station 3826; north coast of Molokai Island, 295 fathoms, station 3904; south coast of Oahu Island, 294 to 330 fathoms, stations 3916 and 3917; French Frigate Shoal, 395 to 397 fathoms, station 3973; vicinity of Kauai Island, 165 to 703 fathoms, stations 3983, 3985, 3988, 3989, 3992, 4022, 4137, and 4187; Kaiwi Channel, 350 to 433 fathoms, stations 4107 and 4113.

#### Family STYLODACTYLIDÆ.

##### *Stylodactylus discissipes* Bate.

(Pl. xxiii, fig. 1.)

*Stylodactylus discissipes* Bate, Challenger Macrura, 851, pl. cxxxviii, fig. 1, 1888.

Vicinity of Kauai Island, 230 to 53 fathoms, station 4002; 1 female.

The dimensions are as follows: Rostrum 9, carapace 6.6, entire length 33.3 mm.; antennal flagellum 66 mm. Rostral formula  $\frac{3}{3}$ ; the ventral teeth are at irregular intervals, as if the normal number were greater. Surface of carapace densely and finely punctate, and with a deciduous pubescence.

Of the five pairs of lateral spines on the telson the posterior pair is almost in line with the posterior median spine; beneath the latter and across the end of the segment are two pairs of very long movable spines, of which the inner pair is three-fifths as long as outer pair.



FIG. 75.—*Stylodactylus discissipes*, telson,  $\times 4\frac{1}{2}$ .

#### Family PASIPHÆIDÆ.

##### *Pasiphæa kaiwiensis*, sp. nov.

(Pl. xxiii, fig. 4.)

Length of carapace contained in length of abdomen from two and two-thirds to two and four-fifths times. Carapace not carinate except at the anterior tooth, which is triangular, dentiform, with a spiniform tip, and does not reach the level of the anterior margin of the carapace. Branchiostegal spine situated over the anterior end of the branchiostegal sinus.

Abdomen not carinate; although the sixth segment is much compressed, it is very blunt and smooth above. Telson about three-fourths as long as sixth segment, its tip cut in a very shallow V.

Eyes considerably enlarged distally. Antennular peduncle reaching a little past middle of acicle, which is slightly more than half length of carapace.

The first two pairs of feet extend beyond acicle by about length of fingers; merus of first pair armed with one spine or none below; merus of second pair many-spined. Fingers of first pair subequal to palm; of second pair one and a half to one and two-thirds times as long as palm.

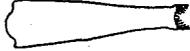


FIG. 76.—*Pasiphæa kaiwiensis*, station 3470, telson,  $\times 2\frac{1}{2}$ .

*Dimensions*.—Ovigerous female, length of carapace 25.7, length of abdomen 74 mm.

Kaiwi Channel, 343 to 337 fathoms, stations 3470 (type locality) and 3471; 8 specimens. Cat. No. of type, 30557.

This species is strongly like *P. americana* Faxon, but differs most notably in its longer acicle, longer fingers, and less deeply cut telson.

***Pasiphæa truncata*, sp. nov.**

(Pl. xxiii, fig. 5.)

Differs from *P. kaiwiensis* in having the sixth abdominal segment sharply carinate, the carina terminating in a short, pointed tooth; in having the telson more deeply grooved and its tip truncate; in having the acicle just half as long as carapace; the merus of first pair of feet armed below with many spines; fingers about two-thirds as long as palm, those of second pair a little longer than palm.

There are also minor differences, such as the greater prominence of the median frontal lobe, the greater obliquity of the angle of the branchiostegal sinus.

*Dimensions*.—Male (station 4166), length of carapace 24.5, length of abdomen 66 mm.

*Distribution*.—Kaiwi Channel, 351 to 375 fathoms, stations 3474 and 3475; vicinity of Modu Manu, 293 to 800 fathoms, station 4166 (type locality); 4 specimens. Cat. No. of type, 30558.

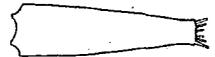


FIG. 77.—*Pasiphæa truncata*, station 3474, telson,  $\times 2\frac{1}{2}$ .

***Pasiphæa flagellata*, sp. nov.**

(Pl. xxiii, fig. 2.)

Length of carapace contained little more than twice in length of abdomen. Carapace similar to that of *P. kaiwiensis*; median tooth farther back.

Abdomen with sixth segment bluntly carinate, and very slightly exceeding the telson, which is deeply grooved, and has the tip truncate aside from the movable spines.



FIG. 78.—*Pasiphæa flagellata*, station 4108, telson,  $\times 2\frac{1}{2}$ .

Acicle less than half as long as carapace. Antennal flagellum very long (twice as long as body) and very fine in distal half. The two pairs of chelipeds exceed the acicle by the fingers and about one-fourth the palm. Fingers of first pair three-fourths as long as palm, of second pair a little longer than palm. Merus of first pair armed below with three or four, of second pair with many spines.

*Dimensions*.—Female (station 4108), length of carapace 24.6, of abdomen 53.2 mm.

*Distribution*.—North coast of Molokai Island, 295 fathoms, station 3904; vicinity of Kauai Island, 362 to 399 fathoms, stations 4014 and 4022; Kaiwi Channel, 411 to 442 fathoms, station 4108 (type locality); 6 specimens. Cat. No. of type, 30559.

*P. flagellata*, like the two preceding species, belongs to the same group as *P. americana* Faxon and *P. affinis* Rathbun, in which the carapace is not carinated, the gastric spine does not overreach the frontal margin, and the branchiostegal spine is anteriorly placed. It differs, however, in its truncate telson, from all of the group except *P. truncata*; from *P. americana* in its longer carapace and chela with proportionally longer fingers and its longer telson; from *P. affinis* in its noncarinated abdomen, except the sixth segment; from *P. kaiwiensis* and *P. truncata* in longer carapace, shorter acicle, etc.

***Psathyrocaris hawaiiensis*, sp. nov.**

In the vicinity of Modu Manu in 876 fathoms, station 3977, was found a specimen of a species differing from any yet described. The specimen is much damaged and devoid of a large share of its appendages.

Rostrum nearly half as long as carapace, reaching beyond middle of second antennular segment; upper margin straight, armed with seventeen close-set spines above, of which only two are behind the orbit, the crest not being prolonged farther back, and five minute spinules below, this margin appearing unarmed to the naked eye; tip acuminate.

Eyes much flattened, as in *P. platyophthalmus*, Alcock and Anderson, showing only a narrow crescent of light-colored pigment.

The antennular scale overlaps a little the second segment, which is three times as long as the third; the peduncle reaches somewhat beyond middle of antennal scale; the antennal peduncle falls very little short of the antennular.

Outer maxilliped reaching to end of acicle. The only trunk-leg remaining is one of the third pair, and reaches to middle of acicle and has a falcate dactylus which is the same length as the propodus and more than twice as long as carpus.

The abdomen is too mutilated to show any distinctive character; none of the pleopods are perfect.

Length of rostrum 5.8, of carapace 11.5 mm.

Differs from other species in longer and more slender rostrum, longer second joint of antennula.

Cat. No. of type, 30560.

#### *Leptochela robusta* Stimpson.

*Leptochela robusta* Stimpson, Proc. Acad. Nat. Sci. Phila., XII, 1860, 112 [43].  
Bate, Challenger Macrura, 862, pl. CXXXIX, figs. 3 and 4, 1888.

*Distribution*.—South coast of Oahu Island, surface, stations 3812 and 3921; south coast of Molokai Island, surface, station 3829.

These specimens average 13 mm. in length. Rostrum very slender, shorter than eyes. Longer antennular flagellum longer than carapace. Fifth abdominal segment very bluntly and obscurely carinate; sixth segment with a median tubercle at proximal end, which, however, is hidden under the preceding segment when the abdomen is horizontally extended. The three pairs of dorsal spines on the telson very remote from one another, one pair at middle, one very near distal end and the other very near proximal end.

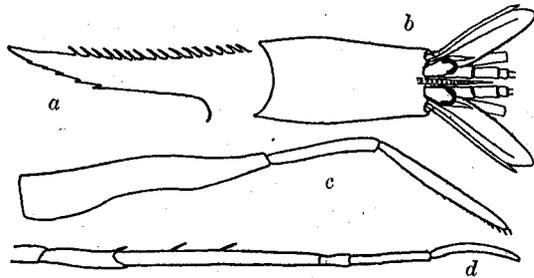


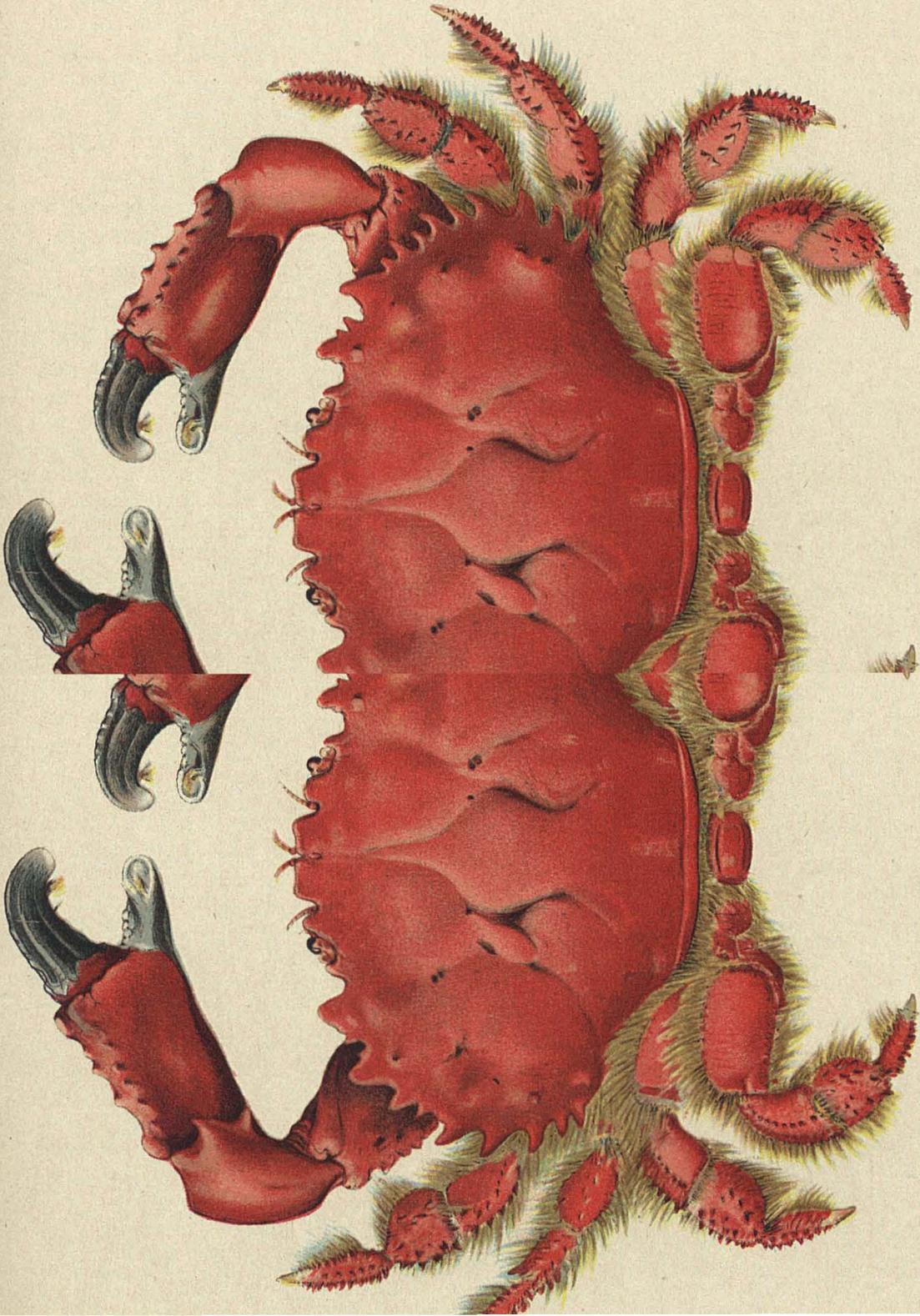
FIG. 79.—*Peathyrocaris hawaiiensis*, type. a, Rostrum,  $\times 4$ . b, Carapace and antennal region,  $\times 1\frac{1}{2}$ . c, Outer maxilliped,  $\times 4$ . d, Third foot,  $\times 4$ .

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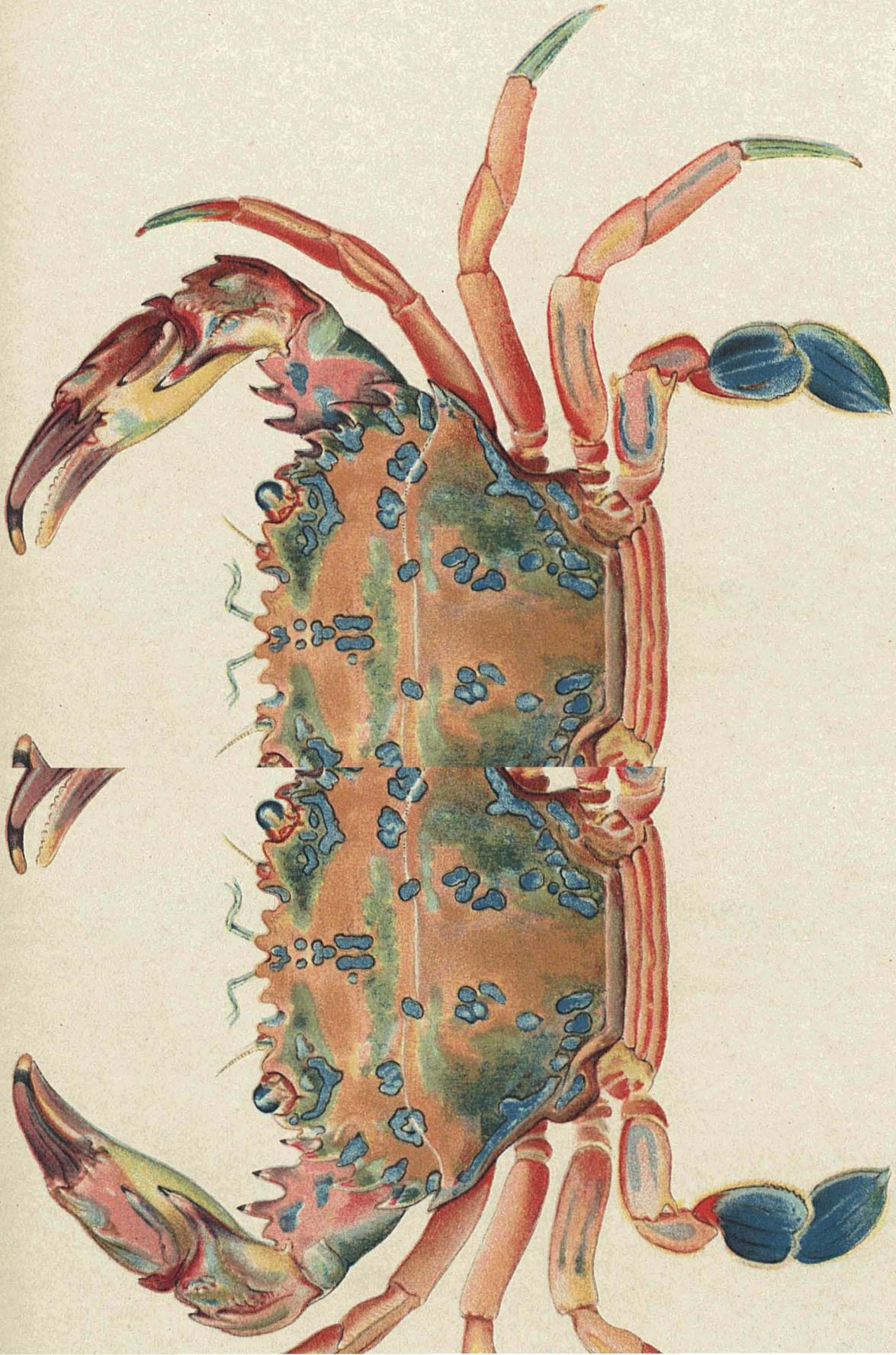
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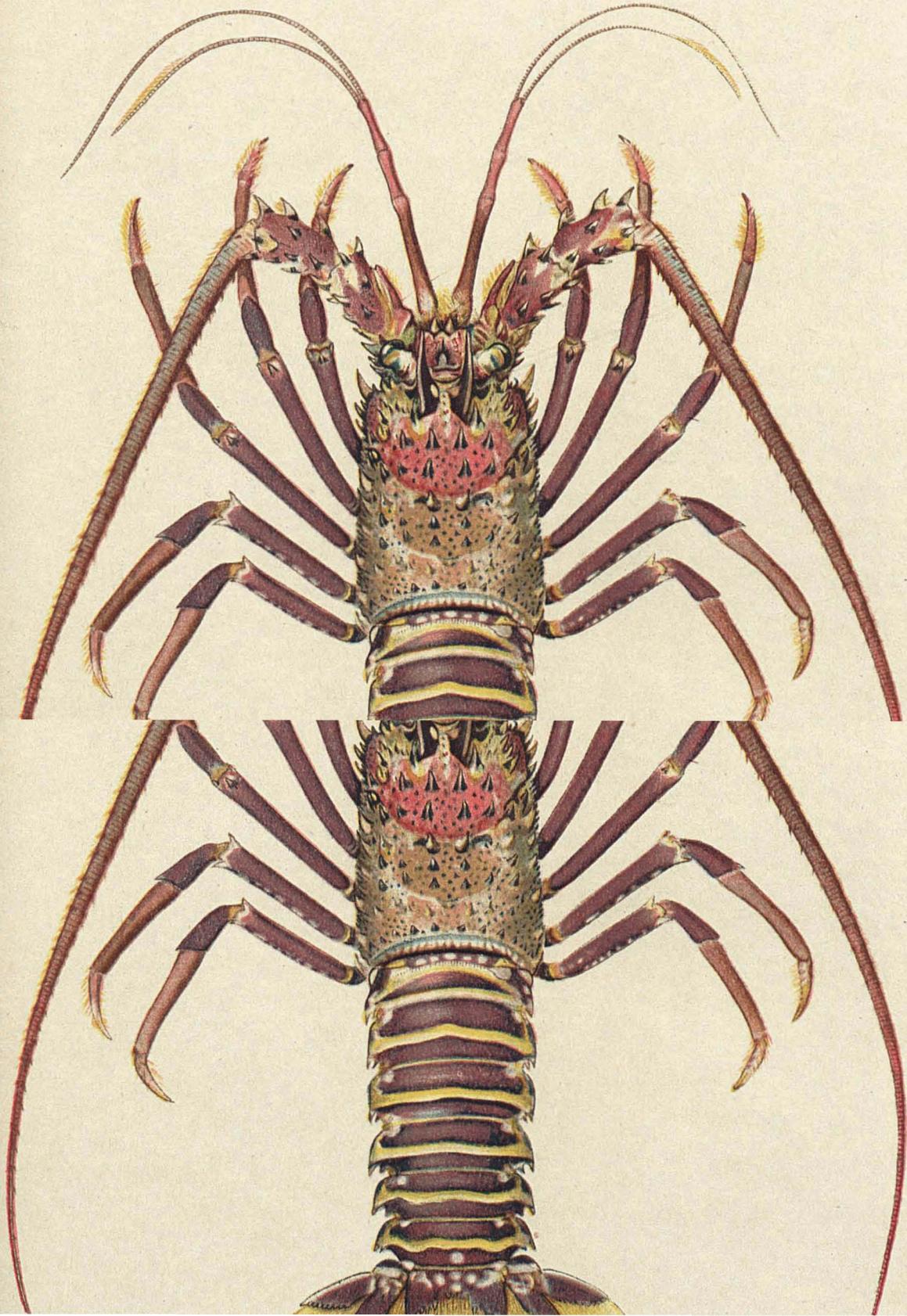
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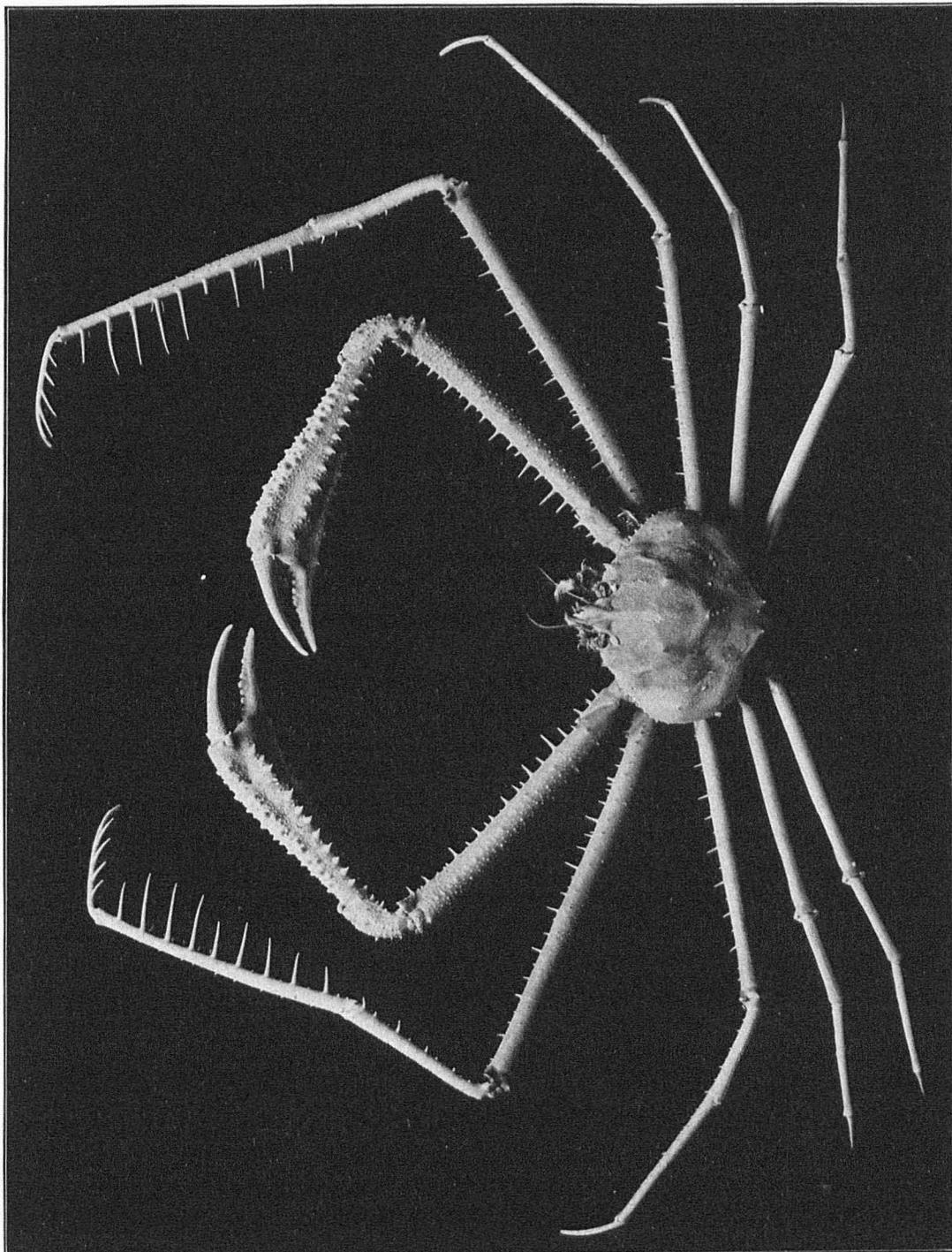
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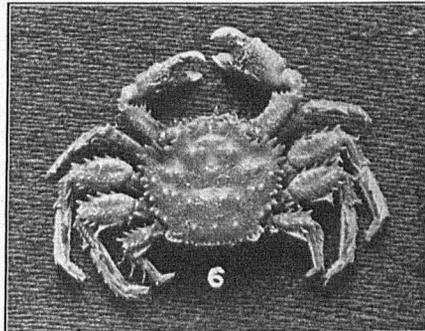
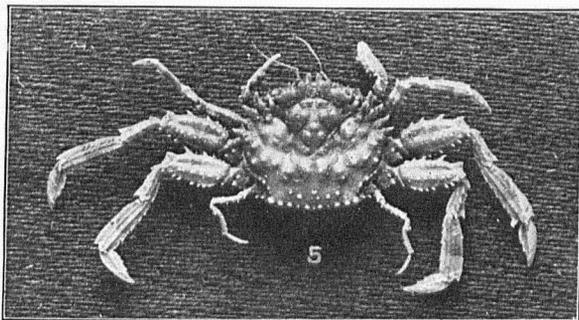
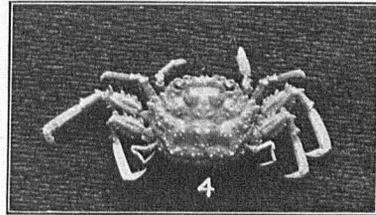
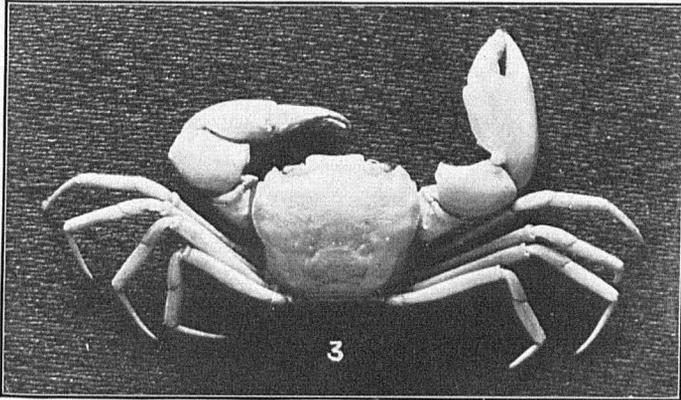
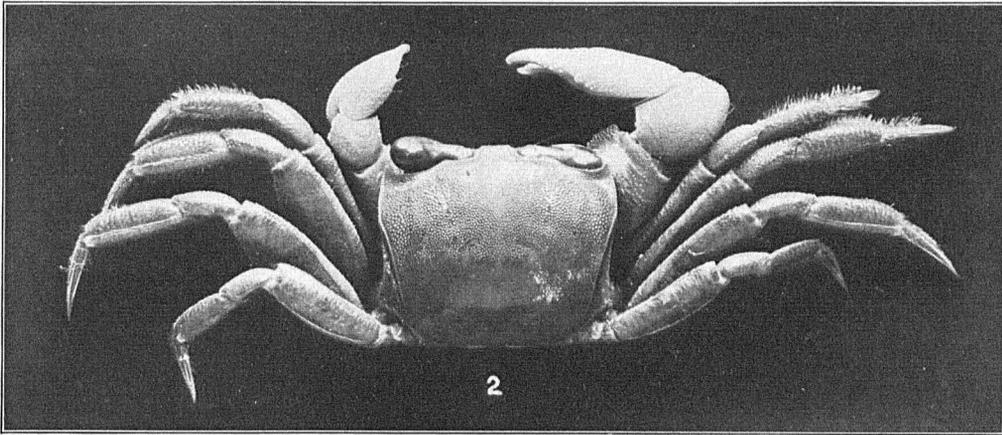
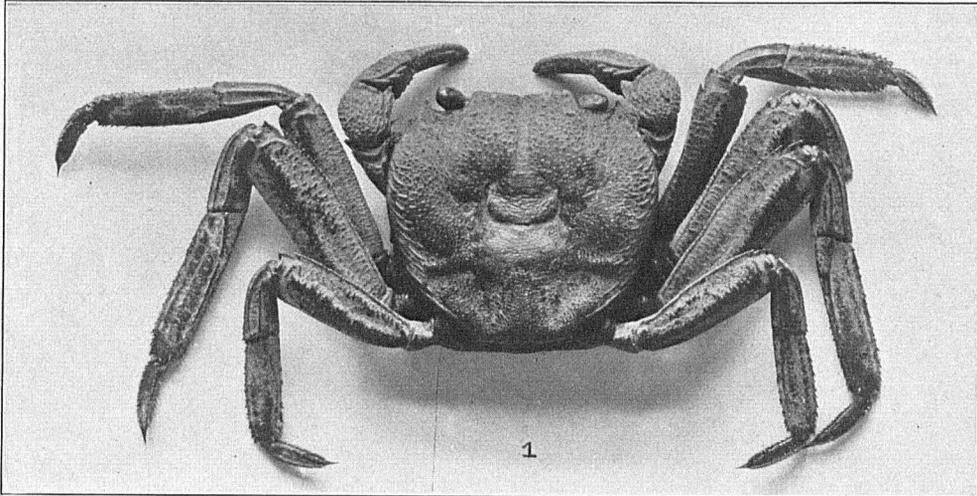
CHARYBDIS ERYTHRODACTYLA (LAMARCK).

CHARYBDIS ERYTHRODACTYLA (LAMARCK).



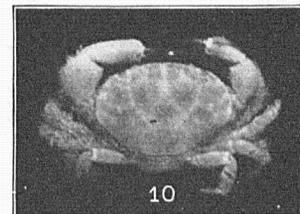
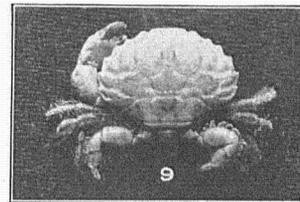
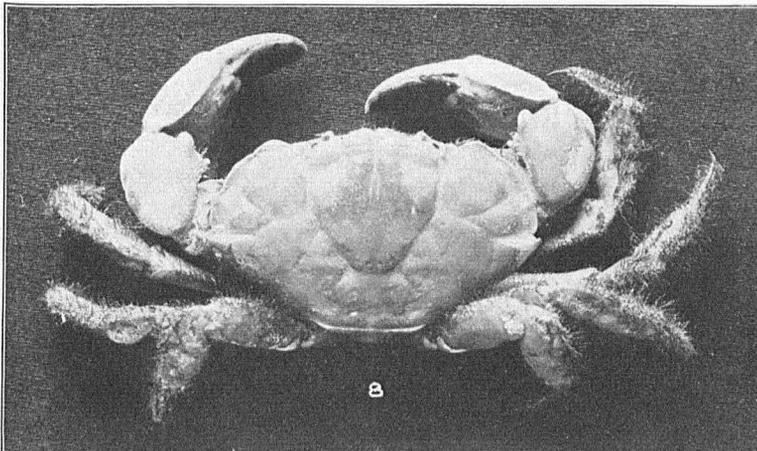
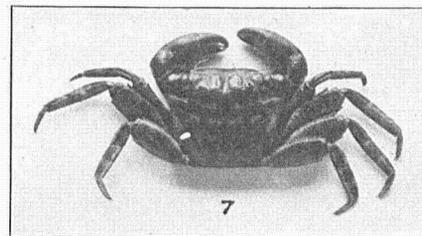
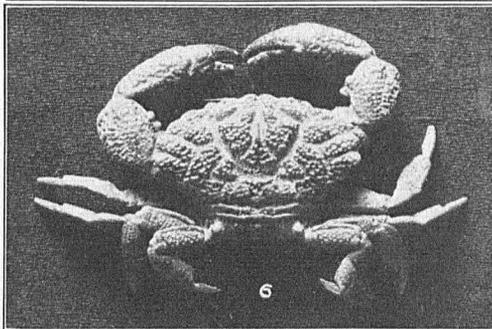
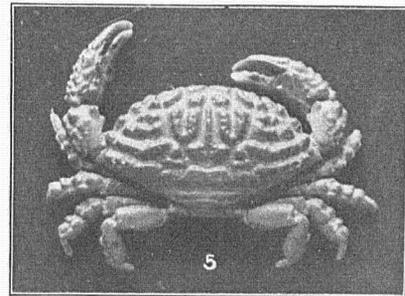
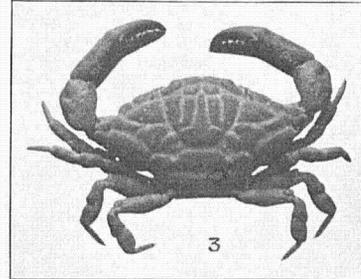
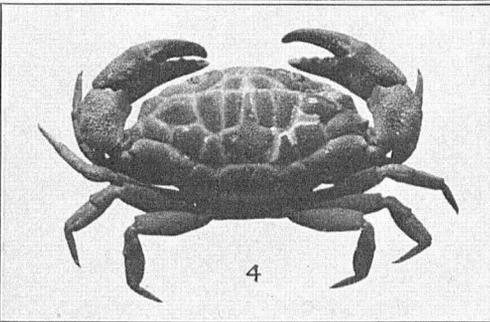
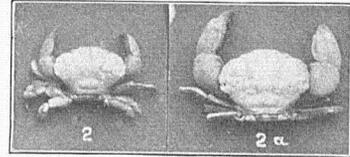
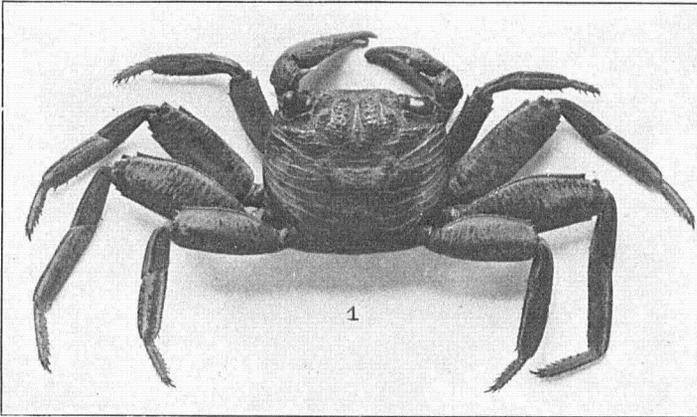


CYRTOMAI SMITHI, MALE, STATION 3984.



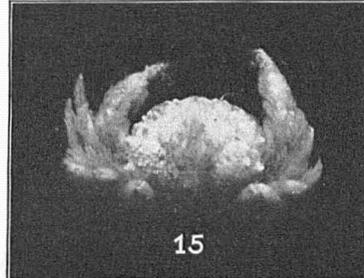
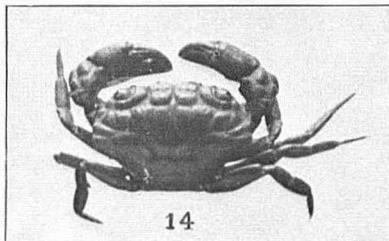
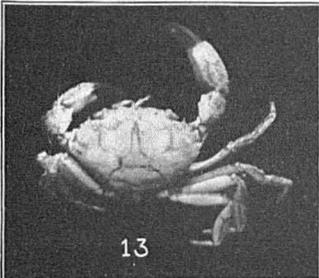
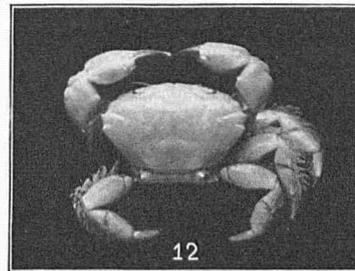
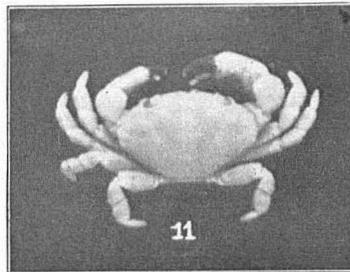
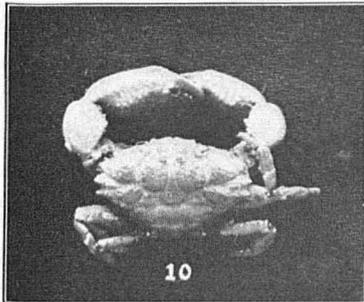
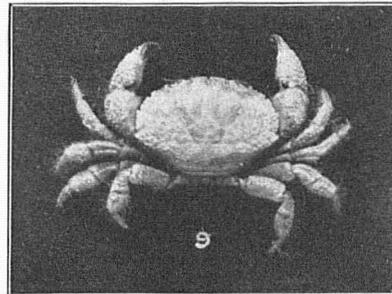
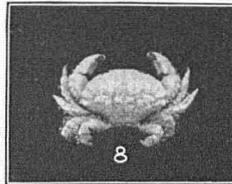
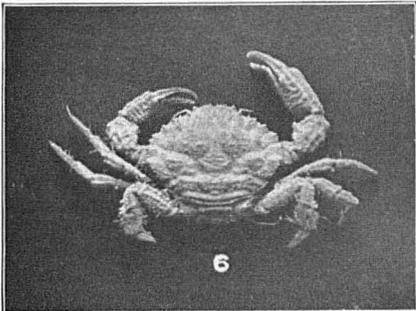
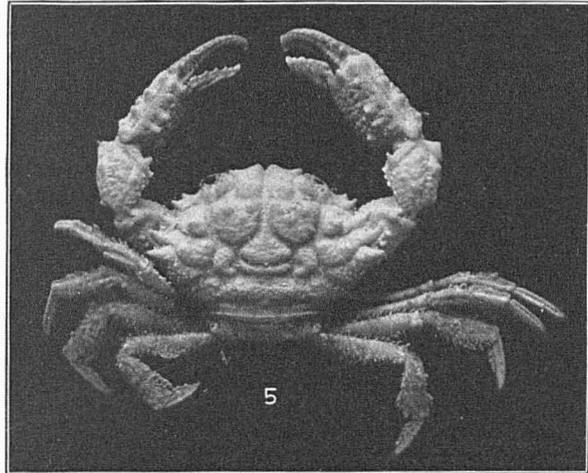
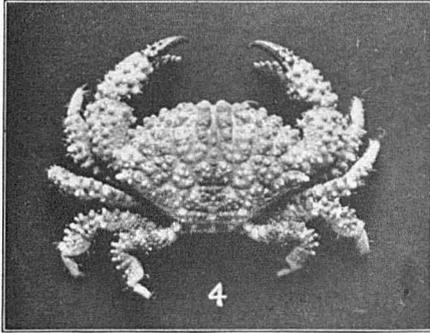
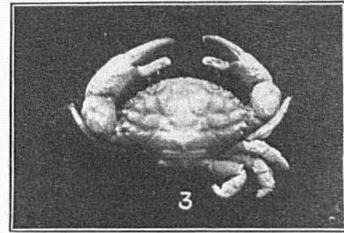
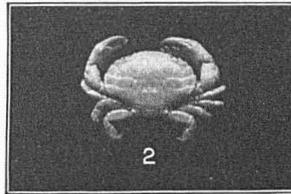
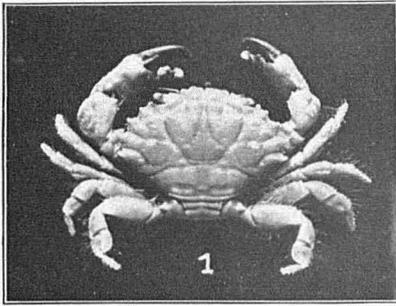
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2. *Ocypode levins*, male, Honolulu.  
3. *Pilumnoplax cooki*, male, type.

4. *Palicus oahuensis*, female, type.  
5. *Palicus fisheri*, male, type.  
6. *Maella spinipes*, male, station 3847.



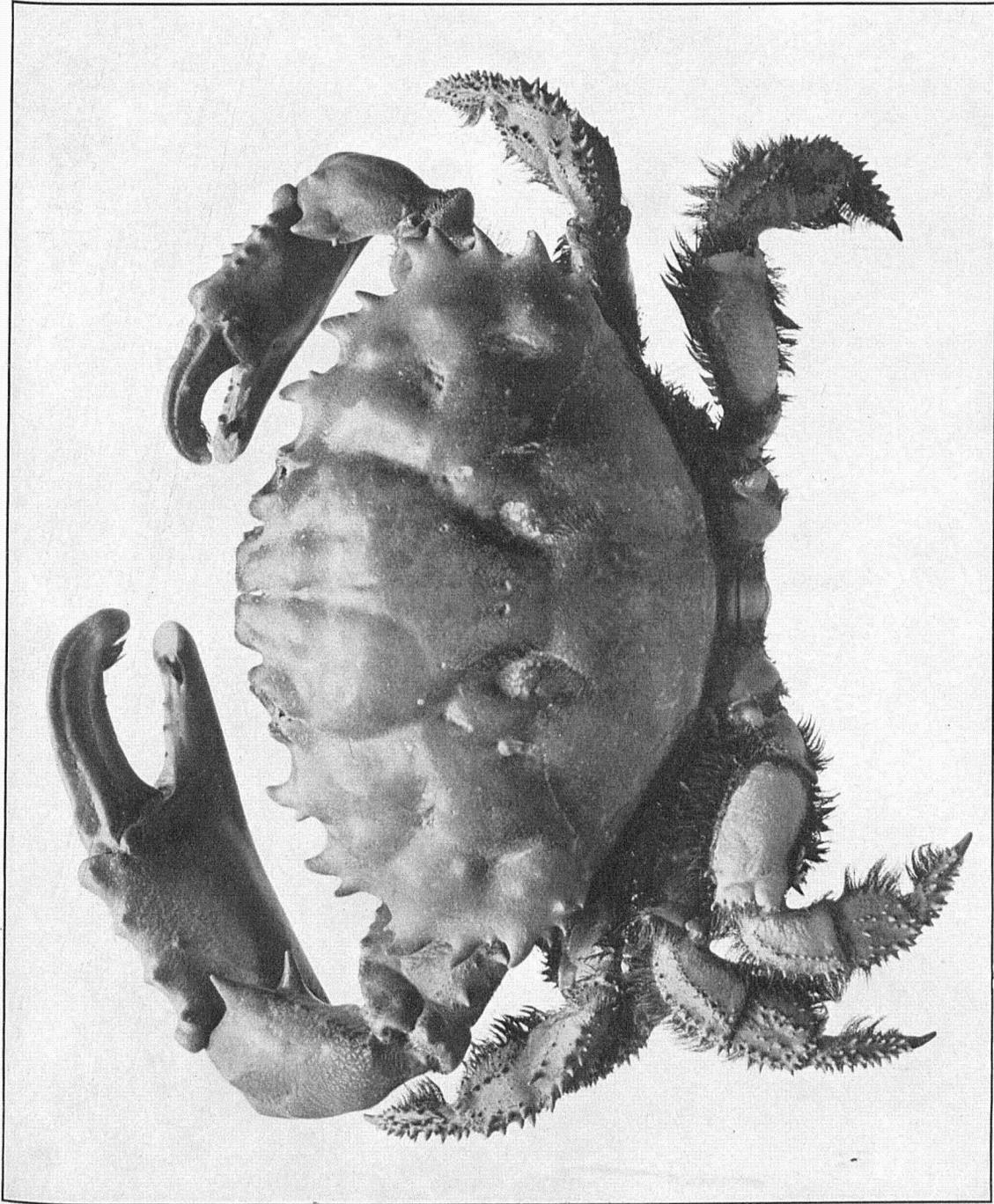
1. *Grapsus strigosus longitarsis*, female, Napili.  
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 2a. *Lophozozymus dodone*. Type (male) of *Cancer dodone* Herbst in Berlin Museum.  
 3. *Carpilodes virgatus*, male, type.  
 4. *Carpilodes coccineus*, male, type.

5. *Carpilodes supernodosus*, male, type.  
 6. *Xantho taeniosus*, male, type.  
 7. *Pachygrapsus longipes*, male, Honolulu.  
 8. *Lophozozymus intonsus*, male, Kailua.  
 9. *Leptodius waiukuensis*, female, type.  
 10. *Xanthocticus biunguis*, female, type.

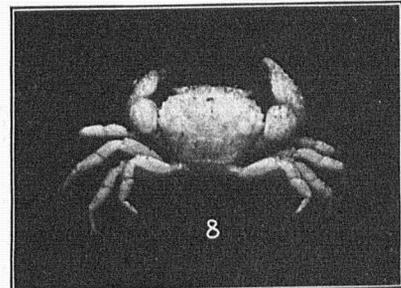
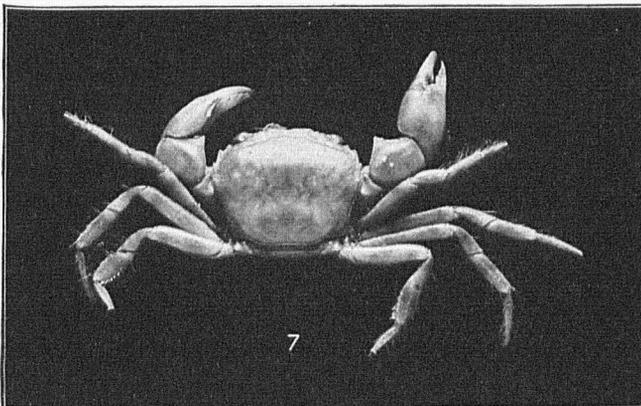
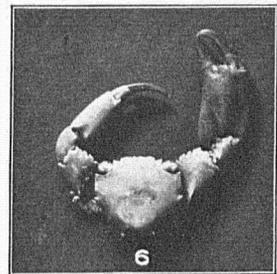
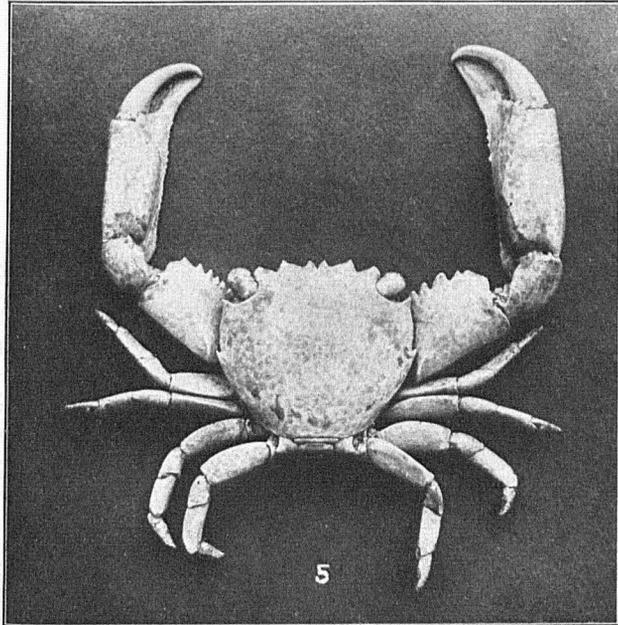
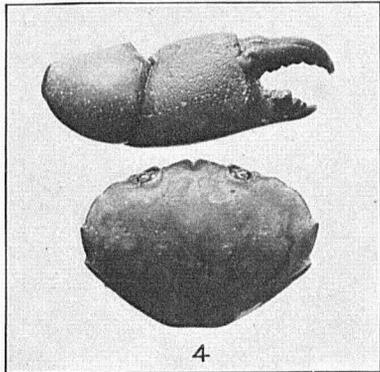
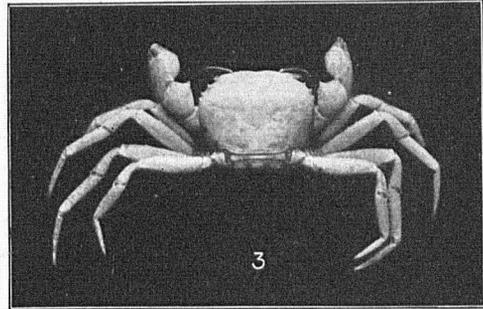
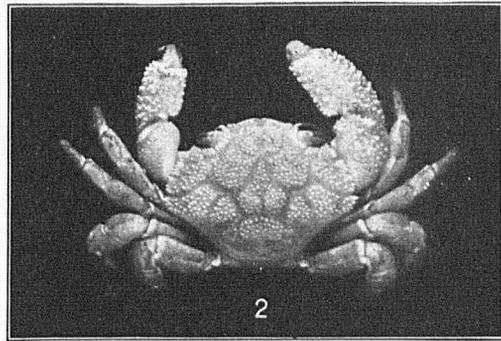
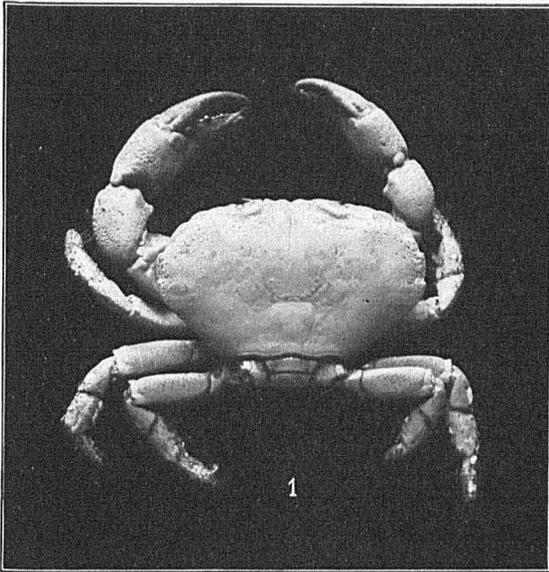


1. *Leptodius molokaiensis*, male, type.  
 2. *Leptodius gracilis*, male, Hawaiian Islands.  
 3. *Leptodius nudipes*, male, Hawaiian Islands.  
 4. *Actaea nodulosa*, male, station 4032.  
 5. *Medæus ornatus*, male, station 3872.  
 6. *Cyclozanthops angustus*, female, type.  
 7. *Elisodes electra*. Type (male) of *Cancer metis* Herbst in Berlin Museum.

8. *Actæa garretti*, male, type.  
 9. *Actæa hawaiiensis*, male, type.  
 10. *Medæus simplex*, male, Hilo.  
 11. *Xanthius flavescens*, male, type.  
 12. *Xanthius canaliculatus*, female, type.  
 13. *Micropanope scrobata*, female, type.  
 14. *Xanthius minutus*, male, station 4169.  
 15. *Banarçia villosa*, female, type.

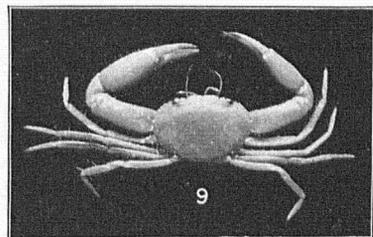
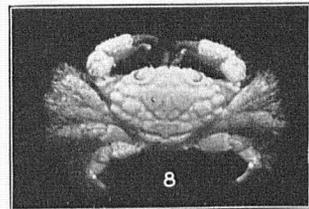
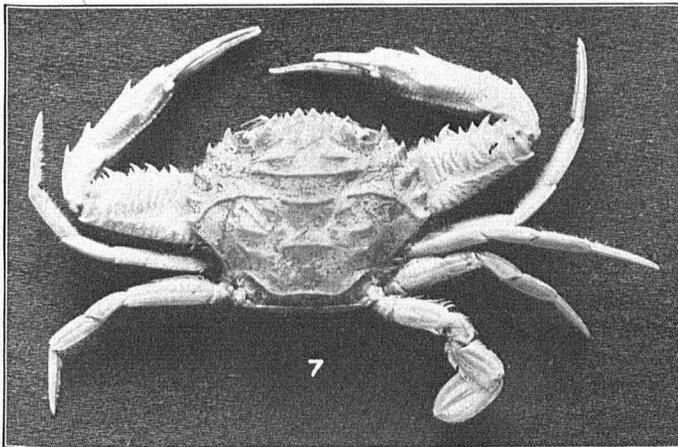
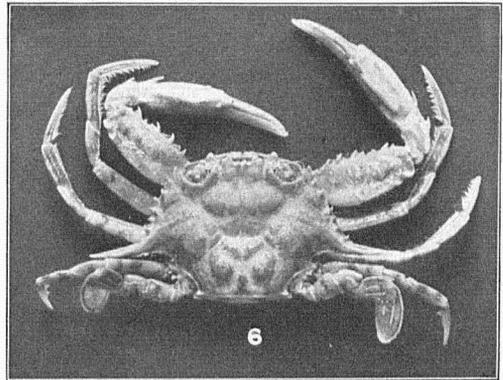
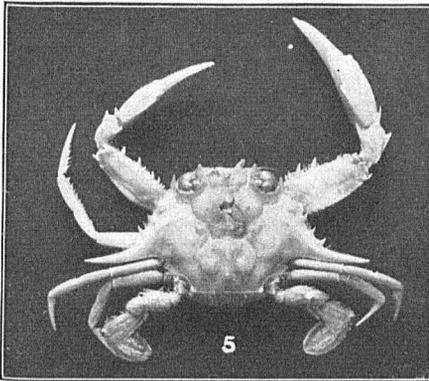
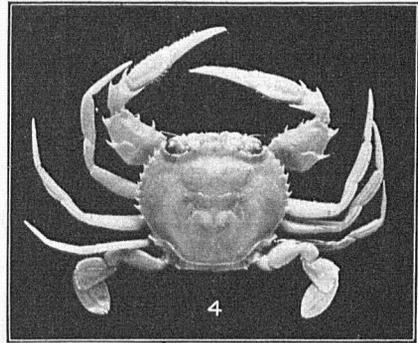
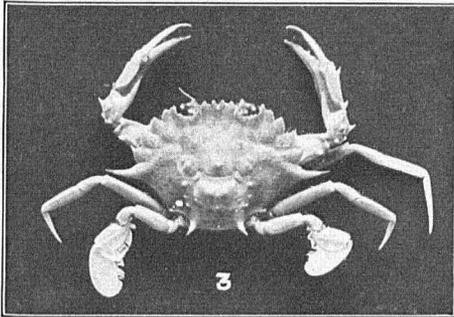
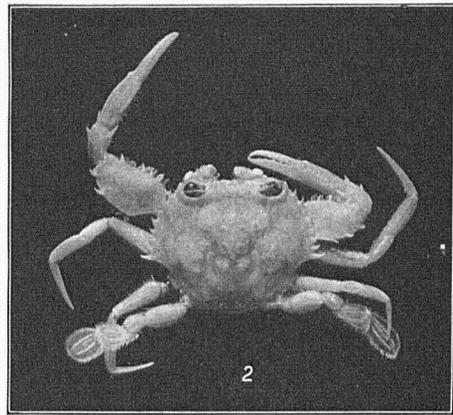
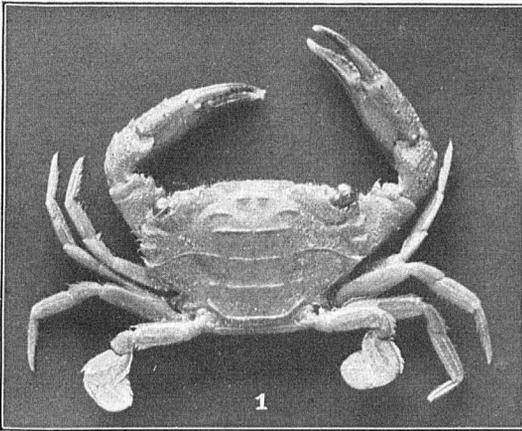


ETISUS SPLENDIDUS, MALE, TYPE.



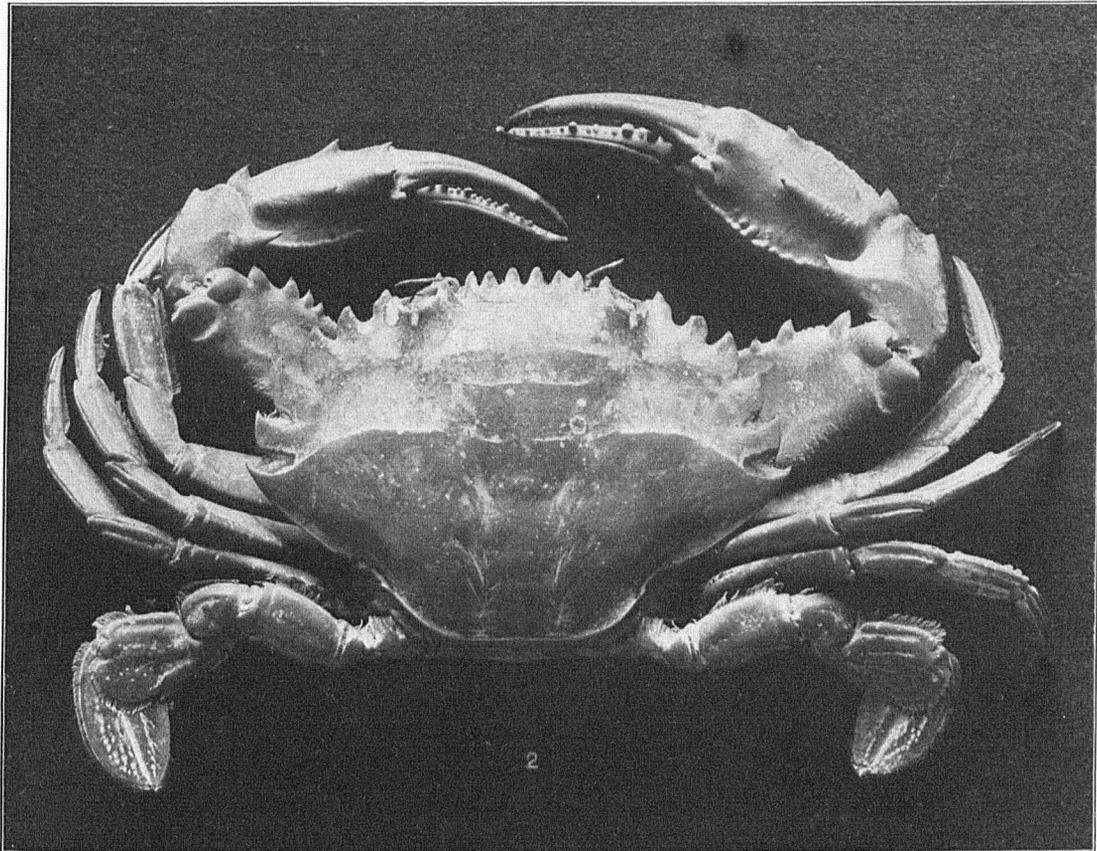
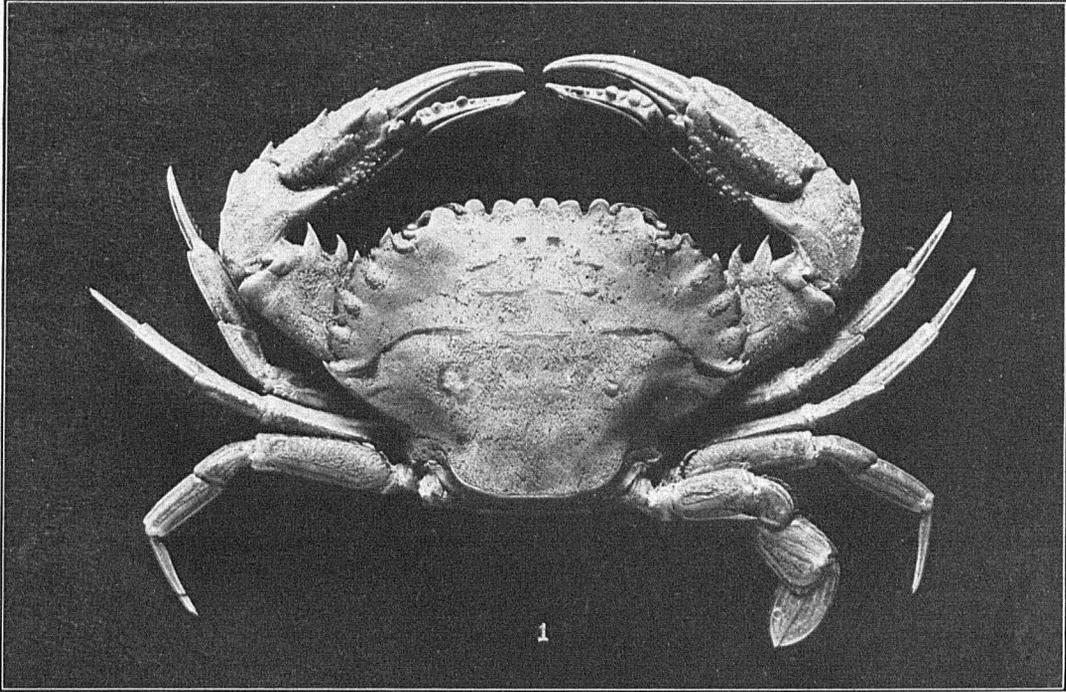
1. *Pseudozius inornatus*, male, Kailua.  
 2. *Actumnus obesus*, male, station 3849.  
 3. *Pilumnus tenuiola*, female, type.  
 4. *Menippe convexa*, female, type.  
 5. *Grapsillus rufopunctatus*. Type of *Cancer rufopunctatus* Herbst in Berlin Museum.

6. *Grapsillus cymodoce*. Type of *Cancer cymodoce* Herbst in Berlin Museum.  
 7. *Platyzoius levis*, female, station 3876.  
 8. *Pilumnus nuttingi*, female, type.



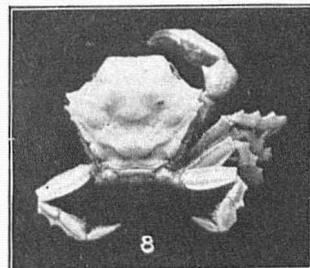
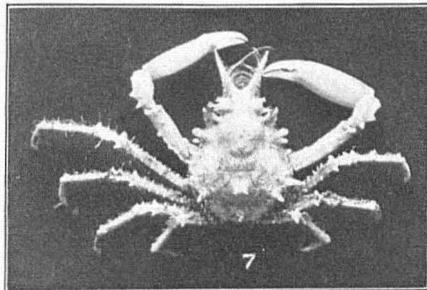
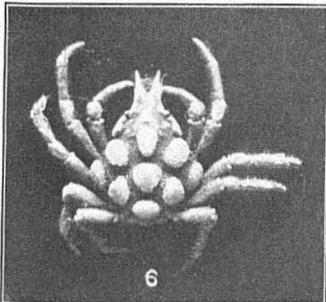
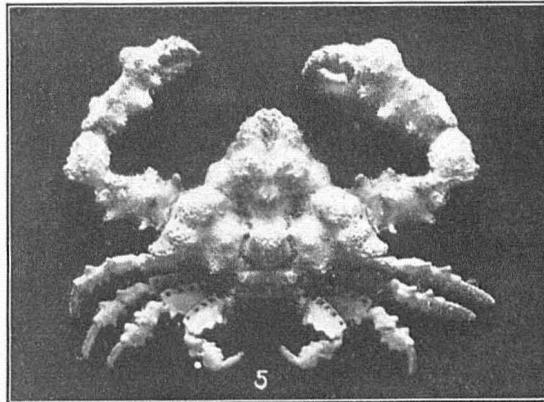
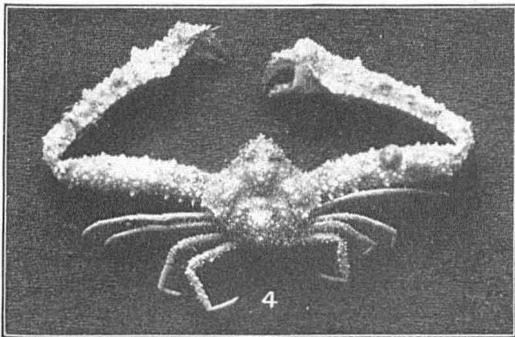
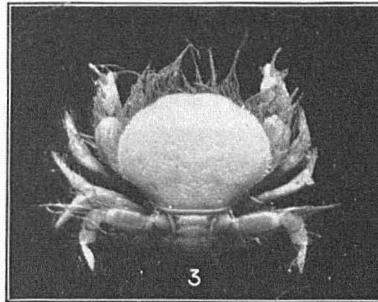
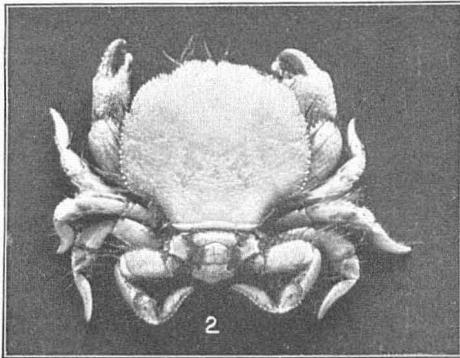
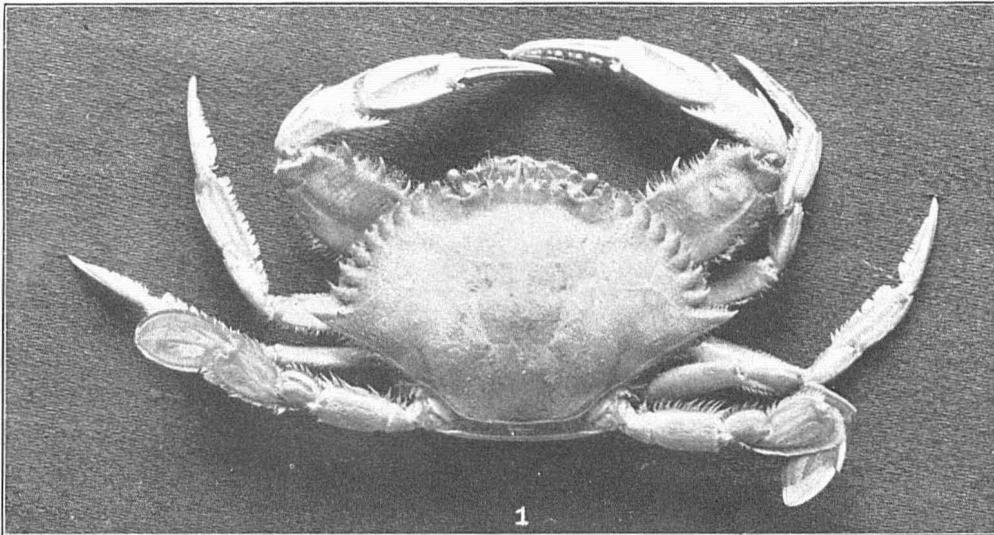
1. *Thalaimita auauensis*, male, type.  
 2. *Portunus (Achelous) granulatus*, male, station 4159.  
 3. *Parathranites hexagonum*, male, type.  
 4. *Portunus (Achelous) orbicularis*, female, station 3962.  
 5. *Portunus (Xiphonectes) macrophthalmus*, male, type.

6. *Portunus (Xiphonectes) longispinosus*, male, Honolulu Reef.  
 7. *Lupocyclus quinquecostatus*, male, type.  
 8. *Phymodius laysani*, female, type.  
 9. *Goniocaplyra inaequalis*, male, station 3876.



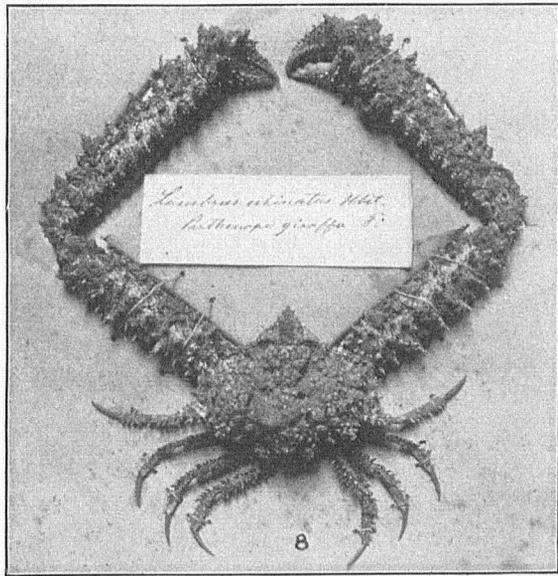
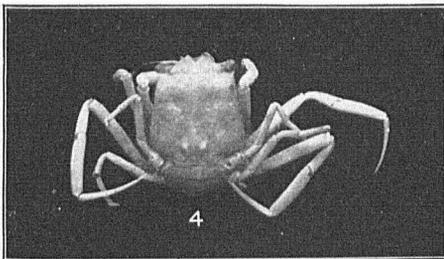
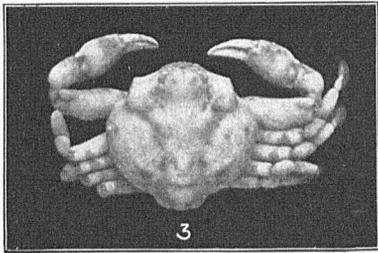
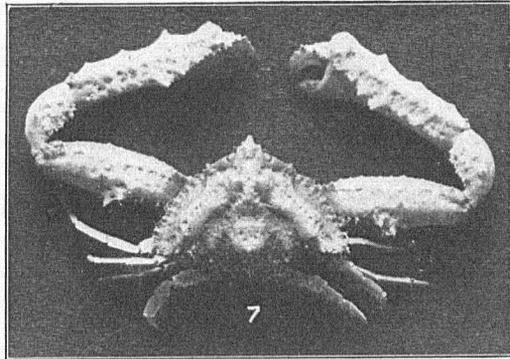
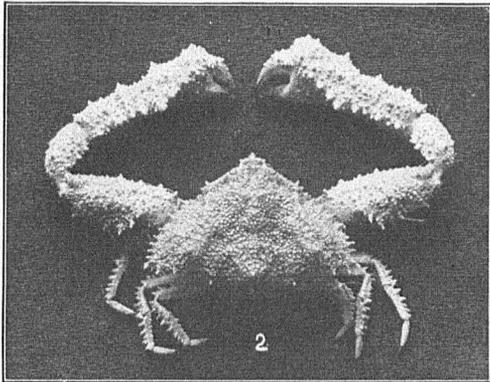
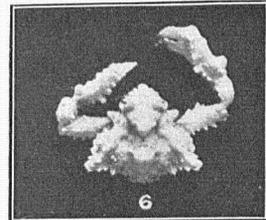
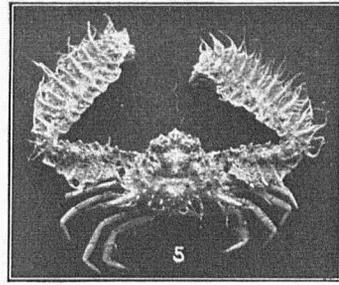
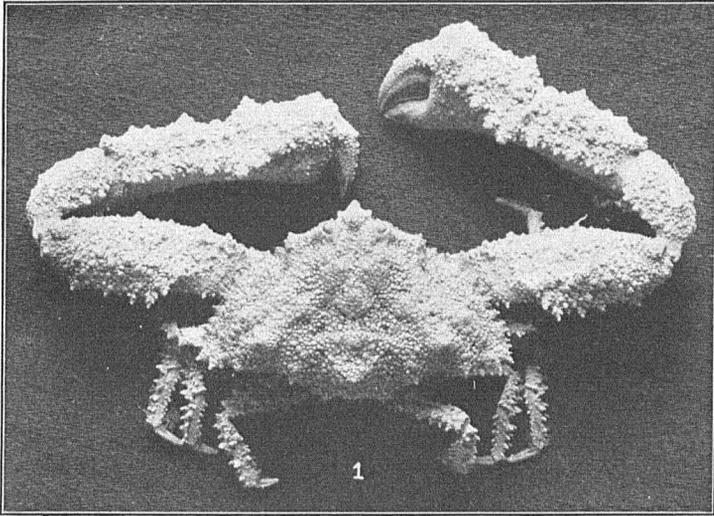
1. *Charybdis orientalis*, male, Honolulu.

2. *Charybdis japonica*, male, Japan.



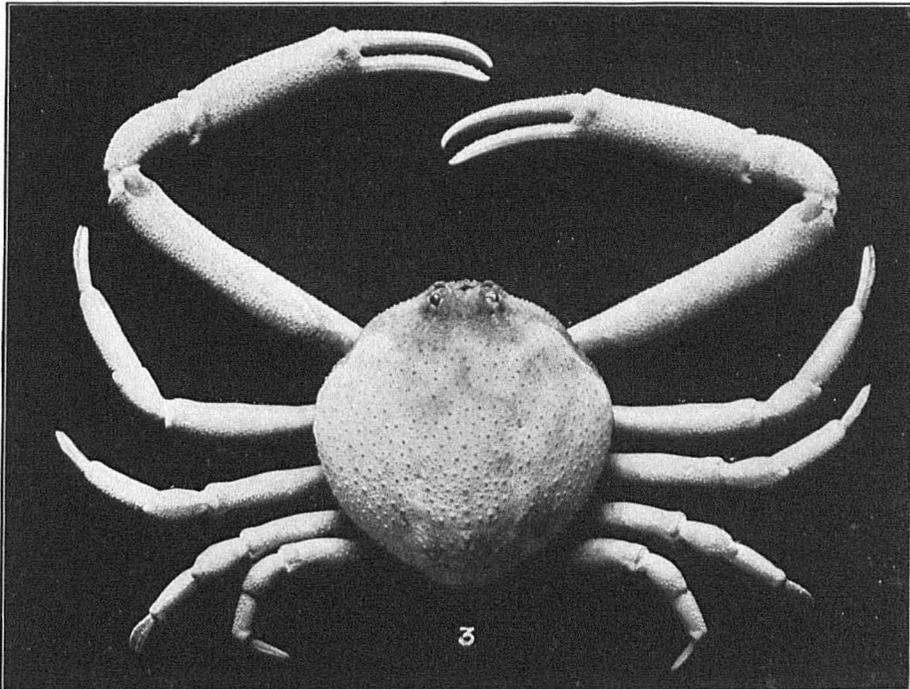
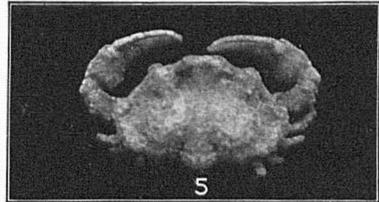
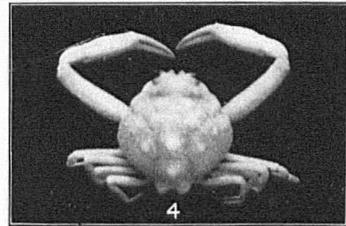
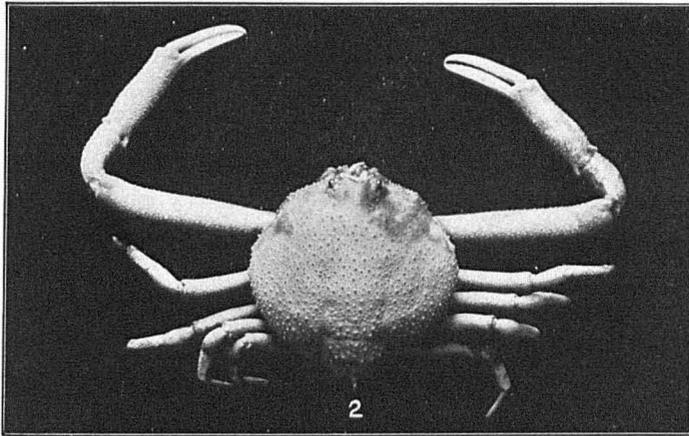
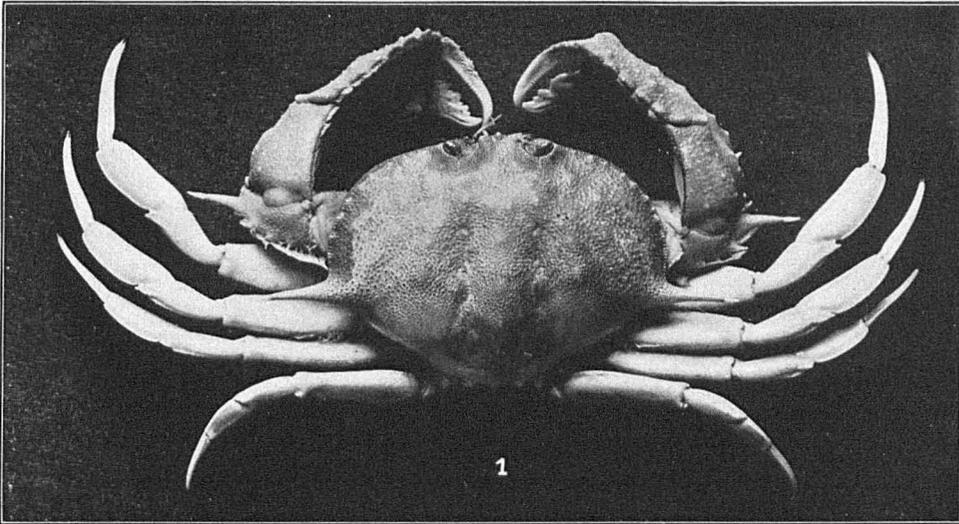
1. *Portunus pubescens*, male, Honolulu market.  
2. *Kraussia hendersoni*, female, station 3876.  
3. *Kraussia integra*, female, station 3955.  
4. *Parthenope (Platylambrus) nummifera*, male, type.

5. *Daldorfia horrida*, male, station 3874.  
6. *Sphenocarcinus carbunculus*, female, type.  
7. *Chlorinoides goldsboroughi*, male, type.  
8. *Harrovia truncata*, male, type.



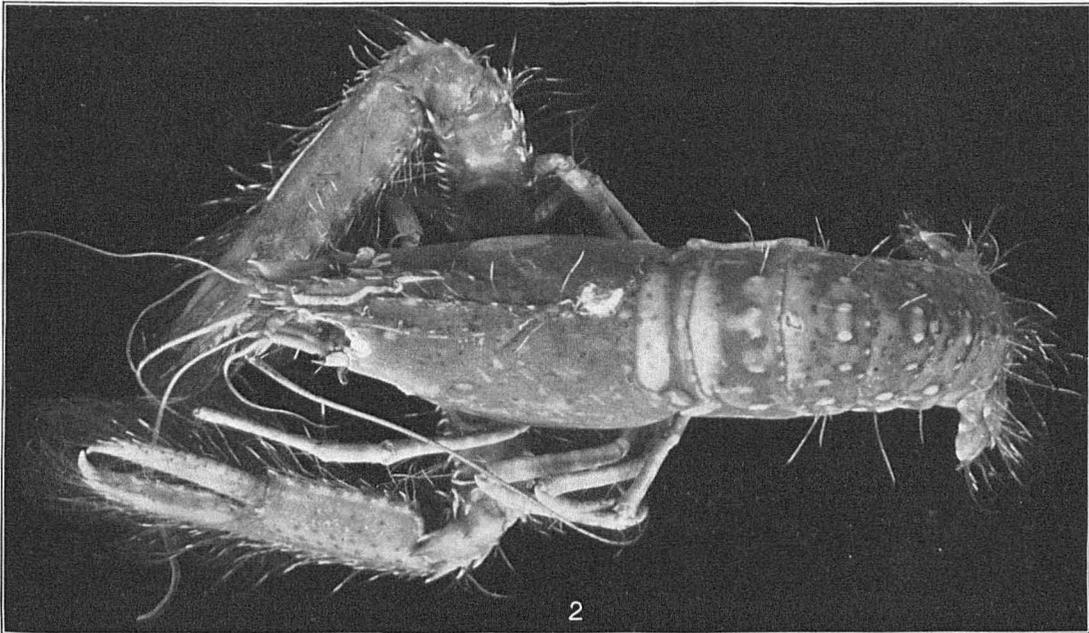
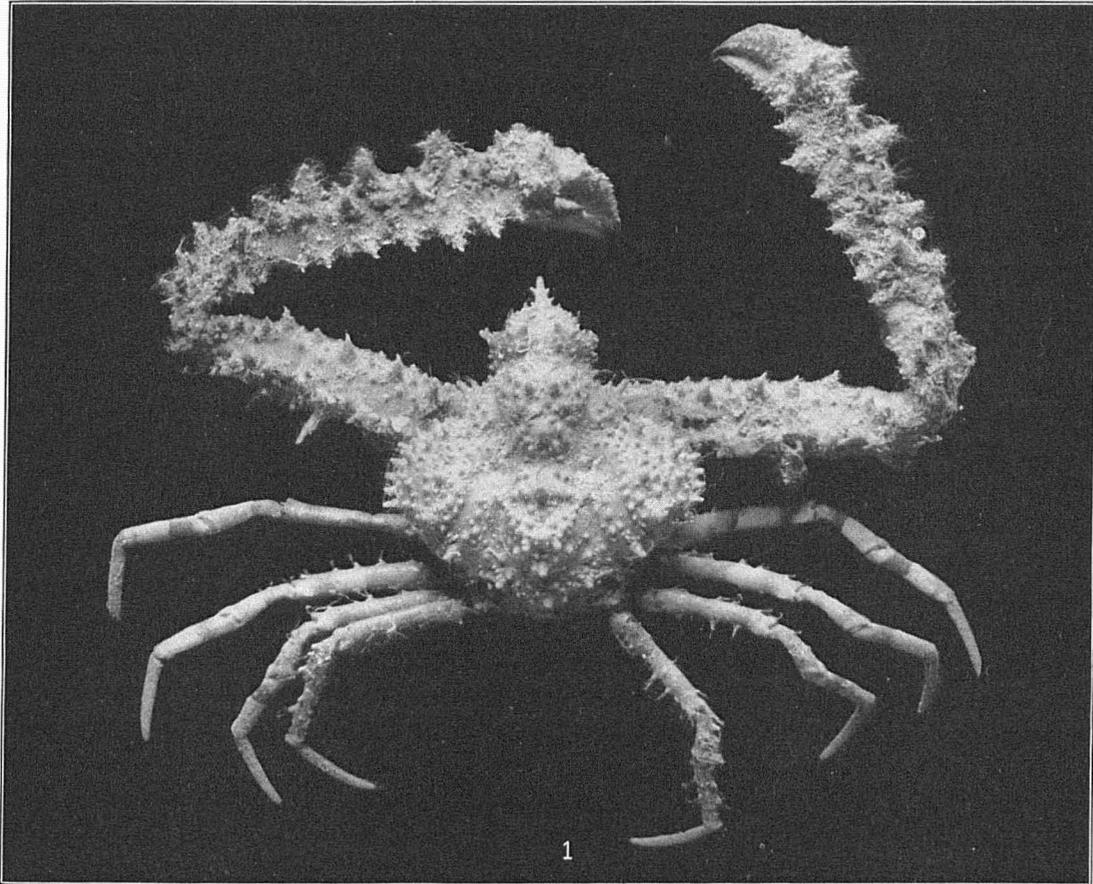
1. *Parthenope (Platylambrus) stellata*, male, type.  
 2. *Parthenope (Platylambrus) stellata*, sharp-spined variety, male, station 4045.  
 3. *Ebalia jordani*, male, type.  
 4. *Ethusa mascaron hawaiiensis*, female, type.  
 5. *Parthenope (Aulacolambrus) whitei*, male, station 3847.

6. *Parthenope (Parthenolambrus) calappoides*, male, station 4164.  
 7. *Parthenope (Platylambrus) stellata lacunosa*, male, type.  
 8. *Parthenope (Platylambrus) echinata* (Herbst). Type of *Parthenope giraffa* Fabricius, in Kiel Museum.



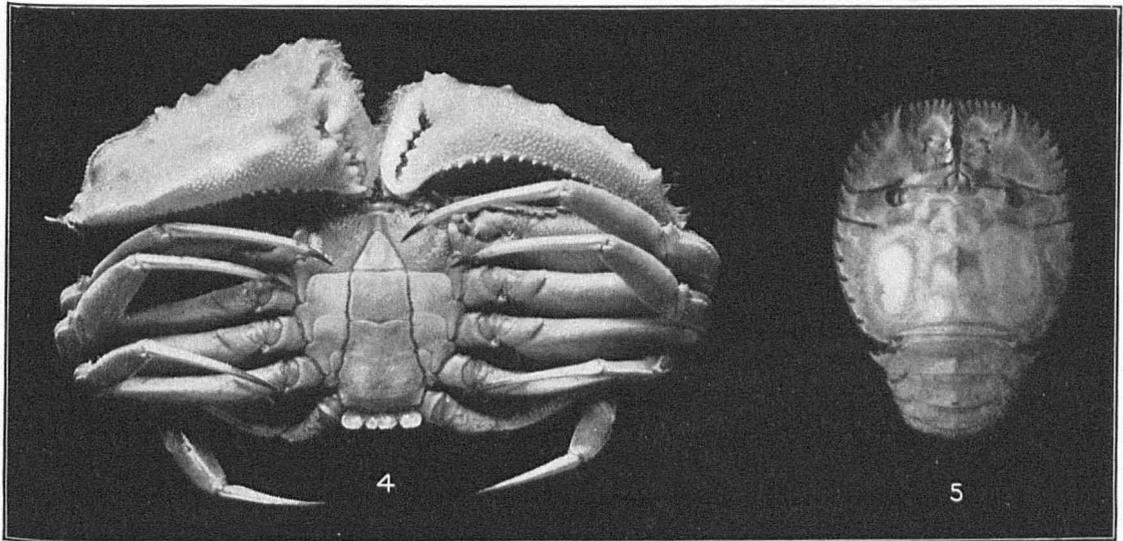
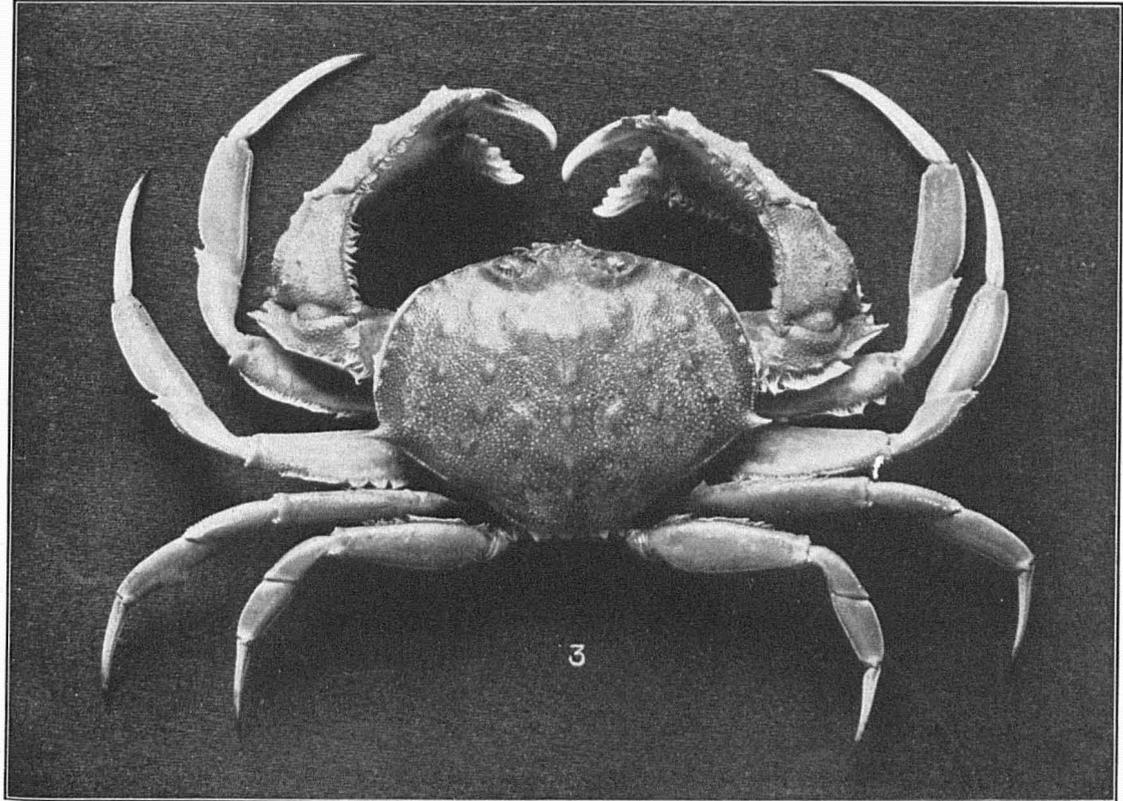
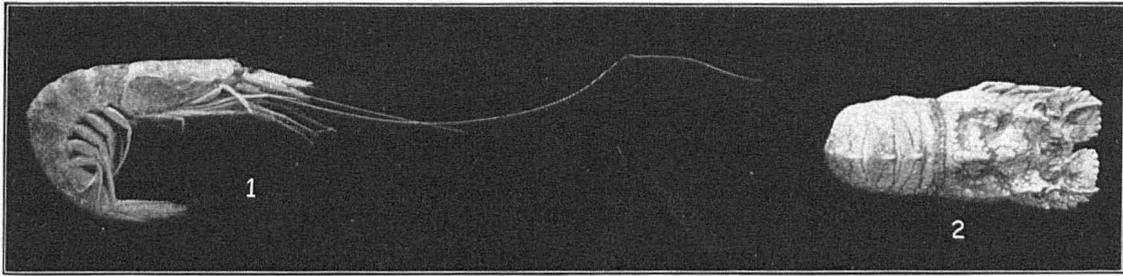
1. *Mursia spinimanus*, male, type.  
2. *Randallia distincta*, half-grown male,  
station 4117.

3. *Randallia distincta*, full-grown male, station 4044.  
4. *Randallia gilberti*, male, station 4062.  
5. *Tlos angulatus*, female, type.



1. *Parthenope (Rhinolambrus) lamelligera*, male, station 4164.

2. *Enoplometopus occidentalis*, male, Honolulu market.



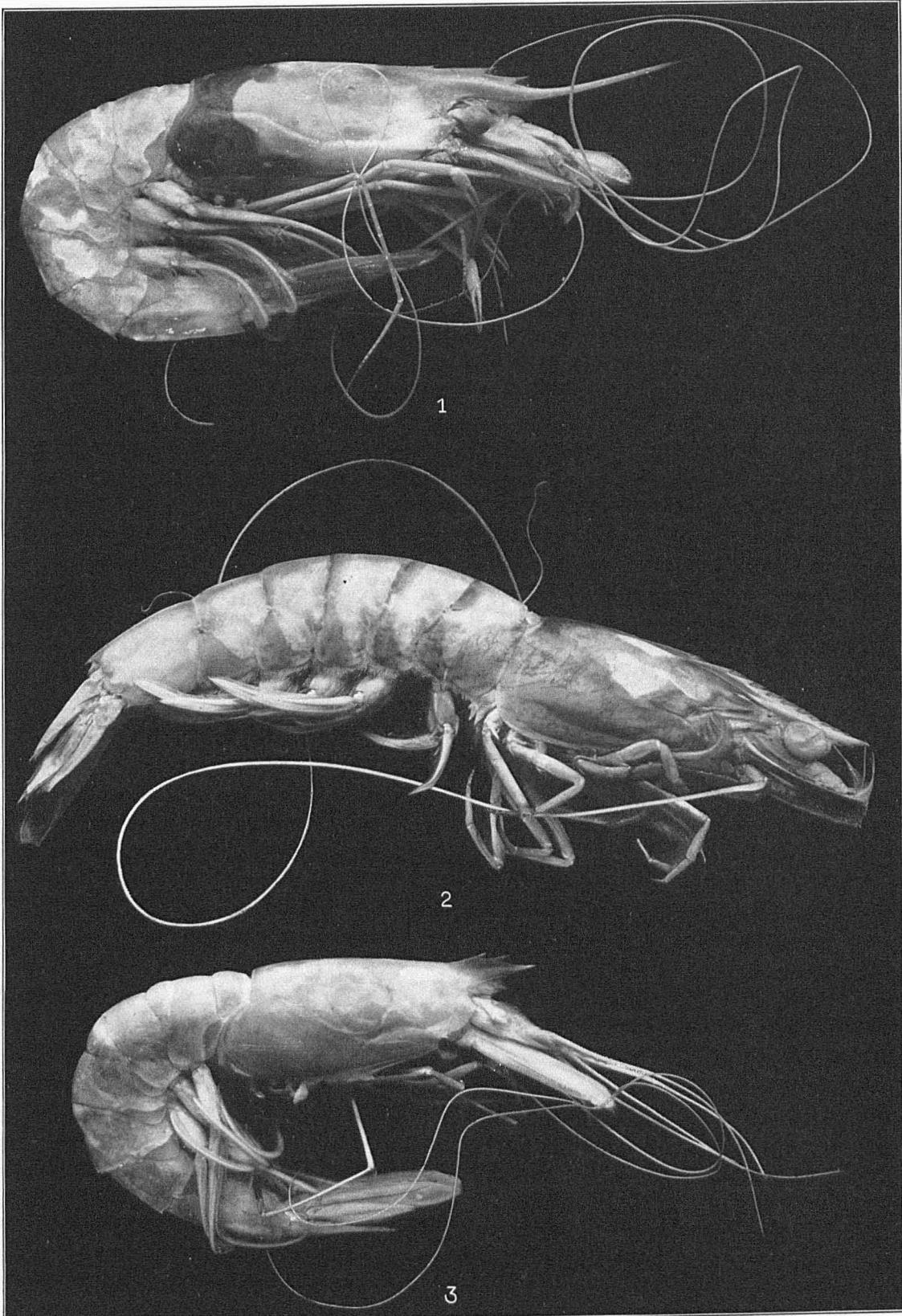
1. *Sergestes robustus*, spined variety, station 4011.

2. *Scyllarus marlensii*, female, station 3872.

3. *Mursia hawaiiensis*, male, station 4080, dorsal view.

4. *Mursia hawaiiensis*, male, station 4080, ventral view.

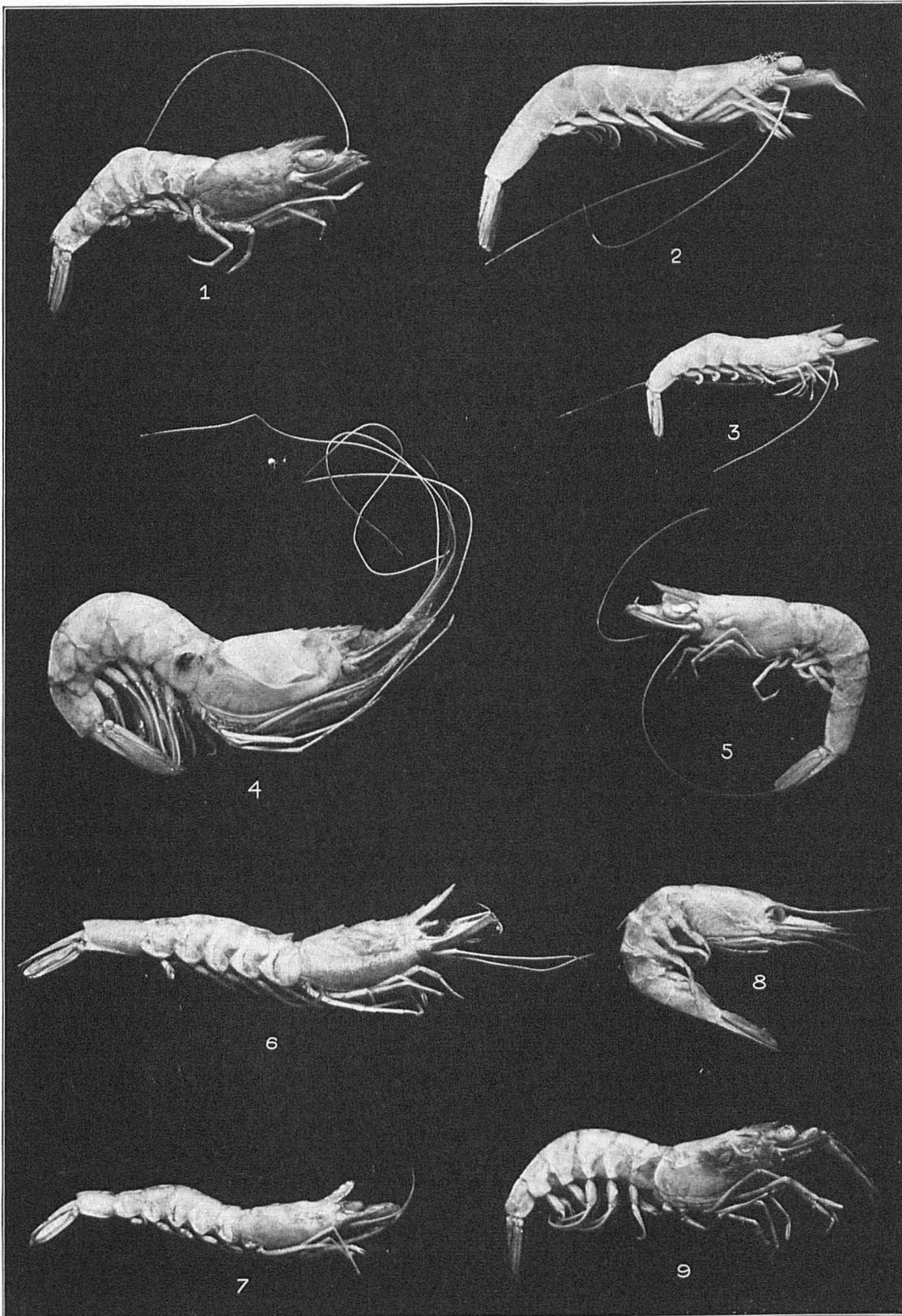
5. *Parribacus pappiraccus*, male, type



1. *Aristeus semidentatus*, female, station 4016.

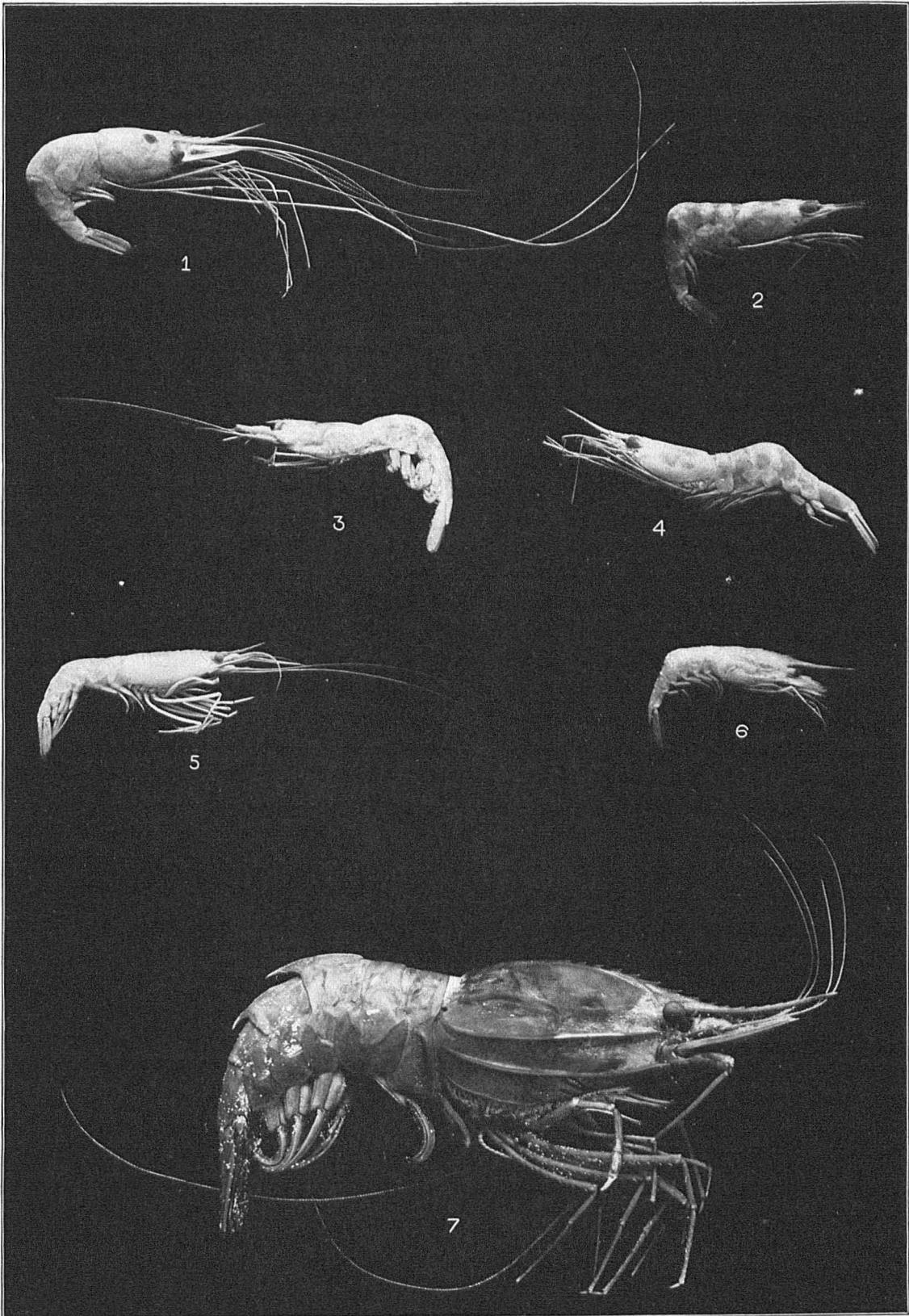
2. *Penaeus marginatus*, female, station 4070.

3. *Benthesicymus laciniatus*, female, type.



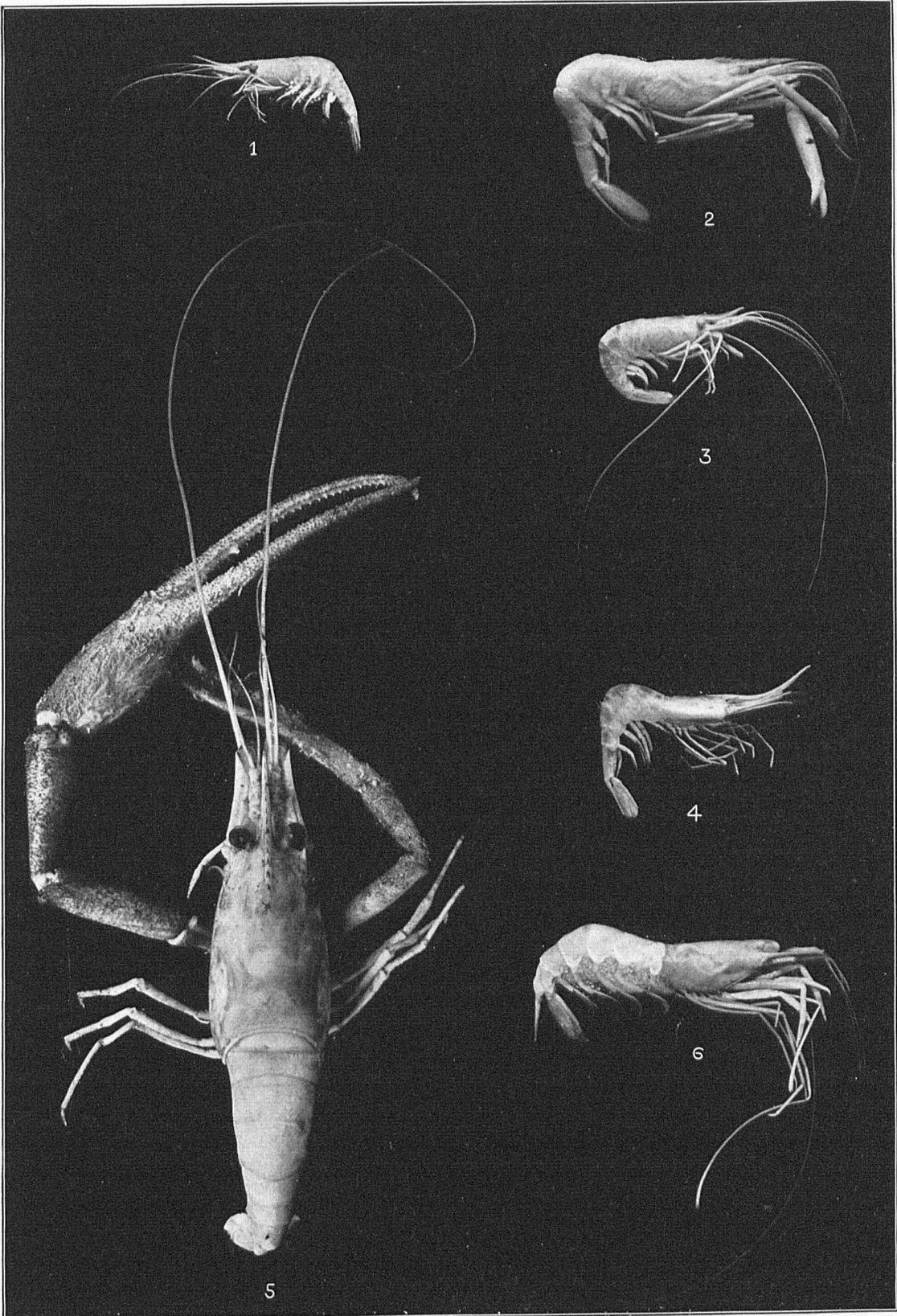
1. *Metapenaeus evermanni*, female, type.
2. *Metapenaeus richtersi*, female, station 3812.
3. *Metapenaeus mogiensis*, female, station 3851.
4. *Haliporus modestus*, female, station 4102.
5. *Metapenaeus velutinus*, female, station 3853.

6. *Sicyonia longicauda*, female, station 3865.
7. *Sicyonia larvis*, female, station 3859.
8. *Oplophorus foliaceus*, female, type.
9. *Solenocera lucasii*, male, station 3987.



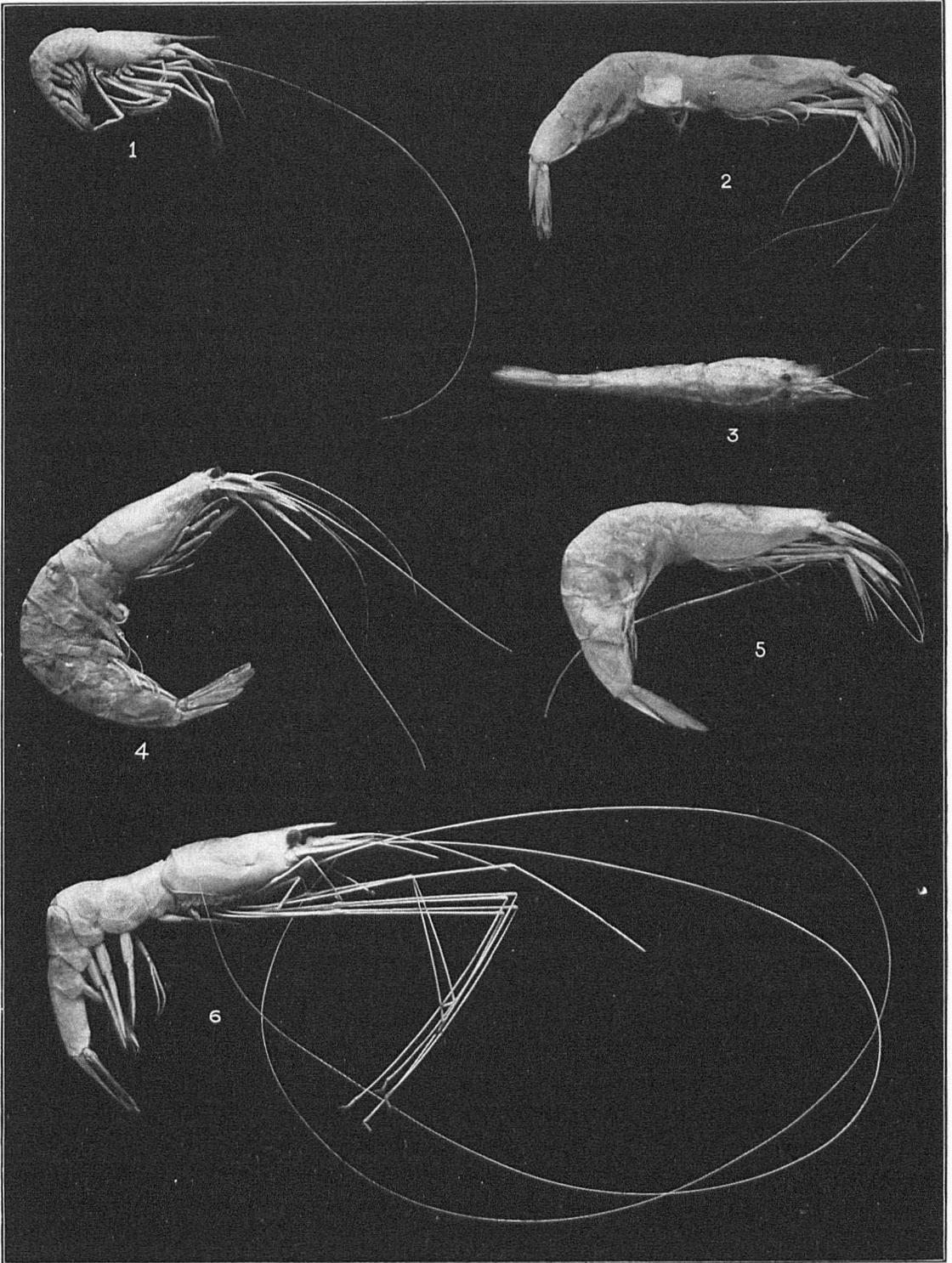
1. *Pandalus ocellus*, station 3858.  
2. *Pandalus exiguus*, female, type.  
3. *Pandalus brevis*, male, type.  
4. *Pandalus sindoi*, type.

5. *Pandalus spinidorsalis*, station 3986.  
6. *Heterocarpus signatus*, type.  
7. *Heterocarpus ensifer*, station 3472.



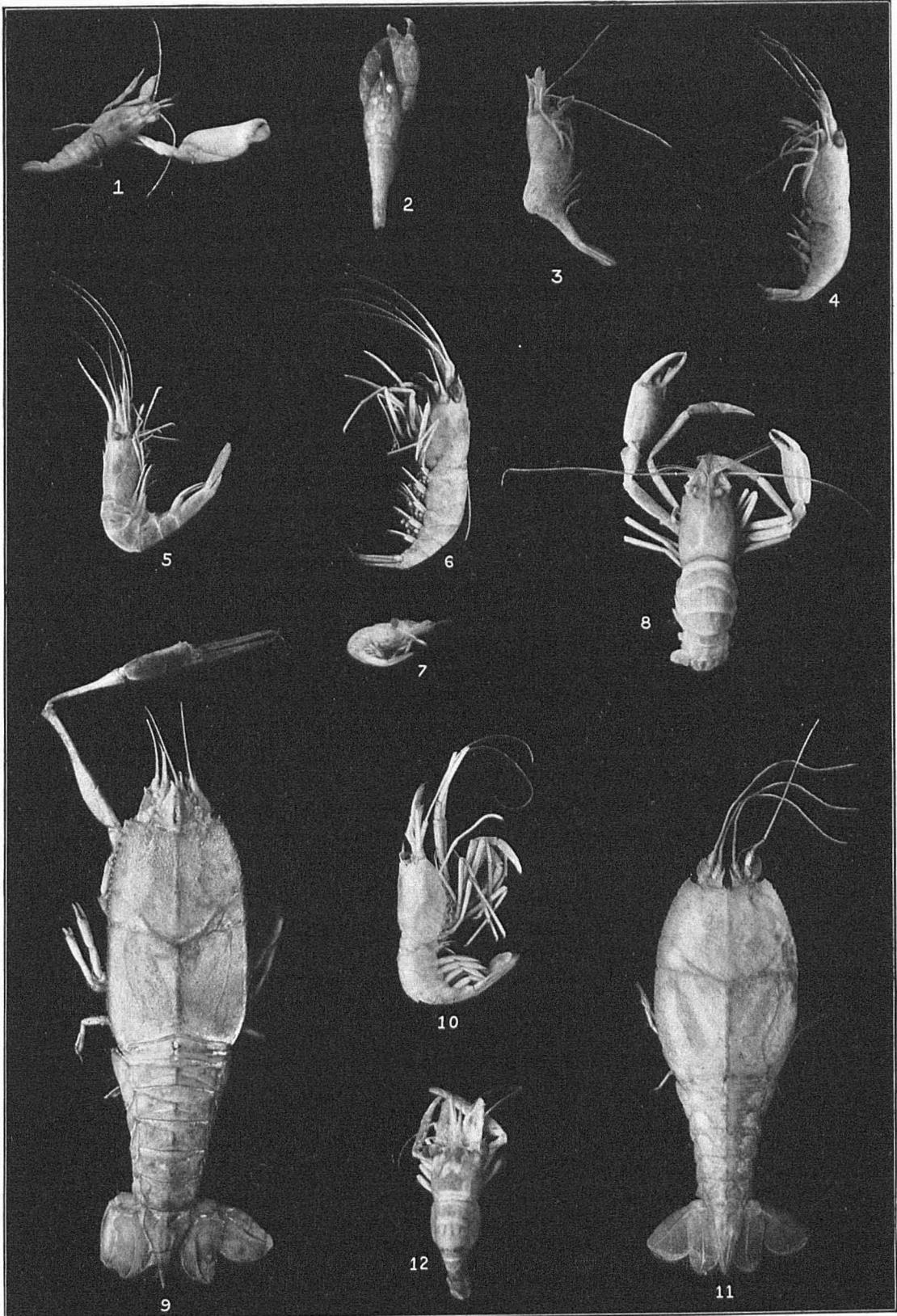
1. *Palæmon debilis*, female, Kealakekua Bay.  
2. *Palæmonella laccadivensis*, station 3989.  
3. *Palæmon pacificus*, Hilo.

4. *Palæmon pandaloides*, type.  
5. *Bithynis grandimanus*, male, Honolulu market.  
6. *Processa processa*, station 3874.



1. *Stylodactylus discissipes*, female, station 4002.  
2. *Pasiphæa flagellata*, type.  
3. *Egeon orientalis*, female, station 4166.

4. *Pasiphæa kaiwiensis*, female, station 3470.  
5. *Pasiphæa truncata*, type.  
6. *Nemátocarcinus tenuirostris*, station 4015.



1. *Coralliocaris quadridentata*, type.  
 2. *Coralliocaris truncata*, type.  
 3. *Hippolyte acuta*, Honolulu Reef.  
 4. *Hippolytina paucidentis*, female, type.  
 5. *Spirontocaris kauaiensis*, type.  
 6. *Hippolytina acicula*, type.

7. *Periclimenes pusillus*, station 3921.  
 8. *Spongicola hcnshawi*, female, type.  
 9. *Polycheles snyderi*, male, type.  
 10. *Spirontocaris profunda*, female, type.  
 11. *Polycheles asper*, female, type.  
 12. *Harpilius depressus*, female, Honolulu Reef.