NEW YORK ACADEMY OF SCIENCES

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PORTO RICO and the VIRGIN ISLANDS

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The Amphipods of Porto Rico and the Virgin Islands—*Clarence R. Shoemaker*

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CRUSTACEA MACRURA AND ANOMURA OF PORTO RICO AND THE VIRGIN ISLANDS

By Waldo L. Schmitt

CONTENTS

INTRODUCTION

In keeping with the general plan of these reports an endeavor has been made to include every species known from Porto Rico and the Virgin Islands, including St. Croix. For each there is given a brief recapitulation of specific characters except in the case of those belonging to genera represented by several species. In these instances the diagnostic keys provided will serve the same purpose. At least one species under each genus is figured. The several figures have been derived from various sources; a few are original. Due credit is given in all cases, and where a particular author's work does not appear in the synonymy of the species in question, it will be found in the bibliography accompanying this paper.

A *Crangon* (p. 145) represented by only a single chela has not been specifically determined, but has, for purposes of enumeration, been counted as a species. This chela is quite distinctive, but without more of the animal at hand has not warranted description. On the other hand, the several varieties and subspecies of *Synalpheus* are not counted apart from the species proper to which they are referable. Thus we are able to list from our region a total of 142 species, 68 genera, and 24 families of macruran and anomuran crustacea. In the collections of the Expedition, or assembled by the American Museum for this report, are nearly half the total number of species, 65, more than half the number of genera, 37, and two-thirds the number of families, 16—a very remarkable showing in view of the fact that only shore and shallow-water marine and freshwater collecting was undertaken. Four plates showing eight of the principal collecting localities will be found at the end of this part.

Four recently described species * are included in the above totals: *Synalpheus osburni, Periclimenes portoricensis, Gnathophylloides mineri, Paguristes tortugæ,* as well as a fifth species, *Emerita portoricensis,* described in the present paper. Types of the first three are in the American Museum and of the last two in the United States National Museum,

* Four new species of decapod crustaceans from Porto Rico. By Waldo L. Schmitt, Amer. Mus. Novitates, Sept. 26, 1933, No. 662, pp. 1-9, 4 figs.

as they had been previously noted in collections belonging to this institution. In connection with the determination of the new *Emerita portoricensis*—the only *Emerita* so far found in Porto Rico—occasion has been taken to revise our knowledge of the known species with the rather surprising result that at least seven † species may now be recognized, of which six are found in the Western Hemisphere, four on the Atlantic coast of America, *E. benedicti, E. brasiliensis, E. portoricensis, E. talpoida,* and two on the Pacific coast, *E. analoga, E. rathbunæ.* Further, it appears that the Indo-Pacific form long known as *Emerita asiatica,* is that first named by Linnæus as *Cancer emerita,* and should now be known as *Emerita emerita.* Characters by which these species may be distinguished are given in the form of a diagnostic key, and in part shown on an accompanying plate. On page 210 the name *Lepidopa benedicti* is proposed for *L. scutellata* Benedict (1903).

Any new information contained in this report relative to range and distribution of species other than that derived from Expedition material will have been drawn from unpublished records contained in the United States National Museum.

Quite obviously the present report is based upon the earlier and very comprehensive reports on the Porto Rican crustacean fauna by Mary J. Rathbun and James E. Benedict, authors respectively of "The Brachyura and Macrura of Porto Rico," and "The Anomuran Collections made by the Fish Hawk Expedition to Porto Rico," Bull. U. S. Fish Commission for 1900 [1901]. Other useful works will be found in the accompanying bibliography.

Grateful acknowledgment is here made to Dr. Willard G. Van Name of the American Museum of Natural History for his preliminary identification of the greater part of the material upon which this report is based.

SYSTEMATIC DISCUSSION

PENÆIDÆ

Penæus Fabricius

Penæus brasiliensis Latreille

Penæus brasiliensis Latreille, 1817, Nouv. Dict. Hist. Nat., xxv, p. 156; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 100; Milne Edwards and Bouvier, 1909, Mem. Mus. Comp. Zoöl., xxvii, No. 3, p. 235, Pl. VI, figs. 11-12, Text-figs. 64-67.

† Four are new, *E. portoricensis,* already mentioned above, and *E. benedicti, brasiliensis,* and *rathbunæ.*

Type locality.—Brazil.

Distribution.—Marthas Vineyard and Long Island Sound to Brazil; West Africa, Porto Rico, St. Thomas; to a depth of 955 fathoms.

Specimens collected.—San Juan: Condado Bay, 5; Palo Seco Point, 2; San Juan, 1. Off Parguera, west of Enriques Cayo, P. R., 1. Four miles east of Tallaboa, 1.

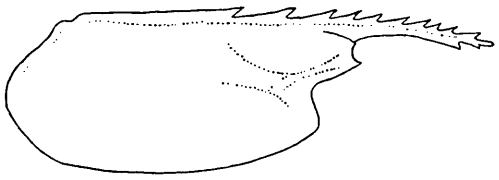

FIG. 1.—*Penæus brasiliensis* Carapace (after A. Milne Edwards and Bouvier)

Diagnosis.—Carapace and abdomen glabrous; postrostral carina extending almost to posterior margin, with a deep sulcus paralleling it either side. Rostrum exceeding eyes but shorter than antennular peduncles, armed above with nine or ten sharp teeth of which the first is almost at the middle of the carapace and a little separated from the others, six or seven teeth are situated on the free part of the rostrum, below there are two to three teeth. Fourth to sixth abdominal somites carinate, very sharp on sixth with a groove on either side; telson tapers to an acute spinous tip, without lateral or marginal spines.

Penæopsis Bate

Penæopsis serratus Bate

Penæopsis serratus Bate, 1881, Ann. Mag. Nat. Hist., (5), xiii, p. 183.

Parapenæus megalops Smith, 1885, Proc. U. S. Nat. Mus., viii, p. 172; Rathbun, 1901, Bull. U. S. Fish. Comm. for 1900, xx, Pt. 2, p. 102.

Penæopsis serratus A. Milne Edwards and Bouvier, 1909, Mem. Mus. Comp. Zoöl., xxvii, No. 3, p. 221, Pl. IV, fig. 1-4; Schmitt, 1926, Biol. Results "Endeavour," Australia, v, p. 322.

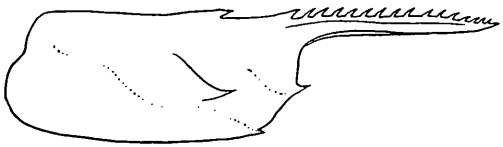

FIG. 2.—*Penæopsis serratus* Carapace (after A. Milne Edwards and Bouvier)

Type locality.—Off Morrosquillo, Colombia, 155 fathoms, *Albatross* Sta. 2143.

Distribution.—South Carolina to Colombia; West Indies; Porto Rico; 155-225 fathoms.

Diagnosis.—Carapace and abdomen glabrous; postrostral carina extending about half-way back on carapace. Rostrum about as long as antennal scale, armed above only with twelve to fifteen spines, gastric spine remote from rostral teeth. Fourth to sixth somites carinated; telson with a long slender fixed spine either side of spinous acumen.

Parapenæus Smith

Parapenæus americanus Rathbun

Parapenæus americanus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 102, Pl. II; A. Milne Edwards and Bouvier, 1909, Mem. Mus. Comp. Zoöl., xxvii, No. 3, p. 231.

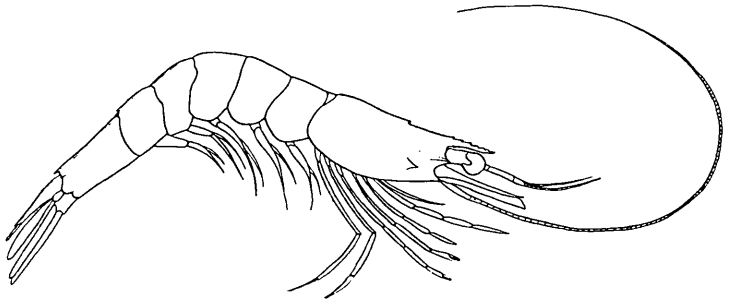

FIG. 3.—*Parapenæus americanus* (after Rathbun)

Type locality.—Mayagüez Harbor, Porto Rico, 220-225 fathoms, *Fish Hawk* Sta. 142.

Distribution.—Porto Rico; St. Lucia; Martinique: 116-225 fathoms.

Diagnosis.—Carapace and abdomen glabrous, postrostral carina fades out in posterior fourth of carapace. Rostrum short, scarcely exceeding the eyes; armed above only with six teeth in addition to a remotely isolated epigastric tooth. Fourth to sixth abdominal somites sharply carinate; telson terminates in an acicular spine armed either side with a slender fixed spine.

Trachypenæus Alcock

KEY TO SPECIES

A¹. Abdomen glabrous except for a narrow line of pubescence either side of median carina of fifth and sixth somites. Telson with short acuminate tip armed either side with a short spine.....*constrictus*

A². Posterior half of abdomen pubescent. Telson tapering gradually to a long, slender tip armed either side with a long, slender spine.....*similis*

Trachypenæus constrictus (Stimpson)

Penæus constrictus Stimpson, 1871, Ann. Lyc. Nat. Hist. N. Y., x, p. 135.
Parapenæus constrictus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 101.
Trachypenæus constrictus A. Milne Edwards and Bouvier, 1909. Mem. Mus. Comp. Zoöl., xxvii, No. 3, p. 232, Pl. V, fig. 7-10, Pl. VI, figs. 1, 2, Text-figs. 60-63.

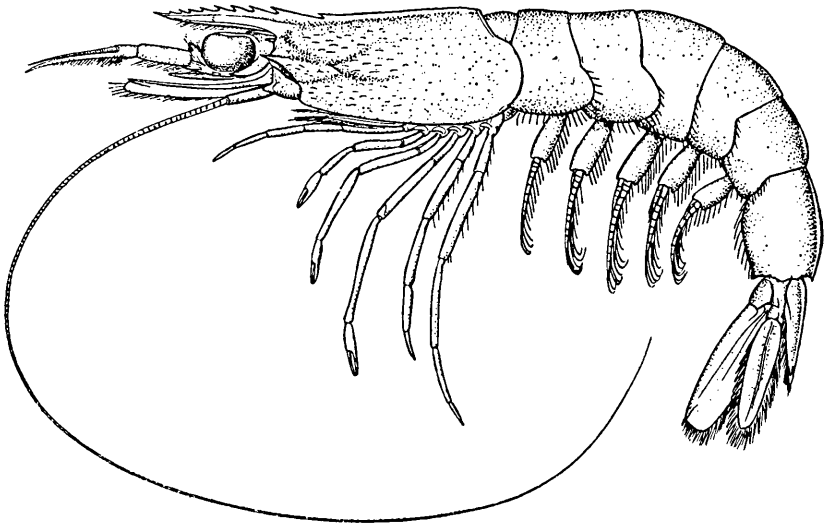

FIG. 4.—*Trachypenæus constrictus* (after Verrill)

Type locality.—Beaufort, North Carolina, 4 fathoms.

Distribution.—From off Chesapeake Bay and Bermuda to Louisiana; Porto Rico; Sombrero; to a depth of 27 fathoms.

Specimens collected.—Entrance Condado Bay, 1.

Trachypenæus similis (Smith)

Parapenæus constrictus variety *similis* Smith, 1885, Proc. U. S. Nat. Mus., viii, p. 175.
Parapenæus similis Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 101.
Trachypenæus constrictus similis Alcock, 1906, Cat. Indian Dec. Crust., Pt. 3, fasc. 1, p. 53.

Type locality.—Gulf of Paria, Trinidad, Venezuela, 31 fathoms, *Albatross* Sta. 2121-22.

Distribution.—Florida to Trinidad; Porto Rico; Vieques; St. Thomas: to a depth of 31 fathoms.

Specimens collected.—Guanica Harbor, 4. Salinas Cove, Don Luis Cayo, 4.

Xiphopenæus Smith

Xiphopenæus krøyeri (Heller)

Penaus krøyeri Heller, 1962, *Sitzb. Akad. Wiss.*, Wien, xlv, Abt. 1, p. 425. Pl. II, fig. 51.

Xiphopenæus krøyeri Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 102.

FIG. 5.—*Xiphopenæus krøyeri* (after Heller)

Type locality.—Rio de Janeiro, Brazil.

Distribution.—South Carolina to Brazil; Porto Rico.

Diagnosis.—Carapace and abdomen glabrous; rounded postrostral carina from base of rostrum to posterior border. Rostrum long and slender, equalling or exceeding carapace, basally with a thin high crest which is armed above only with five sharp teeth in addition to an isolated epigastric spine. Fourth to sixth abdominal somites carinate, carina high and sharp on sixth somite; telson tapers to an acute spinous tip, without lateral or marginal spines.

Eusicyonia Stebbing

KEY TO SPECIES

A¹. Dorsal crest of carapace armed with three teeth; rostrum proper armed with two teeth above, not counting terminal spiniform armature. *lævigata*

A². Dorsal crest of carapace with two teeth; three superior rostral teeth.

B¹. Anterior of two teeth on carapace located well behind insertion of hepatic spine..... *edwardsii*

B². Anterior tooth of carapace about over or a little before the hepatic spine..... *dorsalis*

Eusicyonia lævigata Stimpson

Sicyonia lævigata Stimpson, 1871, Ann. Lyc. Nat. Hist. New York, x, p. 131; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 103.

Type locality.—Charleston, South Carolina.

Distribution.—From off Cape Hatteras to Colombia; Porto Rico, Culebra, Vieques, Humaçao, St. Thomas; to a depth of 49 fathoms.

Specimens collected.—Condado Bay, San Juan, 1. Guanica Harbor, 8. Off Tallaboa, 2. Salinas Cove, Don Luis Cayo, 1.

Eusicyonia dorsalis Kingsley

Sicyonia dorsalis Kingsley, 1878, Proc. Acad. Nat. Sci. Phila., xxx, p. 97 [9]; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 103; A. Milne Edwards and Bouvier, 1909, Mem. Mus. Comp. Zoöl., xxvii, No. 3, p. 253, Pl. VIII, figs. 4-13, Text-figs. 86-88.

Type locality.—Fort Jefferson, Dry Tortugas, Florida.

Distribution.—From off Cape Hatteras to Colombia; Porto Rico; Vieques; St. Thomas; to a depth of 230 fathoms.

Eusicyonia edwardsii (Miers)

Sicyonia carinata Milne Edwards, 1830, Ann. Sci. Nat., xix, p. 344, Pl. IX, fig. 9; 1837, Hist. Nat. Crust., ii, p. 410.

Sicyonia edwardsii Miers, 1881, Ann. Mag. Nat. Hist., series 5, viii, p. 367; A. Milne Edwards and Bouvier, 1909, Mem. Mus. Comp. Zoöl., xxvii, No. 3, p. 251, Pl. XIII, figs. 1-3.

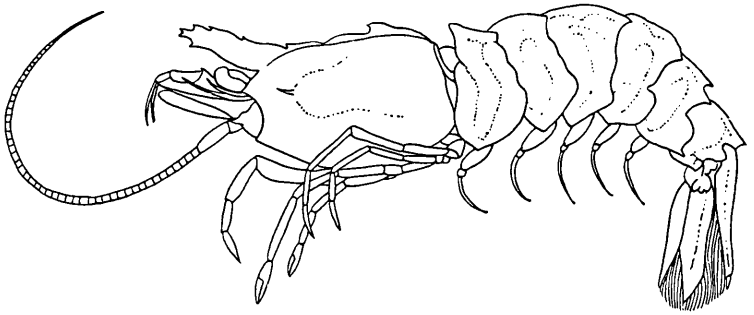

FIG. 6.—*Eusicyonia edwardsii* (after A. Milne Edwards and Bouvier)

Type locality.—Not known (M. Edw., 1830); Rio de Janeiro, Brazil (M. Edw., 1837).

Distribution.—Florida to Brazil, shallow water to 27 fathoms. Flanagan Passage, 27 fathoms.

PASIPHÆIDÆ

Leptochela Stimpson

KEY TO SPECIES

A¹. Orbits entire; carina of fifth abdominal somite dentate.....*carinata*

A². Orbits serrate or spinulous; carina of fifth somite entire.....*serratorbita*

Leptochela carinata Ortmann

Leptochela carinata Ortmann, 1893, Ergeb. Plankton Exped., ii, [pt.] G, b, p. 41, Pl. IV, fig. 1; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 127.

Type locality.—Off the mouth of Tocantins River [about 40 miles S. W. of Para], Brazil, 27 to 55 fathoms.

Distribution.—Bahamas to Brazil; Vieques; Culebra; to a depth of 28 fathoms.

Leptochela serratorbita Bate

Leptochela serratorbita Bate, 1888, Challenger Rept., Zool., xxiv, p. 859, Pl. CXXXIX, fig. 1; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 127.

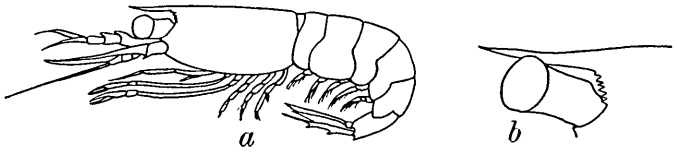

FIG. 7.—*Leptochela serratorbita*: a, lateral view; b, rostrum and orbital margin (after Bate)

Type locality.—St. Thomas, shallow water.

Distribution.—Key West, Florida to St. Thomas; Porto Rico; Vieques; Culebra; to a depth of 23 fathoms.

ATYIDÆ

Xiphocaris von Martens

Xiphocaris elongata (Guérin)

Hippolyte elongatus Guérin, 1856 [1857], in La Sagra's Hist. Cuba, Pt. 2, vii, Crustaceous, p. xx, viii, atlas, Pl. II, fig. 16.

Xiphocaris elongata Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 118; Bouvier, 1925, Encyc. Entom., iv, p. 48, figs. 1-53.

Type locality.—Cuba.

Distribution.—West Indies: Cuba to Barbados; Porto Rico; fresh water.

Specimens collected.—Guanica Lake, 133. Streams between Lake Guanica and Guanica, 8. San Juan, 54. Brackish lagoon, Tallaboa, 3. Mayagüez, 5. Aibonito (woods, five minutes' walk north of town across park, under dead leaves, soil, humus *), 1.

* This Aibonito record, in view of the information on the label accompanying it, would almost seem to be based on a specimen found migrating from one body of water to another (?). It is certainly not to be expected that it could exist for any reasonable length of time in damp soil.

Diagnosis.—The genus is monotypic. The rostrum typically exceeds the carapace in length, though subject to considerable variation; it may even be so short as not to exceed the middle of the second article of the antennular peduncle. For the greater part, the rostrum is unarmed above, there may be from one to nine teeth near the tip, and from six to fifteen basally, more or less over the eyes; specimens have been found

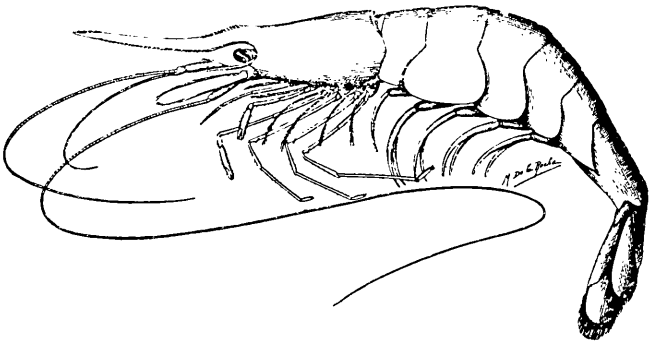

FIG. 8.—*Xiphocaris elongata* (after Bouvier)

among the shorter rostrated forms which are wholly devoid of teeth above: below there may be from none up to thirty-five or more teeth disposed more or less regularly along the greater part of the inferior margin.

Remarks.—The rostrum of the last specimen is shorter than in any of the described varieties, and, though not appearing so, may be abnormal or regenerated. It is scarcely as long as the first segment of the antennular peduncle.

Atya Leach

KEY TO SPECIES

A¹. Lateral indentation on either rostral margin formed by a broadly obtuse angulation; intermediate bristles of telson in a single series. *occidentalis*

A². Lateral notch of rostral margin formed by a right or acute angle which terminates externally in an obtuse tooth; intermediate bristles of telson arranged in two series..... *scabra*

Atya occidentalis Newport

Atya occidentalis Newport, 1847, Ann. Mag. Nat. Hist., xix, p. 159; Bouvier, 1925, Encyc. Entomol., iv, p. 312, figs. 700-702.

Atya scabra Rathbun (part), 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 119.

FIG. 9.—*Atya occidentalis*
a, dorsal view of rostrum (after Bouvier)
b, frontal view of rostrum and frontal margin of carapace

Type locality.—Jamaica.

Distribution.—Mexico, Central America, West Indies, West Africa; Porto Rico; fresh water.

Specimens collected.—Luguillo Forest, 2.

Atya scabra Leach

Atya scabra Leach, 1815, Trans. Linn. Soc. London, xi, p. 345.

Atya scabra Leach, 1817, Zool. Misc., iii, p. 29, Pl. CXXXI; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 119; Bouvier, 1925, Encyc. Entom., iv, p. 314, figs. 55-67, 703-706.

Type locality.—Not indicated.

Distribution.—Mexico, Central America; West Indies, and northern South America; West Africa, and adjacent islands; New Caledonia, and Australia; Porto Rico; fresh water.

Ortmannia Rathbun

Though the Ortmannias are mutant forms of *Atya,* too little is known of most of them to properly link them with the corresponding species of the latter. For systematic treatment, at least for the present, it is a convenience to deal with the two as distinct genera.

KEY TO SPECIES

A¹. Rostrum a little longer than the antennular peduncles. Pterygostomian angle rounded.....*serrei*

A². Rostrum reaches about to middle of second segment of antennular peduncle, more or less. Pterygostomian angle acute.....*mexicana*

Ortmannia mexicana Saussure

Caridina mexicana Saussure, 1858, Mém. Soc. Phys. Hist. Nat. Genève, xiv, p. 463, Pl. IV, fig. 26.

Atyoida potimirim Müller, 1881, Kosmos, ix, p. 117, figs. 1-20.

Ortmannia mexicana Bouvier, 1925, Encyc. Entom., iv, p. 289, figs. 660-669.

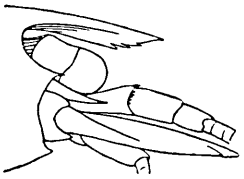

FIG. 10.—*Ortmannia mexicana* Lateral view of front (after Bouvier)

Type locality.—From the vicinity of Vera Cruz, Mexico.

Distribution.—Mexico to Brazil: Porto Rico; Vieques; fresh water.

Specimens collected.—Streams between Lake Guanica and Guanica, 2.

Ortmannia serrei Bouvier

Ortmannia serrei Bouvier, 1909, Bull. Mus. Paris, p. 332; 1925, Encyc. Entom., iv, p. 279, figs. 645-654.

Type locality.—Havana, Cuba.

Distribution.—Heretofore known only from Cuba, but with the specimens collected, as noted below, now includes Porto Rico in its range.

Specimens collected.—Streams between Lake Guanica and Guanica, 3.

Micratya Bouvier

Micratya poeyi (Guérin)

Atya poeyi Guérin, 1856 [1857] in La Sagra's Hist. Cuba, Pt. 2, vii, Crustaceos, p. XVIII, viii, atlas, Pl. II, figs. 7, 7a, 7b.

Micratya poeyi Bouvier, 1925, Encyc. Entomol., iv, p. 325, figs. 709-716.

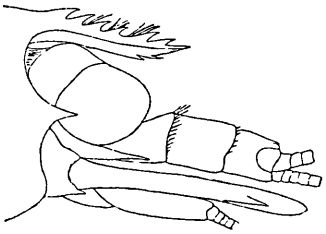

FIG. 11.—*Micratya poeyi* Lateral view of front (after Bouvier)

Type locality.—Cuba.

Distribution.—To the known Cuban localities may be added the Arimoa River, Santa Clara, a first record for the south coast of Cuba where more than a dozen specimens were taken by Mr. John H. Welsh,

June, 1929. The Porto Rican specimens listed below represent the first known occurrence of the species outside of Cuba.

Specimens collected.—Barros, Porto Rico, June 4, 1915, 2.

Diagnosis.—The genus is monotypic. The rostrum about to the second segment of the antennular peduncle; it is much compressed and is armed with five to eight strong teeth above and usually with one or two smaller teeth below.

PANDALIDÆ

Parapandalus Borradaile

Parapandalus longicauda (Rathbun)

Pandalus longicauda Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 117, fig. 24.

Parapandalus longicauda de Man, 1920, Siboga Exped., Monog. 39a[3], pp. 107, 138, 140.

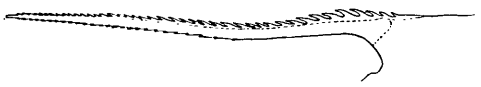

FIG. 12.—*Parapandalus longicauda* (from Rathbun)

Type locality.—Gulf of Mexico, lat. 28° 42′ 30″ N., long. 85° 29′ W., 88 fathoms, *Albatross* Sta. 2403.

Distribution.—Otherwise has been taken only in Mayagüez Harbor, Porto Rico, 220-225 fathoms.

Diagnosis.—Rostrum twice as long as carapace and nearly horizontal; at the posterior sixth of carapace a small blunt median spine; in front of this arises the median crest which is unarmed posteriorly, anteriorly with about forty small, fixed spines, of which two or three are on the carapace, the remainder on the rostrum: lower edge of rostrum armed with about thirty spines. Thoracic legs without epipodites; second pair of legs subequal, carpus one and a half times merus, and about twenty jointed. Sixth abdominal somite much compressed and three times the length of the fifth; it has a median groove with a carina on each side.

Pantomus A. Milne Edwards

Pantomus parvulus A. Milne Edwards

Pantomus parvulus A. Milne Edwards, 1883, Recueil de Figures de Crustacés nouveaux ou peu connus, Pl. XXVI; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 117.

Type locality.—Northern part of Yucatan Bank, lat. 23° 13′ N., long. 89° 16′ W., 84 fathoms, *Blake* Sta. 36.

Distribution.—Otherwise known from off Cape Lookout, North Carolina, Cape San Blas, Florida; Porto Rico and St. Croix; 84-248 fathoms.

Diagnosis.—The articulated rostrum is longer than the carapace, terminal half ascending; anterior half of carapace carinated and armed

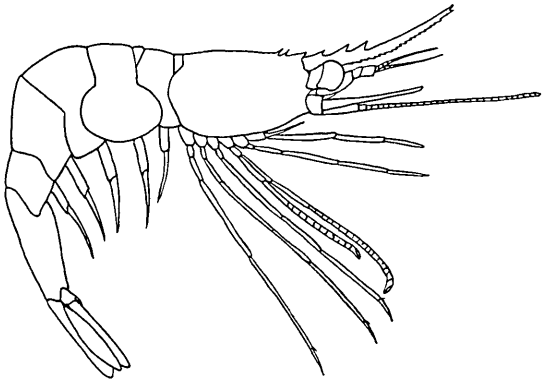

FIG. 13.—*Pantomus parvulus*
(after Milne Edwards)

with three spines; three spines on basal half of rostrum, tip bifid, armed below with numerous slender overlapping spines. Second pair of legs unequal, carpus of longer with fifteen to seventeen articles, shorter with carpus of ten to twelve articles. Third abdominal somite carinated in its posterior half; sixth somite elongate, two and a half times as long as fifth.

CRANGONIDÆ

Automate de Man

Automate evermanni Rathbun

Automate evermanni Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 112, fig. 22.

Type locality.—Off Aguadilla, Porto Rico, 137 fathoms, *Fish Hawk* Sta. 6055.

Distribution.—Has also been taken in Mayagüez Harbor, Porto Rico, 12-18 fathoms.

Diagnosis.—Carapace compressed, smooth. Rostrum very small, triangular, more or less acute. Antennular scale not reaching end of basal segment, antennal scale about as long as median segment of antennular peduncle, its outer margin straight. Anterior margin of carpus of large

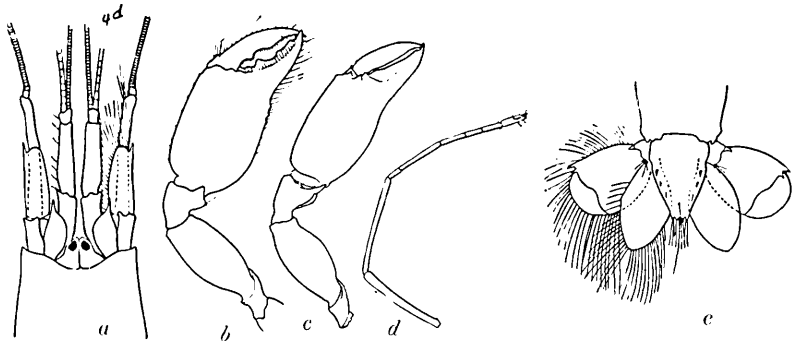

FIG. 14.—*Automate evermanni*
a, anterior portion
b, male cheliped
c, female cheliped
d, second leg
e, tail fan
(from Rathbun)

cheliped with a projecting tooth on lower border of outer side, another smaller tooth on upper part of inner side; lower margin propodus granulated near its middle; fingers gaping. In the female the carpus is longer, the propodus narrower, non-granulate, and the fingers do not gape. In the carpus of the second pair of legs the first joint is little more than one-half the second, fourth a little longer than first, fifth intermediate between third and fourth.

Jousseaumea Coutière

Jousseaumea trigona (Rathbun)

Jousseaumea trigona Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 111, fig. 21.

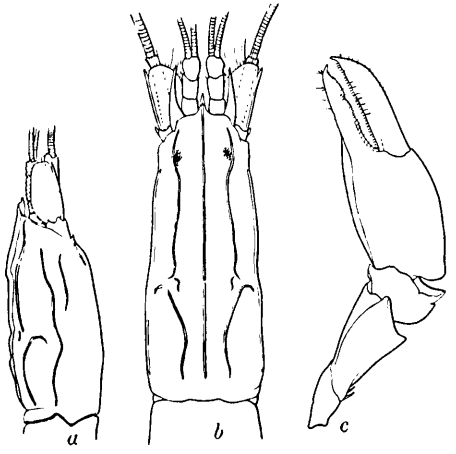

FIG. 15.—*Jousseaumea trigona*
a, lateral view of carapace
b, dorsal view
c, cheliped
(from Rathbun)

Type locality.—Off Vieques, 6 fathoms, *Fish Hawk*, Sta. 6096.

Distribution.—Has also been taken at Barbados.

Diagnosis.—Carapace depressed, cristate, with nine sharp longitudinal crests, of which the median extends from the tip of the rostrum to near the posterior margin of the carapace. Rostrum viewed from above, triangular acute, tip reaching slightly beyond the first segment of the antennular peduncle. Antennular peduncle short, second segment a little longer than third; scale broad at base as peduncle and overreaching a little the penultimate segment of peduncle. Antennal peduncle little longer than antennular; scale very broad with almost straight outer margin, and not quite so long as antennular peduncle, distal spine scarcely overreaching blade. Carpus of large cheliped very short, with a sharp outer tooth; fingers about as long as palm, subcylindrical, movable finger larger than fixed; fingers terminating in horny tips crossing each other, prehensile edges subentire and ciliate. First segment of carpus of second legs equal to second, third, and fourth taken together; these three subequal; fifth one and a half times fourth; palm as long as fifth carpal segment, fingers a little longer than palm.

Crangon Weber

Key to Species

A¹. Carapace without median spine at base of rostrum; no long spine between rostrum and orbital hoods.

B¹. Orbital hoods spined.

C¹. Propodus of large chela notched on both margins.

D¹. Meri of third and fourth legs with distal spine beneath; basal antennal spine long, rostrum keeled..... *candei*, p. 143

D². Meri of third and four legs not spined; basal antennal spine short; rostrum flattened, not keeled..... *macrocheles*, p. 142

C². Propodus of large chela not notched; smooth and more or less evenly rounded though compressed; meri of third and fourth legs not spined; basal antennal spine short; rostrum flattened. *formosus*, p. 144

B². Orbital hoods not spined.

C¹. Propodus of large chela not notched below.

D¹. Meri of third and fourth legs with distal spine beneath; no basal antennal spine; orbital hoods rounded but with small triangular projection either side of keeled rostrum. *cristulifrons*, p. 143

D². Meri of third and fourth legs not spined; basal antennal spine present.

E¹. Orbital hoods triangularly produced, but not spined; propodus of large chela notched above.....*packardii*, p. 144

E². Orbital hoods rounded; propodus of large chela not notched.

F¹. Large chela with two longitudinal grooves on outer surface.....*rostratipes*, p. 145

F². Large chela flattened, with at most a longitudinal broad, shallow groove or depression on either side leading from fixed finger.....*floridanus*, p. 144

C². Propodus of large chela notched on both margins; meri of third and fourth legs not spined.

D¹. Orbito-rostral depressions not sharply marked off behind, gradually merging with carapace.....*heterochælis*, p. 144

D². Orbito-rostral depressions sharply marked off from carapace behind.....*armillatus*, p. 142

A². Carapace with median spine at base of rostrum; a long spine between rostrum and orbital hoods.....*armatus*, p. 142

Crangon Weber

? Crangon macrocheles (Hailstone)

Hippolyte macrocheles Hailstone, 1835, Mag. Nat. Hist., viii, pp. 395, 549, 552, 553.
Alpheus macrocheles Zimmer, 1913, Zool. Jahrb., suppl. XI, p. 386, fig. F.

Type locality.—Hastings, England.

Distribution.—England; Mediterranean; St. Thomas.

Specimens collected.—A single specimen lacking the chelæ and most of the other legs, off Cana Gorda Island, outside Guanica Harbor, appears, from what there is left of it, to comply with the description given by Miss Rathbun (1901).

Crangon armatus Rathbun

Alpheus armatus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 108, fig. 20. Zimmer, 1913, Zool. Jahrb., suppl. II, p. 395, figs. W, X, Y, Z, A¹, B¹.

Type locality.—Ponce, Porto Rico.

Distribution.—Also recorded from Jamaica and St. Thomas.

Crangon armillatus (H. Milne Edwards)

Alpheus armillatus H. Milne Edwards, 1837, Hist. Nat. Crust., ii, p. 354; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 107 (part); Zimmer, 1913, Zool. Jahrb., suppl. XI, p. 401, figs. K¹, T¹.

Type locality.—West Indies.

Distribution.—North Carolina, and Bermuda, to Brazil; Porto Rico; Hucares; St. Thomas.

Specimens collected.—Julia Cove, Guanica Harbor, 2. Porto Rico, 2.

Crangon candei (Guérin)

Alpheus candei Guérin, 1856 [1857], in La Sagra's Hist. Cuba, Pt. 2, vii, Crustaceos, p. XIX, viii, atlas, Pl. II, fig. 9; Verrill, 1922, xxvi, p. 68, Pl. XIX, figs. 3a-d, Pl. XX, fig. 1, Pl. XXI, figs. 6, 6a, Pl. XXIV, figs. 2-4, Pl. XXV, figs. 7, 8, Pl. XXIX, figs. 1a-t, Text-fig. 5b.

Alpheus dentipes Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 105.

? Alpheus candei Coutière, 1910, Proc. U. S. Nat. Mus., xxxvii, p. 486, fig. 1.

Crangon candei Schmitt, 1924, Univ. Iowa Studies Nat. Hist., x, p. 69.

Type locality.—Cuba.

Distribution.—Bermuda; Cuba to Barbados and Curaçao; Porto Rico; Culebra.

Specimens collected.—Guanica Harbor, 1; south of Cana Gorda, near Guanica, 2; off Guanica Harbor, 1; due south of bell buoy, off Guanica Harbor, 1. Porto Rico, 1.

Remarks.—In placing these several specimens under *C. candei* I follow Coutière and Verrill; but for want of a sufficiently complete set of specimens I have not been able to satisfy myself as to the proper definition of this species and its distinction from *C. dentipes*. Typical European and Mediterranean specimens of the latter are regrettably not to hand at this writing. As mentioned at an earlier date (1924) the movable finger of the larger chela may be either blunt or more or less swollen or more or less pointed or acuminate. One with such a finger appears in the present collection from off Guanica Harbor (due south of bell buoy); the others have fingers of the blunter swollen end type, as did specimens from Barbados which I had the opportunity of examining.

Crangon cristulifrons Rathbun

Alpheus cristulifrons Rathbun, 1900, Proc. Wash. Acad. Sci., ii, p. 152; 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 106.

Type locality.—Fernando Noronha.

Distribution.—Dry Tortugas, Florida to Barbados and Curaçao; Porto Rico; Culebra.

Specimens collected.—Entrance Condado Bay, San Juan, 1.

Crangon floridanus (Kingsley)

Alpheus floridanus Kingsley, 1878, Bull. U. S. Geol. Survey, iv, p. 193; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 107.

Alpheus platycheirus Boone, 1927, Bull. Bingham Oceanog. Coll., i, p. 131, figs. 29, 30; 1930; Zoologica, xii, p. 49, figs. 9, 9a.

Type locality.—Fort Jefferson, Dry Tortugas, Florida.

Distribution.—Dry Tortugas, Florida; Jamaica; Porto Rico; Curaçao.

Specimens collected.—Guanica Harbor, 1.

Crangon formosus (Gibbes)

Alpheus formosus Gibbes, 1850, Proc. Amer. Assoc. Adv. Sci., iii, p. 196 (32); Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 106.

Alpheus panamensis Zimmer, 1913, Zool. Jahrb., suppl. XI, Pt. 3, p. 391, figs. X-V.

Type locality.—Key West, Florida.

Distribution.—North Carolina and Bermuda to Brazil; Porto Rico; Culebra; Humaçao; St. John.

Specimens collected.—Coral reefs, Ballena Point, 1.

Crangon heterochælis (Say)

Alpheus heterochaelis Say, 1818, Jour. Acad. Nat. Sci. Phila., i, p. 243; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 107 (part).

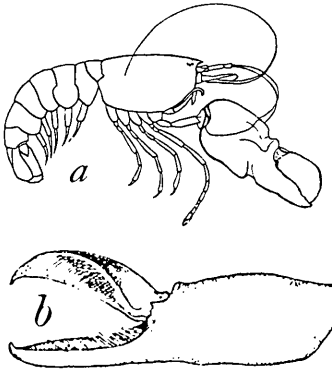

Fig. 16.—*Crangon heterochaelis*
a, lateral view (after Kingsley)
b, small chela of male (after Hay)

Type locality.—Southern States.

Distribution.—Virginia and Bermuda to Brazil; Porto Rico: Culebra.

Specimens collected.—San Juan: Condado Bay, 1; East end San Antonio R. R. Bridge (Miramar), 2. Ensenada, 1.

Crangon packardii (Kingsley)

Alpheus packardii Kingsley, 1879 (1880), Proc. Acad. Nat. Sci. Phila., xxxi, p. 417; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 107; Zimmer, 1913; Zool. Jahrb., suppl. XI, p. 409, figs. A^2, G^2.

Type locality.—Key West, Florida.

Distribution.—North Carolina and Bermuda to Florida and West Indies; Porto Rico; Culebra; Fajardo; St. Thomas.

Specimens collected.—Condado Bay, 2. Guanica Harbor, 1. Mangrove Island at Parguera, 1. Off Parguera west of Enriques Cayo, 1. Point Brea, 1.

Crangon rostratipes Pocock

Alpheus rostratipes Pocock, 1890, Jour. Linn. Soc. London, Zool., xx, p. 522; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 108.

Type locality.—Fernando Noronha.

Distribution.—Has also been recorded from Porto Rico, Curaçao, and Brazil.

Crangon species

Alpheus macrocheles Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx. Pt. 2, p. 105 (part).

Remarks.—This small major chela mentioned by Miss Rathbun, is, as she herself thought, not *C. macrocheles.* The fixed finger is much too long and there is little or no evidence of a notch in the ventral margin of the palm. This seems to definitely preclude its being *C. macrocheles,* but I have not, on the other hand, been able to identify it with any of the species from the West Indies or adjacent regions.

Synalpheus Bate

KEY TO SPECIES

To avoid encumbering this key as well as the systematic discussion, it has been deemed best to refer to such subspecies, or forms occurring in the region covered by this report, under the respective species of which they are a part.

A¹. Dactyls of third, fourth, and fifth legs with two very unequal hooks, of which the ventral is much the stronger; proximally placed with respect to the ventral process is an inconspicuous obtuse supernumerary process; basicerite spinous above.....*fritzmülleri*, p. 148

A². Dactyls with two hooks approximately equal in width at the base.

B¹. Dactyls long and slender, hooks continuing the general direction of the axis of the dactyl; antennular scale longer than basal segment of antennular peduncle; blade of antennal scale always present.

C¹. Frontal teeth always longer than wide and spinous; rostrum armed with a ventral prolongation which embraces the ocellary beak.

D¹. Upper anterior margin of palm of large chela armed with a spine or spinous prominence.

E¹. Basicerite unarmed above..... ...*townsendi*, p. 151

E². Basicerite strongly spinous above... ....*apioceros*, p. 147

D². Palmar border of large chela unarmed.....*latastei*, p. 148

C². Frontal teeth usually more or less squat triangular, at times with concave margins and somewhat longer (as the subspecies *antillensis* of *S. minus*), but never with an inferior vertical prolongation to the rostrum.

D¹. Basicerite strongly spinous above; carpus of second legs less than ten times as long as wide.. .....*minus*, p. 149

D². Basicerite acutely angled, but not distinctly spinous above; carpus of second legs ten to fifteen times as long as wide. *brevicarpus*, p. 147

B². Dactyls short, hooks strongly curved, the ventral one usually bent at a considerable angle to the axis of the dactyl; antennular scale not exceeding the first segment of the antennular peduncle.

C¹. Antennal scale lacking blade.

D¹. Basicerite more or less projecting and spinous above.

E¹. Blunt tubercle on palmar border of large chela directed obliquely upward, margin of outer uropod with three teeth .....*rathbunæ*, p. 151

E². Blunt tubercle on palmar border of large chela directed forward continuing the line of the superior border of the palm. Outer margin of uropod with more than three teeth.....*osburni*, p. 149

D². Basicerite unarmed above, rounded off or merely angulated.

E¹. Spine of antennal scale not exceeding second segment of antennular peduncle..... ...*brooksi*, p. 148

E². Spine of antennal scale as long as or longer than antennular peduncle.....*pectiniger*, p. 151

C². Blade of antennal scale present (very much reduced in females of *S. paraneptunus*).....

D¹. Posterior border of telson with four nearly equal and almost equidistant spines; antennal scale reduced, may reach middle of second segment of antennular peduncle...*pandionis*, p. 149

D². Inner pair of spines of posterior border of telson about twice or more than twice as long as outer.....

E¹. Carpocerite stout, four times as long as wide in female, only three and a half times in the male. Brush of hairs on movable finger of small chela of large size, fifteen to twenty rows of hairs.....*sanctithomæ*, p. 151

E². Carpocerite quite slender, six times as long as wide. Brush of hairs on small chela much reduced, about thirty hairs in six rows. ..... *paraneptunus*, p. 150

Synalpheus apioceros Coutière

Synalphcus apioccros Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 27, fig. 9, fig. 10 (subsp. *sanjosci*), fig. 11 (subsp. *mayaguensis*), fig. 12 (subsp. *leiopes*), fig. 13 (subsp. *desterrocnsis*).

Type locality.—The type of the species (*s. s.*) was taken at Marco, Florida.

Distribution.—The species proper is known from type locality and also Plataforma, Brazil, but between these two extremes has only been reported from Jamaica, and Curaçao, to a depth of 9½ fathoms. The subspecies *mayaguensis* is known only from four specimens taken from a coral reef at Mayagüez, Porto Rico; *sanjosei* is a Lower California form; *leiopes,* from Venezuela; and *desterroensis* from Desterro, now Florianopolis, Brazil.

Specimens collected.—Mangroves between Ensenada and Guanica, 1. Only the subspecies *mayaguensis* has been reported from Porto Rico before. The specimen here recorded approaches the typical form more nearly than the Porto Rican variety, inasmuch as the spine arising from the palmar border of the chela is the anterior prolongation of a swollen prominence which rises above the anterior or superior margin of the palm, while in *mayaguensis* the spine "continues in a straight line the anterior margin of the palm." In the subspecies the dactyl of the third pair of legs is 3.8 times as long as wide in the species proper, 3.2 times as long as wide at the base.

Synalpheus brevicarpus (Herrick)

Alpheus saulcyi var. *brevicarpus* Herrick, 1891, Mem. Nat. Acad. Sci., v, p. 384.
Synalphcus brevicarpus Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 50, fig. 29, fig. 30 (subsp. *guerini*).

Type locality.—The specimens upon which Herrick's description is based were taken in the Bahamas.

Distribution.—The typical form is known from Florida and the Bahamas, the Gulf of Mexico, Cuba, Barbados, and Curaçao; the subspecies from its original locality off Humaçao near Porto Rico, 9½ fathoms, Key West, and Curaçao.

Specimens collected.—Off mouth of Guanica Harbor, 1. This individual appears to more nearly approach the typical species than the

variety. However, the tubercle on the palmar border of the large chela is but pointed and not tipped by a spine as it is both in the species and subspecies. The latter differs from the former in that "the basicerite of the antenna is a little more spinous above" and the blade of the scaphocerite about equals the antennular peduncle while the spine considerably exceeds it. In the species proper the spine exceeds the blade only slightly.

Synalpheus brooksi Coutière

Synalpheus brooksi Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 69, fig. 41, fig. 42 (subsp. *strepiceros*), fig. 43 (subsp. *eleutherae*).

Type locality.—Sugar Loaf Key, Florida.

Distribution.—Florida and Bahamas to Brazil; Vieques; St. Thomas; to a depth of 168 fathoms. Two subspecies, *eleutherae* Coutière and *strepsiceros* Coutière, are found at Eleuthera Island, Bahamas, and at St. Thomas, respectively.

Synalpheus fritzmülleri Coutière

Synalpheus fritzmülleri Coutière, 1909, Proc. U. S. Nat. Mus. xxxvi, p. 35, fig. 18, fig. 19 (subsp. *elongatus*).

Type locality.—Marco, Florida.

Distribution.—Florida to Brazil; Lower California; to a depth of 28 fathoms; the typical form has been taken in Florida, Porto Rico, St. Thomas and Lower California; the subspecies *elongatus* Coutière from South Carolina to Desterro, Brazil, including Jamaica and Barbados. Verrill (1922, Trans. Conn. Acad., p. 97, Pl. XXII, fig. 6, Pl. XXXIX, figs. 1-1d (var. *carolinensis*), 3a-3c (var. *caribea*) has figured and described two varieties as he calls them, *carolinensis*, Fort Macon, North Carolina, and *caribea*, from Dominica.

Synalpheus latastei Coutière

Synalpheus latastei Coutière, 1909, Proc. U. S. Nat. Mus. xxxvi, p. 25, fig. 7, fig. 8 (subspecies *tenuispina*).

Type locality.—The species (*s. s.*) is described from specimens from Chile.

Distribution.—Other than from the type locality the species proper is only doubtfully recorded from Australian waters. However, a subspecies, *tenuispina*, was described by Coutière from Desterro, Brazil, and

the specimens taken by the Expedition rather closely resemble this form.

Specimens collected.—Outside Cayo Maria Langa, entrance Guayanilla Harbor, 3. These specimens are tentatively here assigned to the subspecies.

Synalpheus minus Say

Alpheus minus Say, 1818, Jour. Acad. Nat. Sci., Phila., i, p. 245.
Synalpheus minus Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 43, fig. 25, fig. 26 (*bahiensis*), fig. 27 (*antillensis*).

Type locality.—Southern States.

Distribution.—North Carolina and Bermuda, to Brazil; Porto Rico: St. Thomas, to a depth of 28 fathoms. The subspecies *bahiensis* Coutière has been found at Bahia, and Plataforma, Brazil; and the subspecies *antillensis* Coutière in Florida, Porto Rico, and St. Thomas.

Specimens collected.—Outside Cayo Maria Langa, entrance Guayanilla Harbor, 3 fragmentary specimens which appear more referable to the subspecies *antillensis* than the typical form. The frontal teeth of the latter are quite short and more or less equilateral; in the former they are quite long and a little concave on the sides.

Synalpheus pandionis Coutière

Synalpheus pandionis Coutière, 1909, Proc. U. S. Nat. Mus. xxxvi, p. 67, fig. 39, fig. 40 (subsp. *extentus*).

Type locality.—Known only from off St. Thomas, 20-23 fathoms, *Fish Hawk* Sta. 6079. At this station was taken also a specimen representing the subspecies *extentus*.

Distribution.—Confined to Porto Rican and Virgin Island waters.

Specimens collected.—Between Ratones and Caribe Islands off Tallaboa Bay, 1. This specimen seems to be quite typical except that the inner pair of the four spines on the hinder margin of the telson are longer than the outer, all are about equally slender and equidistant. The species proper has the spine of the basicerite and scaphocerite shorter than the antennular peduncle; in the subspecies these spines equal the peduncle.

Synalpheus osburni Schmitt

Synalpheus osburni Schmitt, 1933, Amer. Mus. Novitates, No. 662, p. 1, fig. 1.

Type locality.—Cayo Maria Langa, near Guayanilla Harbor, Porto Rico; the only record for this species.

Specimens collected.—A single ovigerous female taken June 25, 1915.

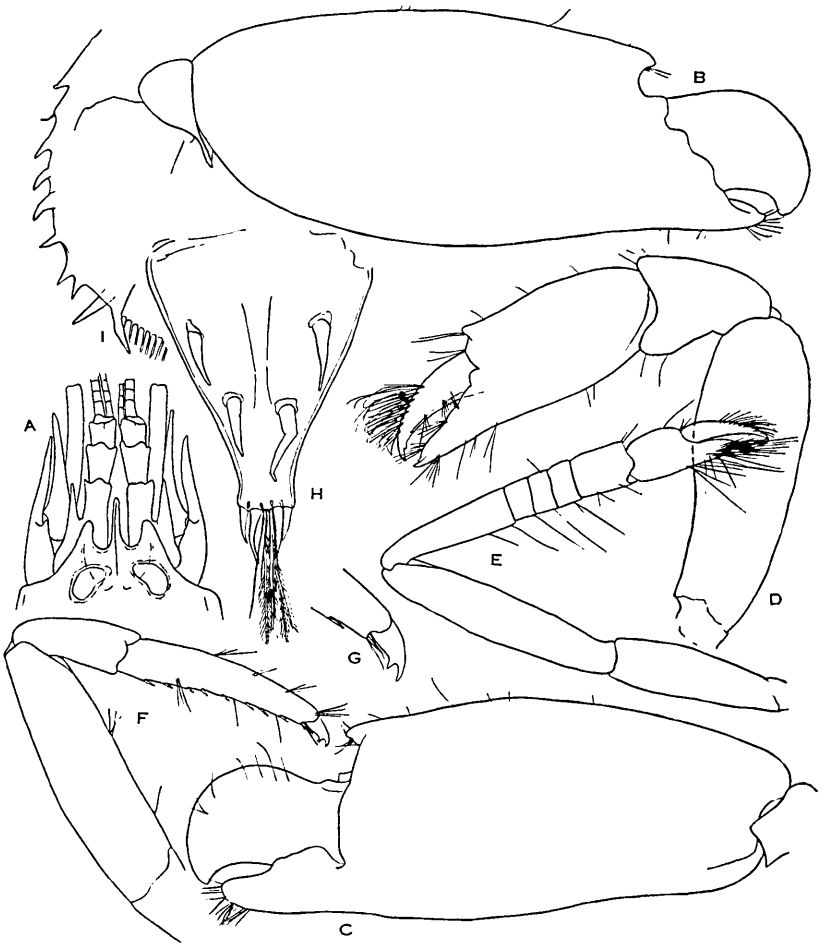

FIG. 17.—*Synalpheus osburni:* a, front from above; b, c, large chela, inner and outer aspects; d, small chela; e, second leg; f, third leg; g, dactyl enlarged; h, telson; i, outer margin of uropod

Synalpheus paraneptunus Coutière

Synalpheus paraneptunus Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 86, fig. 52.

Type locality.—Near Morrosquillo, Colombia, 42 fathoms, *Albatross* Sta. 2112.

Distribution.—Except for the two specimens mentioned below, and the type, known otherwise only from Jamaica.

Specimens collected.—Porto Rico, 2.

Synalpheus pectiniger Coutière

Synalpheus pectiniger Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 78, figs. 48, 49.

Type locality.—Curaçao.

Distribution.—Florida and Bahamas to Curaçao; St. Thomas; to a depth of 26 fathoms.

Synalpheus rathbunæ Coutière

Synalpheus rathbunæ Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 84, fig. 51.

Type locality.—Off St. Thomas, 20-23 fathoms, *Fish Hawk* Sta. 6079.

Distribution.—Otherwise known only from Porto Rico, and off Vieques; to a depth of 12½ to 33 fathoms, except for the specimens taken in the course of the Academy's expedition.

Specimens collected.—Off Cana Gorda Island near Guanica Harbor, 4. Inside Maria Langa Cayo, near Guayanilla Harbor, 3. Off Point Brea, 9. East of Caribe Cayo, 1. South of Salinas Cove, 3.

Remarks.—One of the specimens from Maria Lango Cayo is indeed abnormal and perhaps worthy of some comment. The median rostral projection of the front is wholly wanting and the large chela lacks the characteristic tubercle on the palmar border, otherwise its characters are those of *S. rathbunae.*

Synalpheus sanctithomæ Coutière

Synalpheus sactithomæ Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, p. 61, fig. 35.

Type locality.—Off St. Thomas, 20-23 fathoms, *Fish Hawk* Sta. 6079.

Distribution.—Otherwise only known from *Fish Hawk* Sta. 6080 (near Sta. 6079) in 20 fathoms.

Synalpheus townsendi Coutière

Synalpheus townsendi Coutière, 1909, Proc. U. S. Nat. Mus., xxxvi, Pl. XXXII, fig. 14, fig. 15 (subsp. *productus*), fig. 16 (subsp. *brevispinus*), fig. 17 subsp. *mexicanus*).

Synalpheus townsendi scaphoccris Coutière, 1910, Proc. U. S. Nat. Mus., xxxvii, p. 486, fig. 2.

Type locality.—The type of the species (*s. s.*) was taken in the Gulf of Mexico between the delta of the Mississippi River and Cedar Keys, Florida (lat. 29° 14′ N., long. 85° 29′ 15″ W.), 25 fathoms, *Albatross* Sta. 2373.

Distribution.—The typical form ranges from North Carolina and Bermuda to Bahia, Brazil, and has been taken at Porto Rico, Culebra, Vieques, and St. Thomas to a depth of 420 fathoms.

The several subspecies described by Coutière have been reported as follows:

S. t. brevispinis, Lower California; *mexicanus,* southern part of the Gulf of California; *peruvianus,* oyster beds at Matapalo, near Capon, Peru; *productus,* between delta of the Mississippi River and Cedar Keys, Florida; *scaphocerus,* Tortugas, Florida, and Curaçao.

Specimens collected.—Mangrove Island at Parguera, 1. With its wider antennal scale the specimen probably represents the variety *scaphocerus* not hitherto recorded from Porto Rico. Both chelipeds are wanting. The scaphocerite in the type of this subspecies "has a very broad scale, only 3.8 times as long as wide, this proportion reaching 6 in *S. townsendi,* 5 in the form *brevispinis*" (Coutière, 1910).

Hippolytidæ

Latreutes Stimpson

A¹. Carapace and rostrum unarmed above except for a small median spine on gastric region; rostrum a vertically broad, but elongate blade nearly as long as carapace, slightly curved upward on upper surface toward apex, extremity serrate, lower margin smooth and curved downward in middle. *fucorum*

A². Carapace strongly humped and armed with five or six spiniform teeth, first at about the middle of carapace, last above the cornea; distally, rostrum forms a deep lamelliform somewhat ovoid blade with margins finely toothed above and anteriorly; rostrum shorter than carapace, reaching about as far forward as antennal scale..... *gibberosus*

Latreutes gibberosus (Kingsley)

Concordia gibberosus Kingsley, 1879 (1880), Proc. Acad. Nat. Sci. Phila., xxx, p. 414, Pl. XIV, fig. 5; Hay and Shore, 1918, Bull. U. S. Bur. Fisheries, xxxv, p. 391, Pl. XXVI, fig. 11.

Fig. 18.—*Latreutes gibberosus* Carapace (adapted from Kingsley)

Type locality. Fort Macon, North Carolina.

Distribution.—North Carolina to Florida; Porto Rico; to a depth of 4 fathoms.

Specimens collected.—Guanica Harbor, 1. This is a first record for Porto Rico and only the fourth locality, so to speak, at which the species

has been taken. Fort Macon and Beaufort are practically one; otherwise I have only seen or heard of specimens from off Charleston, South Carolina, at the surface, approximately south of Cape Fear, North Carolina, and from Punta Rassa, Florida, 1 fathom.

Remarks.—The rostral blade is rather completely concealed by the frontal appendages in lateral view, and, being quite transparent, is only to be distinguished on close inspection. Kingsley's type seems no longer to be extant but there is a specimen in the National Museum from Beaufort, North Carolina, named by him which has the rostrum as noted above, and so unlike the one originally described and depicted by him as shorter than the eyes. One would think that the lamelliform portion of the rostrum of the type had been broken off as Kingsley merely describes it as "very short, not exceeding the short, stout eyes." Hay seems to have casually noted the discrepancy, but adds nothing to the description other than to say "rostrum short, little if any advanced beyond the eyes." He did, however, call attention to the fact that the carpus of the second legs "consists of three articles instead of two, as has been understood from Kingsley's descripton." It is this character, taken in conjunction with the simple mandible devoid of palp, the lamelliform rostrum and the fact that the antero-lateral margin is finely serrate that has led me to transfer this species to *Latreutes* and place *Concordia* as a synonym under that genus.

Latreutes fucorum (Fabricius)

Palaemon fucorum Fabricius, 1798, Suppl. Entom. Syst., p. 404.
Latreutes ensiferus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 114.
Latreutes fucorum Stebbing, 1914, Trans. Roy. Soc. Edinburgh, l, Pt. 2, p. 290.

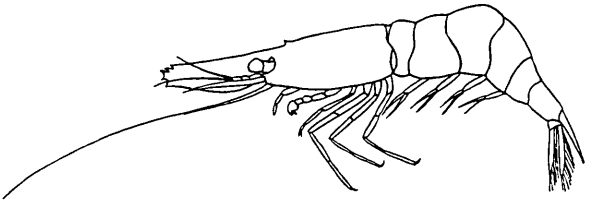

FIG. 19.—*Latreutes fucorum* (after Bate)

Type locality.—Floating gulf-weed.

Distribution.—Marthas Vineyard to Porto Rico; "common in floating gulf-weed in the North Atlantic" (Rathbun).

Lysmata Risso

A¹. One median spine on carapace posterior to rostrum and anterior to middle. *moorei*

A². Two or three median spines on carapace posterior to rostrum, the hinder of these spines at middle of carapace..... *intermedia*

Lysmata intermedia (Kingsley)

Hippolysmata intermedia Kingsley, 1878, Proc. Acad. Nat. Sci., Phila., xxx, p. 90 [2]; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 116.
Lysmata intermedia Kemp, 1914, Rec. Indian Mus., x, p. 112.

Type locality.—Fort Jefferson, and Tortugas, Florida.

Distribution.—Florida Keys to Curaçao; Azores; Porto Rico; Culebra; Vieques; to a depth of 12½ fathoms.

Lysmata moorei (Rathbun)

Hippolysmata moorei Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 115, fig. 23.
Lysmata moorei Kemp, 1914, Rec. Indian Mus., x, p. 112.

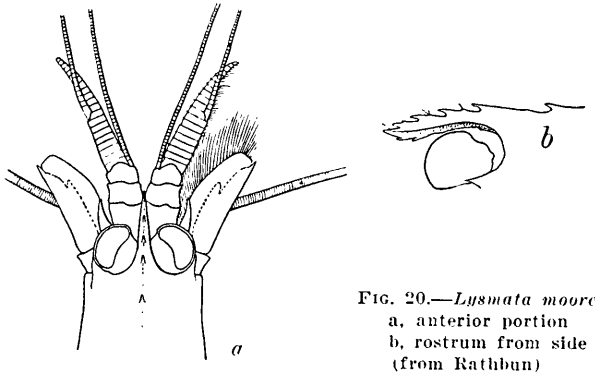

FIG. 20.—*Lysmata moorei*
a, anterior portion
b, rostrum from side
(from Rathbun)

Type locality.—Playa de Ponce, Porto Rico; the only record of this species.

Thor Kingsley

Thor paschalis (Heller)

Hippolyte paschalis Heller, 1861, Sitzb. Akad. Wissen., Wien, xliv, p. 276, Pl. III, fig. 24.
Thor floridanus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 116.
Thor paschalis Kemp, Rec. Indian Mus., 1914, x, p. 95, Pl. I, figs. 6-10.

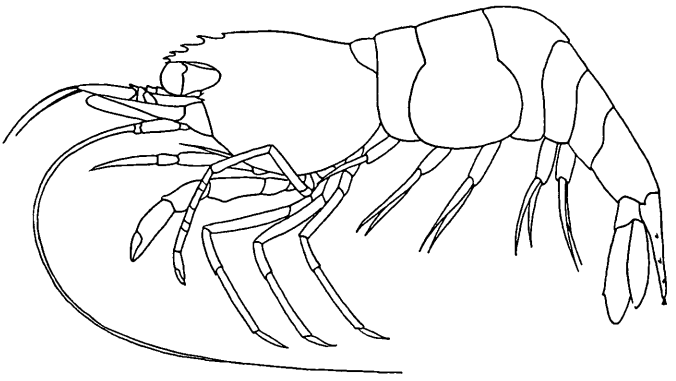

FIG. 21.—*Thor paschalis*
(after Kemp)

Type locality.—Red Sea.

Distribution.—Amboina; Red Sea; Zanzibar; southern India; Gulf of Manar, Singapore, and Andaman Islands. Bermuda, and Beaufort, North Carolina to Curaçao and Yucatan; Porto Rico; Culebra; St. Thomas; to a depth of 23 fathoms.

Specimens collected.—Mangrove Island, Montalva Bay, 1. Coral reefs, Ballena Point.

Diagnosis.—A small species, body compact, carapace with only antennal spine. Rostrum shorter than eyes, with four or five teeth above, unarmed below, first tooth over orbit, distal tooth near tip or overhanging, making it appear bifid. Lateral process of basal joint a long spine; ultimate segment of the antennal peduncle with a movable, distal plate. Carpus of second legs composed of six or seven joints.

Tozeuma Stimpson

Tozeuma carolinensis Kingsley

Tozeuma carolinensis Kingsley, 1878, xxx, p. 90 [2]; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 114.

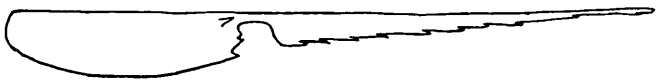

FIG. 22.—*Tozeuma carolinensis* (adapted from Kingsley)

Type locality.—Fort Macon, North Carolina.

Distribution.—Vineyard Sound, North Carolina and Bahamas to

Curaçao and Yucatan; Porto Rico; St. Thomas; to a depth of 4¼ fathoms.

Specimens collected.—Off lighthouse, Caja de Muertos, 1 and fragment of a second specimen. Off Cana Gorda Island, near Guanica, 2.

Diagnosis.—Body very slender, carapace with a spine on either side at the base of the rostrum, pterygostomian present. Rostrum little more than half the length of the remainder of the body, rounded and unarmed above, at the base somewhat flattened and horizontal, distally inclined slightly upward; below serrated, and toward the base lamellate, the teeth becoming more distant toward the extremity. Lateral process of the basal antennal segment anteriorly pointed. Carpus of second legs composed of three joints.

Trachycaris Calman

Trachycaris rugosus (Bate)

Platybema rugosus Bate, 1888, Challenger Rept., Zool., xxiv, p. 579, Pl. CIV, fig. 2; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 113.
Trachycaris rugosus Calman, 1906, Ann. Mag. Nat. Hist., ser. 7, xxvii, p. 33.

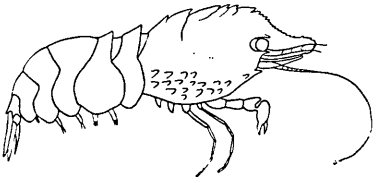

FIG. 23.—*Trachycaris rugosus* (after Bate)

Type locality.—Off Culebra Island, 390 fathoms, *Challenger* Sta. 24.

Distribution.—Florida to Yucatan; Porto Rico; Culebra; Vieques; St. Thomas; to a depth of 390 fathoms.

Specimens collected.—Guanica Harbor, 1. Between Ratones and Caribe Islands off Tallaboa Bay, 2.

Diagnosis.—Body robust. Dorsal crest of carapace armed with teeth from the posterior margin of the carapace forward, and around to under surface of distal extremity of rostrum; posterior teeth larger than rostral. Supraorbital, antennal, and pterygostomian spines present; a straight row of spines extends from the antero-lateral angle to the posterior margin of the carapace; the surface of the carapace above this row is furnished with smaller scattered spines. Lateral process of basal antennal joint spiniform. Carpus of second legs composed of two joints.

PALÆMONIDÆ

Brachycarpus Bate

Brachycarpus biunguiculatus (Lucas)

Palæmon biunguiculatus Lucas, 1849, Explor. Scient. Algerie, Anima. art., Pt. 1, Crust., p. 45, Pl. IV, fig. 4.

Bithynis savignyi Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 124.

Brachycarpus biunguiculatus Kemp, 1925, Rec. Indian Mus., xxvii, p. 312.

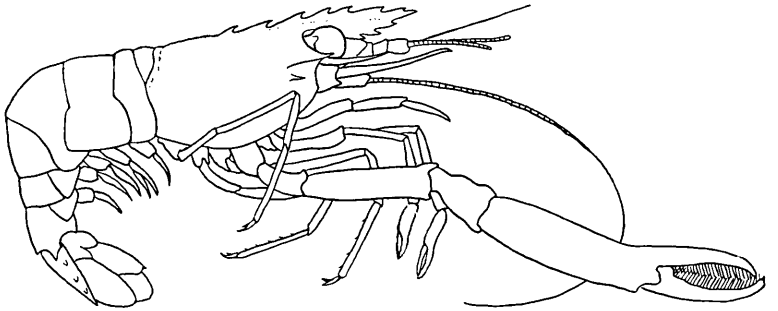

FIG. 24.—*Brachycarpus biunguiculatus* (after Bate)

Type locality.—Coasts of Algeria.

Distribution.—Mediterranean; Bermuda and Bahamas to Curaçao; Porto Rico; to a depth of 78 fathoms.

Specimens collected.—Guanica Harbor, 1; off Cana Gorda Island, near Guanica, 1.

Diagnosis.—Rostrum horizontal, reaching end of antennal scale; armed with seven to eight teeth above, of which three are on the carapace, and three below. Second pair of legs subequal, almost cylindrical, smooth, fingers hairy; carpus less than half the length of merus, distally thickened; palm subcylindrical, slightly compressed, not much thicker than carpus; fingers more than half the length of palm. Dactyls of last three pairs of legs biunguiculate.

Macrobrachium Bate

A¹. Carpus of second legs about as long as or longer than merus.

B¹. Palm of second chelae cylindrical; in fully developed adult both fingers covered with felt-like pubescence; chelipeds equal or subequal. Rostrum equals or exceeds antennal scale; armed with eight to twelve teeth above, of which one is behind the orbit..... *acanthurus*

B². Palm of second chelae tumefied and compressed, in mature specimens chelae are well spined and hairy; chelipeds very unequal. Rostrum shorter than antennal scale; armed with thirteen to fourteen teeth above, of which four, usually five to six, are behind the orbit, and three to five below..... *olfersii*

A². Carpus distally thickened and sensibly shorter than merus; chelipeds rough in young, spiny in fully developed adults, palm cylindrical, fingers not felted. Rostrum shorter than antennal scale; armed with eleven to fourteen teeth above, of which three or four are behind the orbit and three to five below..... *jamaicense*

Macrobrachium acanthurus (Wiegmann)

Palæmon acanthurus Wiegmann, 1836, Arch. f. Natur., 2nd year, i, p. 150.
Bithynis acanthurus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 123.
Macrobrachium acanthurus Rathbun, 1910, Proc. U. S. Nat. Mus., xxxviii, p. 604.

Type locality.—Brazil.

Distribution.—St. Augustine, Florida; Lockport, Louisiana; Ocean Springs, Mississippi; and Texas, to Brazil and Uruguay; West Mexico to Ecuador; Porto Rico, Vieques; fresh water.

Specimens collected.—Guanica, 1; Guanica Lake 8; between Guanica Lake and Guanica, 15; between San Juan and Guayana, 2; brackish lagoon west of Playa, Tallaboa, 3.

Macrobrachium jamaicense (Herbst)

Cancer (Astacus) jamaicensis Herbst, 1792, Natur. Krabben u. Krebse, ii, p. 57, Pl. XXVII, fig. 2.
Bithynis jamaicensis Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 123.
Macrobrachium jamaicense Rathbun, 1910, Proc. U. S. Nat. Mus., xxxviii, p. 561, Pl. LI, fig. 1.

Type locality.—Jamaica.

Distribution.—St. Augustine and Silver Springs, Ocala, Florida to Brazil; from Lower California to Peru; Porto Rico; fresh water.

Macrobrachium olfersii (Wiegmann)

Palæmon olfersii Wiegmann, 1836, Arch. f. Natur., 2nd year, i, p. 150.
Bithynis olfersii Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 124.
Macrobrachium olfersii Rathbun, 1910, Proc. U. S. Nat. Mus., xxxviii, p. 604.

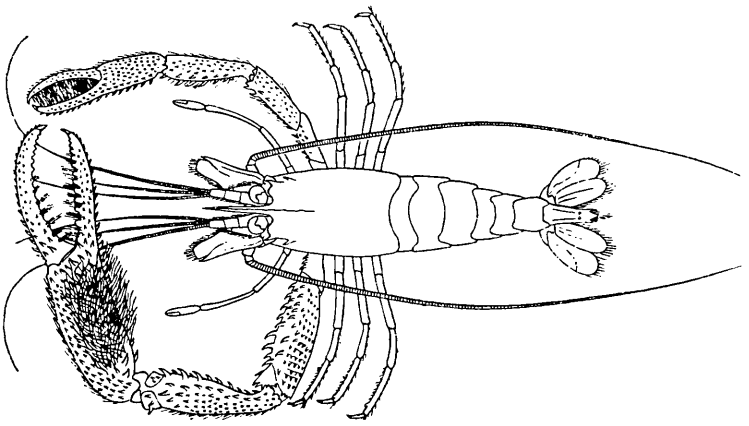

FIG. 25.—*Macrobrachium olfersii* (after Saussure)

Type locality.—Coast of Brazil.

Distribution.—St. Augustine, Florida to Brazil; Lower California to Panama; West Africa; Porto Rico; fresh water.

Specimens collected.—Guanica Lake, 23; between San Juan and Guayana, 1.

Palæmon Weber

A¹. Carpus of second leg a third or nearly a third longer than chela, fingers shorter than palm. Blade of antennal scale extending well in advance of spine. Rostrum armed above with five to seven, usually six, teeth more or less confined to the basal two thirds of the rostrum, and following a toothless interval with one or two, usually two, small teeth close together, above and directly behind, the acute tip; usually one, sometimes two, of the posterior dorsal rostral teeth are situated on the carapace; below there are usually five teeth..... *cubensis*

A². Carpus of second legs shorter than, or at least not exceeding, chela.

B¹. Branchiostegal spine set well back from the edge of the carapace, tip reaching to or slightly beyond the margin.

C¹. Fingers of second legs longer than palm, and noticeably curved; palm short and stout, much swollen or inflated. Spine of antennal scale falls just short of distal extremity of blade. Rostrum armed above with eight to eleven teeth, of which two are on the carapace, below with five to seven..... *tenuicornis*

C². Fingers and palm of second legs subequal; palm elongate, thick, but not swollen or inflated, fingers quite straight. Spine of antennal scale over-reaching blade. Rostrum armed above with eleven to thirteen teeth, of which two or three are on the carapace, below with five to seven..... *paulensis*

B². Branchiostegal spine inserted on margin of the carapace. Palm of second legs one and a half times as long as fingers. Blade of antennal scale broad, much longer than spine. Rostrum armed above with eight to nine teeth of which two or three are on the carapace, below with three or four.....*affinis*

Palæmon affinis H. Milne Edwards

Palæmon affinis H. Milne Edwards, 1837, Hist. Nat. Crust., ii, p. 391.
Palæmon affinis Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 125.
Leander affinis Kemp, 1925, Rec. Indian Mus., xxvii, Pt. 4, p. 292.

Type locality.—New Zealand.

Distribution.—Bermuda; Cuba; Porto Rico; Curaçao; Australia; New Zealand.

Specimens collected.—From house-boat at San Antonio Bridge, San Juan, 1.

Palæmon cubensis (Hay)

Palæmonetes cubensis Hay, 1903, Proc. U. S. Nat. Mus., xxvi, p. 433, Text-fig. 3.
Leander cubensis Kemp, 1925, Rec. Indian Mus., xxvii, Pt. 4, p. 291.

Type locality.—Palacio, Cuba.

Distribution.—Otherwise known only from Porto Rico on records here established.

Specimens collected.—Guanica Lake, 500+. Streams between Lake Guanica and Guanica, 2. Guanica (central side), 40.

Remarks.—Kemp, in considering the telson as without dorsal spines, seems to have been misled by Hay's incomplete figure. There are two to three tiny spines present on either side on the lateral slopes of the telson, scarcely visible in wet specimens. As is also not shown in Hay's figure, the first rostral spine is on the carapace, and the branchiostegal spine instead of being as far removed from the margin of the carapace is situated very close to it, so that the under surface of the spine merges with the margin with very little recession in the curve of the surface behind the margin from tip to base of spine beneath. In at least one Porto Rican specimen the first two rostral spines are on the carapace.

Palæmon paulensis Ortmann

Palæmon paulensis Ortmann, 1897, Rev. Mus. Paulista, ii, p. 192, Pl. I, fig. 14; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 125.
Leander paulensis Kemp, 1925, Rec. Indian Mus., xxvii, Pt. 4, p. 292.

Type locality.—Between the mainland and the Island of San Sebastião, São Paulo, Brazil.

Distribution.—Florida; Cuba; Porto Rico; Curaçao; and Brazil; to a depth of 3 fathoms.

Remarks.—This form is exceedingly close to *P. tenuicornis,* but appears separable with respect to the shape of the palm, and relative length and lack of noticeable curvature of the fingers of the second pair of legs. The shape of the rostrum, concave above, being distally upturned, and its greater length also seems to be characteristic. Kemp, however, includes such rostra among the variations of *P. tenuicornis.* The peculiarities that he notes for this species, the double row of hairs along the lower border of the rostrum and the presence of an appendix interna on the endopodite of the first pleopods of the male, also occur in the specimens of *P. paulensis* I have been able to examine. Kemp does not describe variations of the second chela which would seem to admit the hands of *P. paulensis.* In his key to the species of [*Palaemon*] he states that the branchiostegal spine of *P. paulensis* is inserted on the margin of the carapace, but without indication as to the source of this information. All specimens in the National Museum which have been referred to this species have this spine placed well behind the margin.

It may well be that *P. paulensis* represents a variant, or race, of *P. tenuicornis,* but until a more extensive series of the former is available, or specimens of it from the type locality, I prefer to reserve decision.

Palæmon tenuicornis Say

Palæmon tenuicornis Say, 1818, Jour. Acad. Nat. Sci., Phila., i, p. 249.
Leander tenuicornis Verrill, 1922, p. 143, Pl. XLIII, figs. 4, 4a. Kemp, 1925, Rec. Indian Mus., xxvii, Pt. 4, p. 302, fig. 11.

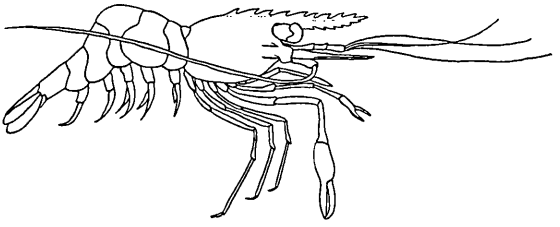

FIG. 26.—*Palæmon tenuicornis* ♂ (after Bate)

Type locality.—Newfoundland Banks.

Distribution.—Abundant in the Atlantic from Cape Cod and Marthas Vineyard to the Falkland Islands; Mediterranean, Red Sea, Indo-

Pacific to Australia, New Zealand and Japan; Porto Rico; St. Thomas; common in gulf weed.

Specimens collected.—Guanica Harbor, 7. Between Ratone and Caribe Islands, off Tallaboa Bay, 1. Coral reefs and lagoons, four miles east of Tallaboa, 2.

Remarks.—The last named two specimens from east of Tallaboa, vary toward *P. paulensis* and in some degree are intermediate between that species and *P. tenuicornis.* (See also *Remarks* under *P. paulensis.*)

PONTONIIDÆ

Periclimenes Costa

A¹. Dactyls of last three legs simple.

B¹. Hepatic and antennal spines present. Rostrum about as long or slightly longer than antennular peduncle and armed above with seven to nine teeth of which two are on the carapace; below with two or three teeth. *americanus*

B². Only antennal spine present, no hepatic spine.

C¹. Rostrum reaches middle of second segment of antennular peduncle; unarmed below; above with four teeth not counting the acuminate tip, teeth all in front of orbital sinus..... *atlantica*

C². Rostrum about or nearly as long as antennular peduncle; armed above with eleven teeth not counting the acuminate tip, two teeth on carapace behind orbital sinus; below with three teeth. *portoricensis*

A². Dactyls of last three legs biunguiculate. Rostrum short, not reaching end of penultimate segment of antennular peduncle, and armed above with seven to eight teeth, below with a tooth near the tip. Hepatic, but no antennal spine; with a long strap-shaped infra or extra orbital process with rounded apex immediately below the orbit..... ..... *longicaudatus*

Periclimenes americanus (Kingsley)

Anchistia americana Kingsley, 1878, Proc. Acad. Nat. Sci., Phila., xxx, p. 96 [8]; 1882, Bull. Essex Inst., xiv, p. 109, Pl. II, fig. 10.

Periclimenes americanus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 121.

Type locality.—Key West, Florida.

Distribution.—Florida and Bermuda to Yucatan; Porto Rico; Vieques; Humacao; St. Thomas; to a depth of 40 fathoms.

Specimens collected.—Guanica Harbor, 5. Condado Bay, inside Dos Hermanos Bridge, 3.

Periclimenes atlantica (Rathbun)

Coralliocaris atlantica Rathbun. 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 122, fig. 26; Kemp, 1922, Rec. Indian Mus., xxiv, p. 268.

FIG. 27.—*Periclimenes atlantica:* a, second chela; b, rostrum (both from Rathbun); c, antennule and eye from side; d, antennule; e, antennal scale; f, mandible; g, same, more enlarged; h, maxillule; i, maxilla; j, k, l, first, second, and third maxillipeds; m, first cheliped; n, third leg; o, dactyl; p, telson and left uropod

Type locality.—Known only from the type and one other specimen, taken off St. Thomas, 20-23 fathoms, *Fish Hawk* Sta. 6079.

Remarks.—Kemp has called attention to the fact that "Miss Rathbun's *C. atlantica* from the West Indies does not belong to *Coralliocaris;* the dactylus of the posterior legs is merely a little swollen and without the large basal process characteristic of the genus." It can probably, for the present at least, be best accommodated in *Periclimenes,* but I do not seem to be able to fit the species with any degree of satisfaction into one of the existing subgenera. The mouth parts, one or another, have certain resemblances to *Coralliocaris,* chiefly the third maxilliped, likewise the short carpus of the second legs in length somewhat resembles that genus. There are some characters which remind one of *Pontonia* and *Conchodytes,* the telson, antennal scale, and the rudimentary or very short accessory branch of outer flagellum of the antennule. The basal joint of the antennular peduncle in Miss Rathbun's species is unlike most of the species of *Periclimenes,* at least those with which I have compared it, in being not so much flattened, more cylindrical, and lacking a spine, or spinous projection, at the outer distal angle. A sharp tooth or spine, however, is to be found on the under side, near the inner margin, at about the middle of the length of the basal joint. The shorter ramus of the outer flagellum is composed of but a single article. The four intermediate terminal spines of the telson are subequal, as are those at the outer angles of the distal margin to the two pairs of dorsal spines; the latter are placed quite close to the lateral margins. The ambulatory legs have an odd dactyl inasmuch as near the base, the inferior margin where the dactyl has its greatest width there is placed a short spine;* the terminal claw beneath, near the end, under considerable magnification shows several serrations.

Periclimenes longicaudatus (Stimpson)

Urocaris longicaudata Stimpson, 1860, Proc. Acad. Nat. Sci. Phila., xii, p. 39 [108]; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 126.
Periclimenes (Periclimenes) longicaudatus Kemp, 1922, Rec. Indian Mus., xxiv, p. 141.

Type locality.—[North or South] Carolina.

Distribution.—North Carolina to Brazil; Bahamas; West Indies; shallow water to 30 fathoms. Porto Rico; Culebra, shallow water to 14¾ fathoms.

* The indication of this spine may be the result of a misinterpretation of a highly magnified microscopic preparation. A re-examination leaves me somewhat doubtful as to its actual presence. The base of that dactyl is not as clearly discernible as might be desired. Aside from the leg figured, there are loose in the bottle with the type only two other ambulatory legs. I am moved to make this belated reservation because a subsequent examination of these legs reveals no such spines on the dactyls.

Specimens collected.—Guanica Harbor, entrance, 10. Ballena Point, Ensenada, 3.

Periclimenes portoricensis (Schmitt)

Periclimenes portoricensis Schmitt, 1933, Amer. Mus. Novitates, No. 662, p. 3, fig. 2.

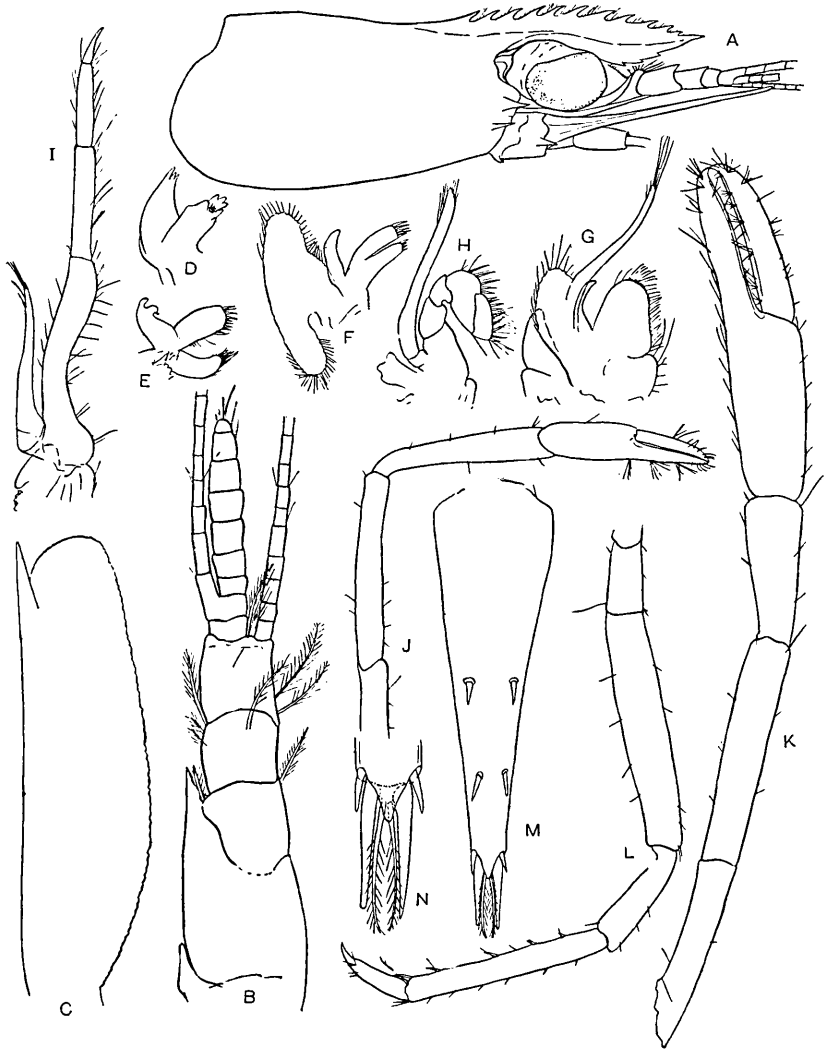

FIG. 28.—*Periclimenes portoricensis:* a, carapace and front, from side; b, antennule; c, antennal scale; d, mandible; e, maxillule; f, maxilla; g, h, i, first, second, and third maxillipeds; j, first leg; k, second leg; l, third leg; m, telson; n, tip enlarged

Type locality.—Porto Rico, the sole record for this species.
Specimens examined.—One female taken July, 1914.

Pontonia Latreille

Pontonia grayi Rathbun

Pontonia grayi Rathbun, 1901, Bull. U. S. Fish Comm., xx, Pt. 2, p. 122, fig. 25.

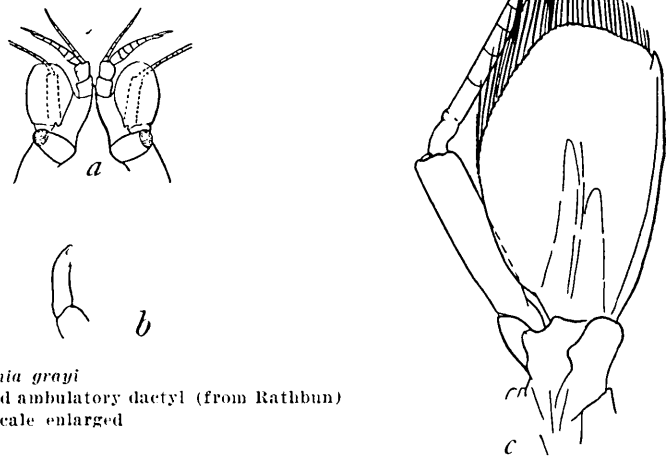

FIG. 29.—*Pontonia grayi*
a, b, front and ambulatory dactyl (from Rathbun)
c, antennal scale enlarged

Type locality.—Between San Antonio Bridge and San Geronimo, San Juan, Porto Rico.

Distribution.—Also known from Vieques and at Jamaica.

Diagnosis.—Rostrum depressed, toothless, reaching to middle of penultimate segment of antennular peduncle. The antennal scale reaches end of antennular peduncle and is provided with a small spine at low magnifications difficult to see as distinct from the blade. It is scarcely indicated in Miss Rathbun's figure. The third maxillipeds, though a little longer than the antennal peduncle, fall short of the end of the scale and the antennular peduncle as well by about half the length of the third joint of the latter. Dactylus of last three legs slightly curved with a subterminal as well as a terminal spine.

GNATHOPHYLLIDÆ

Gnathophyllum Latreille

Gnathophyllum americanum Guérin

Gnathophyllum americanum Guérin, 1856 [1857], in La Sagra's Hist. Cuba, Pt. 2, vii, Crustaceos, p. 20; viii, atlas, Pl. 11, fig. 14; Rathbun, 1901, Bull.

U. S. Fish Comm. for 1900, xx, Pt. 2, p. 126; Verrill, 1922, Trans. Conn. Acad., xxvi, p. 150, Pl. XVI, fig. 7, Pl. XLI, fig. 3, Pl. XLVI, figs. 1-1k, Pl. XLVIII, figs. 5, 5a.

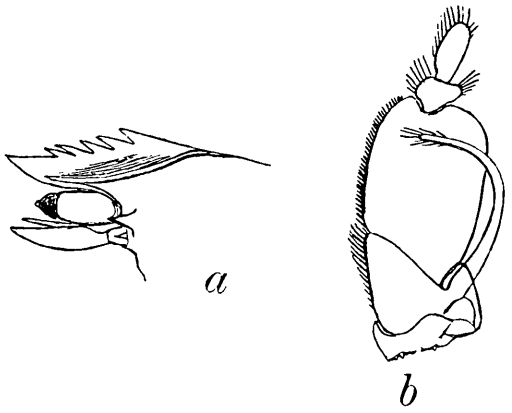

FIG. 30.—*Gnathophyllum americanum:* a, rostrum; b, third maxilliped (after Verrill)

Type locality.—Cuba.

Distribution.—Bermuda, West Indies, Gulf of Mexico, Curaçao; Tahiti; Australia; Mauritius; Porto Rico, St. Thomas; to a depth of 27 fathoms.

Diagnosis.—Body thick, carapace obtusely carinate anteriorly, carina continuous with rostrum. Rostrum not reaching end of ante-penultimate segment of antennular peduncle, and armed above with five to six teeth, extremity acute; the lateral carinæ situated near the inferior margin, which has a very small tooth near the tip. In living and fresh specimens the body is marked with ten to sixteen linear transverse bands of color: legs with a band of same color on ischial, meral, and propodal joints, color fades with time in preserved specimens.

Gnathophylloides Schmitt

Gnathophylloides mineri Schmitt

Gnathophylloides mineri Schmitt, 1933, Amer. Mus. Novitates, No. 662, p. 7, fig. 3.

Type locality.—Coral reefs at Ballena Point, Ensenada, Porto Rico; the only record.

Specimens collected.—Three specimens taken June 12, 1915.

Diagnosis.—Anterior border of carapace below antennal spine not produced in advance of the spine; rostrum armed above with three stout, subequal, equidistant teeth; below with a small tooth slightly behind the rostral extremity. The rostrum of the unique type of the species is fractured near the tip; there may have been a small dorsal tooth just behind the tip corresponding to the ventral tooth. Exopodite of third maxilliped considerably longer than endopodite. Second chelipeds with very short carpal, meral and ischial joints; ambulatory legs remarkably short and stout. Ambulatory dactyls unique among the representatives

FIG. 31.—*Gnathophylloides mineri:* a, carapace, rostrum reconstructed; b, eye; c, antennule; d, antennal scale; e, mandible; f, maxillule; g, maxilla; h, i, j, first, second, and third maxillipeds; k, major chela; l, minor chela; m, first leg; n, ambulatory leg; o, dactyl of same more enlarged; p, telson and uropod of left side.

of the family: short, stout, somewhat ovoid, armed with a stout terminal claw immediately beneath which may be found a pair of slender spines or stout, pointed setæ; lower margin of dactyl curved, protruding a bit distally and armed throughout with a close-set row or comb of low conical spines or blunt teeth. Hinder margin of telson armed with three pairs of more or less subequal spines. The outer pair of these spines is slightly smaller and the medial pair slightly the larger. In advance of terminal spines, but close to the hinder end, the lateral margins are armed with two small spines on either side.

Processidæ

Processa Leach

Processa canaliculata Leach

Processa canaliculata Leach, 1815, Mal. Podoph. Brit., Pl. XLI, and corresponding text; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 104; 1904, Harriman Alaska Exped., x, p. 110.

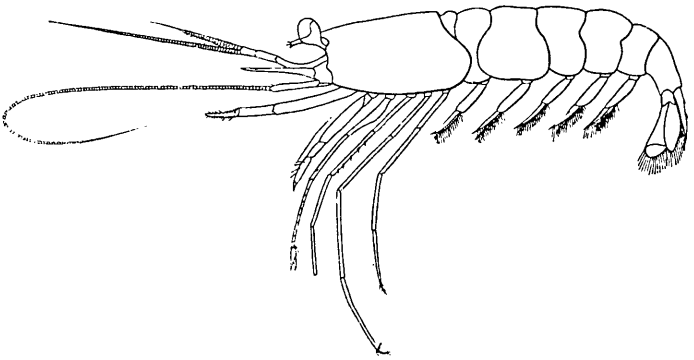

Fig. 32.—*Processa canaliculata* (after Rankin)

Type locality.—Torcross, southern coast of Devon, England.

Distribution.—Bermuda and North Carolina to Brazil; San Diego, California to Panama Bay; Japan; Ceylon; Norway to South Africa, Madeira; Canary and Cape Verde Islands; Porto Rico; Vieques; to a depth of 182 fathoms.

Diagnosis.—Carapace smooth. Rostrum slender, short, about half as long as eye-stalks, unarmed except at apex which is obscurely bifid and furnished with a few long hairs. First pair of feet rather stout, right or chelate foot with palm a little longer than carpus or fingers, left or simple foot with dactyl about one-fourth the length of the propodus;

more rarely the left may be the chelate foot of the two, or even both may be chelate; remaining feet slender and long.

GLYPHOCRANGONIDÆ

Glyphocrangon A. Milne Edwards

Glyphocrangon nobilis A. Milne Edwards

Glyphocrangon nobilis A. Milne Edwards, 1881, Ann. Sci. Nat. Zool. Paris, p. 5; 1883, Recueil de Figures de Crustacés nouveaux ou peu connus, Pl. XXXIX, figs. 2, 2a; de Man, 1920, Siboga Exped., Monog. 39a³, pp. 212, 215, 217, 225, 227, 230, 238, 240.

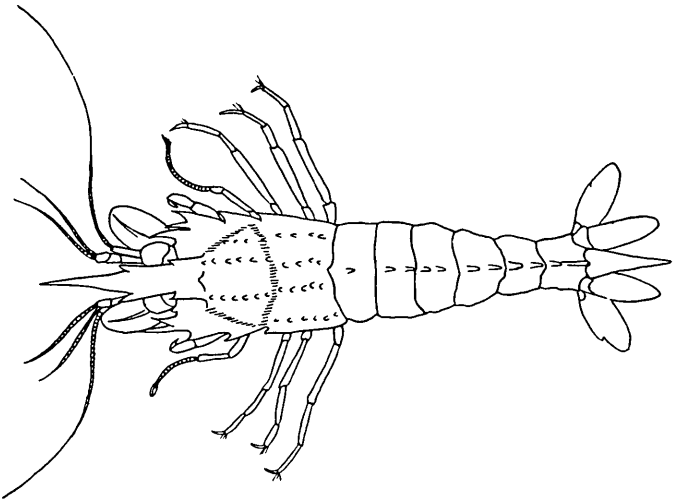

FIG. 33.– *Glyphocrangon nobilis* (after A. Milne Edwards)

Type locality.—Dominica, 1131 fathoms, *Blake* Sta. 182.

Distribution.—West Indies; St. Croix; 333 to 1131 fathoms.

Diagnosis.—Rostrum with upper surface smooth not corrugated; tubercles of the first or dorsal crest of the carapace prominent; posterior moiety of second or subdorsal crest tuberculate; anterior moiety of fourth or lateral crest of the carapace is not continuous with the branchiostegal spine, though undivided, anteriorly it terminates in a single small spine. Tubercles on abdomen numerous.

STENOPIDÆ

Stenopus Latreille

Stenopus hispidus (Olivier)

Palæmon hispidus Olivier, 1811, Encyc. Méth., Hist. Nat. Insectes, viii, p. 666; Pl. CCCXIX, fig. 2, 1818.

Stenopus hispidus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 99.

Type locality.—Not known.

Distribution.—Bermuda and Bahamas to Colombia; West Indies, Red Sea; Indian Ocean: Formosa, Hawaii, and South Pacific. Porto Rico and St. Croix.

Specimens collected.—Fredericksted Harbor, St. Croix, Virgin Islands, 3.

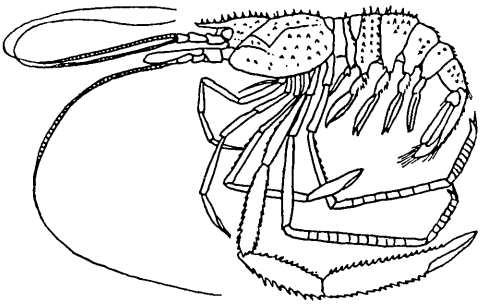

FIG. 34.—*Stenopus hispidus* (After Rankin)

Diagnosis.—Rostrum with a median dorsal row of six spines bifurcated at extremity, a lateral row of three to five spines on each side of the rostrum but no ventral spines. Behind the sixth dorsal spine a double row. Rostrum not reaching end of antennular peduncle. Carapace very rough, with firm, sharp spines which are longer on the dorsal than the lateral regions. Abdomen thickly armed with outwardly projecting spines. In life conspicuously red and white banded.

ERYONIDÆ

Polycheles Heller

A¹. Median dorsal carina of carapace spinulose. Second to fifth abdominal somites with a single median spine. Carpus of first legs not less than two-thirds the length of the palm..... *typhlops*

A². Median dorsal carina modulated. Second to fifth abdominal somites with two dorsal spines each. Carpus of first legs not exceeding one-half the length of the palm..... *crucifer*

Polycheles crucifer (Willemoes-Suhm)

Deidamia crucifer Willemoes-Suhm, [notes of] *in* Wyville Thomson, 1873, Nature, vii, pp. 247, 266, fig. 1.

Willemoesia crucifera Willemoes-Suhm, 1875, Trans. Linn. Soc. Lond. (Zool.), ser. 2, i, p. 52, Pl. XII, fig. 10; Pl. XIII, figs. 10, 11.

Polycheles crucifer Bate, 1888, Rept. Challenger, Zool., xxiv, p. 127, fig. 13, Pl. XIII, Bouvier, 1925, Mem. Mus. Comp. Zoöl., xlvii, p. 428, Pl. IV, fig. 4, Pl. XI, figs. 7-14.

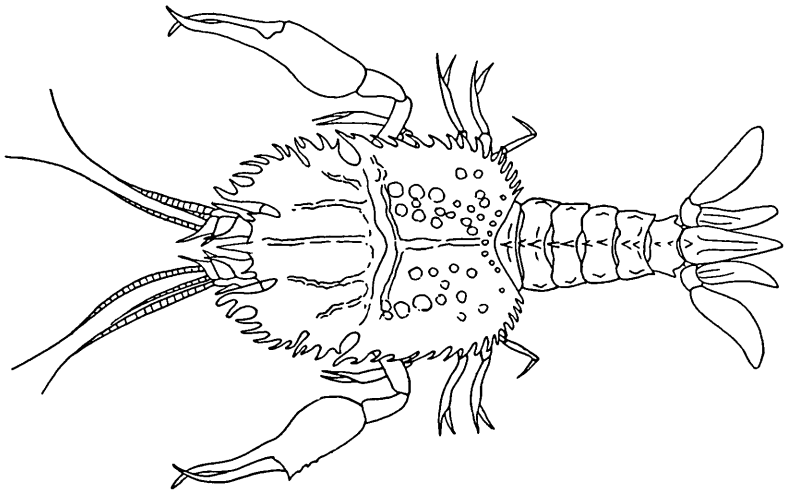

FIG. 35.—*Polycheles crucifer* (after Bate)

Type locality.—Off Sombrero Island, 450 fathoms, *Challenger* Sta. 23.

Distribution.—West Indies; from Morocco to the Canaries, Azores and Teneriffe; St. Croix; 450 to 1,131 fathoms.

Polycheles typhlops Heller

Polycheles typhlops Heller, 1862, Sitz. Acad. wissen. Wien, B. xlv, p. 392, Pl. I, figs. 1-6; de Man, 1916, Siboga Exped., Monog. 39a², pp. 6, 7, 23, 24; Bouvier, 1925, p. 433, fig. 9.

Polycheles agassizii Faxon, 1896, Bull. Mus. Comp. Zoöl., xxx, no. 3, p. 155.

Type locality.—Sicily.

Distribution.—Gulf of Mexico, Caribbean Sea and West Indies: Mediterranean and eastern Atlantic; Arabian Sea, Andaman Sea, coast of Malabar and Bali Sea; 188 to 1,706 fathoms.

PALINURIDÆ

Panulirus White

Panulirus argus (Latreille)

Panulirus argus Latrielle, 1804, Ann. Mus. Hist. Nat. Paris, iii, p. 393; Milne Edwards, 1837, Hist. Nat. Crust., ii, p. 300.

Panulirus argus White, 1847. List Crust. Brit. Mus., p. 69; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 98; Crawford and De Smidt, 1924, Bull. U. S. Bur. Fish., xxxviii, 1921-22, p. 282.

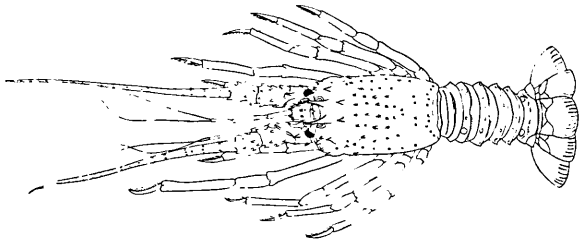

FIG. 36.—*Panulirus argus*
(abdomen foreshortened)

Type locality.—Originally listed as East Indies ("des Grandes-Indies"); obviously an error, as H. Milne Edwards, 1837, says "Antilles."

Distribution.—North Carolina and Bermuda, West Indies to Brazil; Porto Rico, St. Thomas; to depths of twelve fathoms, more or less.

Specimens collected.—Porto Rico, 1 small; off Tallaboa Bay, 1 small and six "puerulus" larvæ; Guanica Harbor, 1 "puerulus" larva.

Palinurus Fabricius

Palinurus longimanus H. Milne Edwards

Palinurus longimanus H. Milne Edwards, 1837, Hist. Nat. des Crust., ii, p. 294.
Puerulus d'Agassiz, Bouvier, 1912, Congress internat. entomol., pp. 82, 87.
Palinurus longimanus, Stade natant, Bouvier, 1925, Mem. Mus. Comp. Zoöl., xlvii, No. 5, p. 442, Pl. VIII, fig. 1.

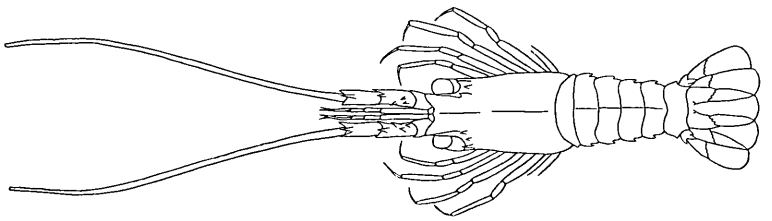

FIG. 37.—*Palinurus longimanus*, natant stage (after Bouvier)

Type locality.—West Indies; the natant stage of this species described by Bouvier was taken off Santa Cruz, 248 fathoms, *Blake* Sta. 134.

Distribution.—Other than from the West Indies, the species has been recorded from Florida and Mauritius.

SCYLLARIDÆ

Scyllarides Gill

Scyllarides æquinoctialis (Lund)

Scyllarus æquinoctialis Lund, 1793, Skrivter af Natur. Selsk., Copenhagen, ii, Pt. 2, p. 21.

Scyllarides æquinoctialis Gill, 1898, Science, n. s., vii, p. 99, 1898; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 97.

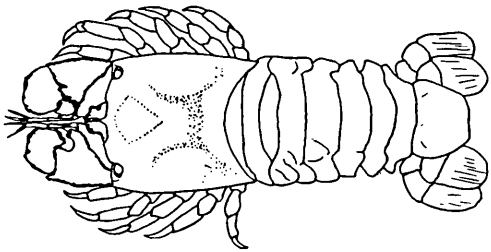

FIG. 38.—*Scyllarides æquinoctialis* (after Milne Edwards)

Type locality.—Jamaica.

Distribution.—Bermuda and Florida Keys to Brazil; Porto Rico.

Diagnosis.—Carapace transversely very convex, deflexed anteriorly: lateral margins nearly parallel, with a slight indentation about one-fourth the distance from the antero-lateral angle; dorsal surface covered with flat scale-like tubercles closely crowded together and with short, stiff bristles. Rostrum with two conical contiguous teeth. First abdominal segment with two large reddish submedian spots, which unite anteriorly. A large species reaching a length of nearly twelve inches.

Scyllarus Fabricius

Scyllarus americanus (Smith)

Arctus americanus Smith, 1869, Amer. Jour. Sci., (2), xlviii, p. 119.

Scyllarus americanus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 97; Bouvier, 1925, Mem. Mus. Comp. Zoöl., xlvii, No. 5, p. 447, Text-figs. 14-16, Pl. VII, fig. 3, Pl. VIII, fig. 2.

Type locality.—Egmont Key, Florida.

Distribution.—North Carolina to Brazil. Vieques; St. Thomas; Flanagan Passage; to a depth of 45 fathoms.

Remarks.—The natant stage or "nisto" was described by Bouvier.

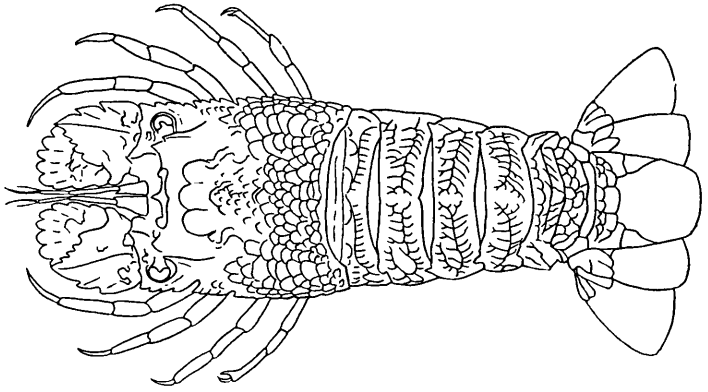

FIG. 39.—*Scyllarus americanus* (after Bouvier)

Diagnosis.—Carapace with three blunt median prominences, two of which are on the gastric region and one on the cardiac region; anterior prominence composed of two tubercles side by side, halfway between margin of the front and the larger posterior gastric tooth; cardiac tooth also bifid. Posterior margin of abdominal segments with a very slight median emargination. A small species, rarely exceeding two inches in length, usually not more than half an inch long.

HOMARIDÆ (Nephropsidæ)

Homoriscus Rathbun

Homoriscus portoricensis Rathbun

Homoriscus portoricensis Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 98, fig. 19.

Type locality.—Known only from a single specimen taken at Playa de Ponce, Porto Rico, *Fish Hawk* Porto Rican Expedition, 1899.

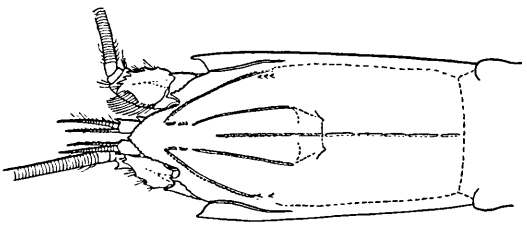

FIG. 40.—*Homoriscus portoricensis* (from Rathbun)

Diagnosis.—Rostrum triangular, acute, sides slightly convex, finely and sharply granulated; upper surface concave; carapace behind rostrum with seven sharp longitudinal crests. Antennular peduncle very short, rostrum extending to middle of its last segment; antennal peduncle a trifle shorter than antennular; antennal scale, large, ovate, dentate on outer margin with four or five spiniform teeth, inner margin fringed with long setae. Abdomen narrower than carapace, gradually tapering posteriorly, smooth, punctate, slightly pubescent; telson longer than broad, rounded at extremity, sides obscurely bispinulous, dorsal surface partly spinulous.

GALATHEIDÆ

Munida Leach

A¹. No spines on posterior margin of carapace. Only second (apparent first) somite of abdomen armed with spines. Eyes small, not reaching middle of basal article of antennular peduncle. Supraocular spines much shorter than rostral spine but exceeding the eyes.....*microphthalma*, p. 178

A². Posterior margin of carapace armed. Second, third, and fourth abdominal somites spined. Eyes concealing or nearly concealing basal article of antennular peduncle.....

B¹. Posterior margin of carapace with one or two spines.

C¹. Fourth abdominal somite with a single spine on median line near posterior margin in addition to a pair of spines on the anterior margin. Supraocular spines shorter than rostral spine and equaling or exceeding eyes.....*affinis*, p. 176

C². No median spine on fourth abdominal somite, anterior margin with one or two pairs of spines.....

D¹. Supraocular spines longer than rostral spine, and exceeding the eyes.....*longipes*, p. 178

D². Supraocular spines shorter than rostral spine, and not exceeding the eyes.....*stimpsoni*, p. 178

B². Six or eight spines on posterior margin of carapace. Supraocular spines shorter than rostral spine, but exceeding eyes. .*crcrmanni*, p. 177

Munida affinis A. Milne Edwards

Munida affinis A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 48; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 53. Pl. III, fig. 14; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 147.

Type locality.—St. Kitts, 208 fathoms, *Blake* Sta. 148.

Distribution.—Also recorded from off Cuba, and in Mayagüez Harbor, Porto Rico; 118 to 290 fathoms.

Munida evermanni Benedict

Munida evermanni Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 146, Pl. V, fig. 4.

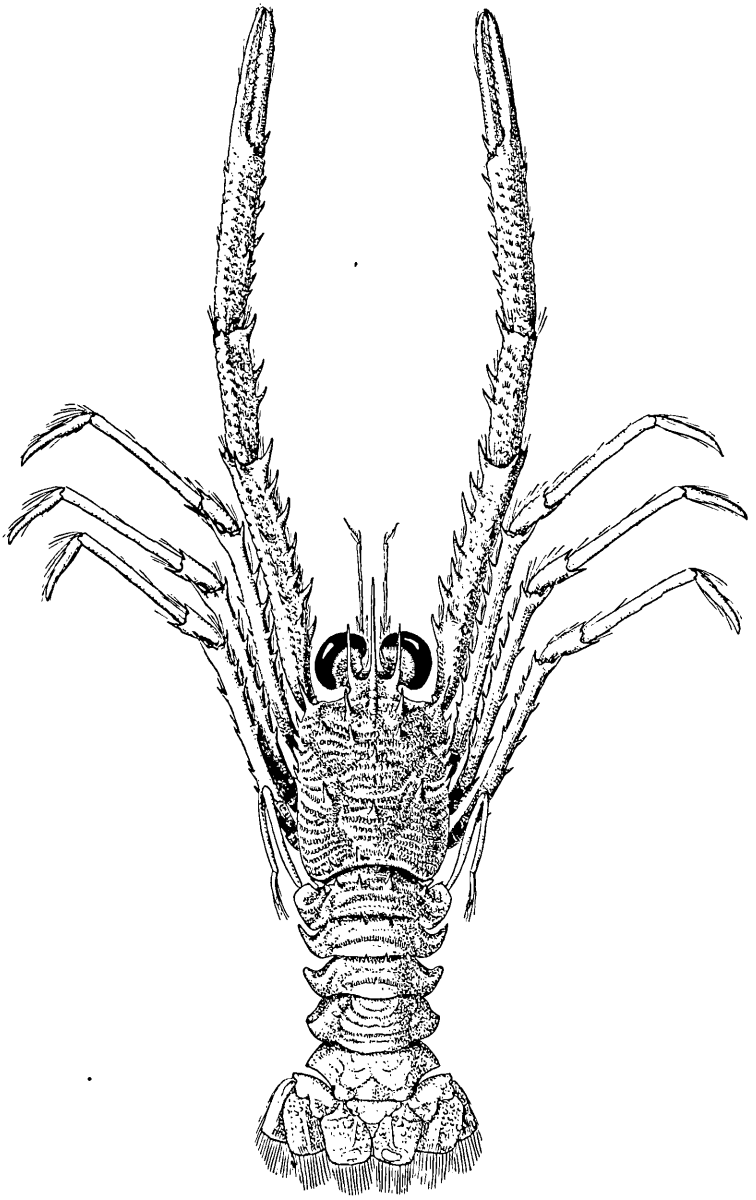

FIG. 41.—*Munida evermanni* (from Benedict)

Type locality.—Known only from Mayagüez Harbor, Porto Rico, 220-225 fathoms, *Fish Hawk* Sta. 6070.

Munida longipes A. Milne Edwards

Munida longipes A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 50; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 44, Pl. III, figs. 9-13; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 147.

Type locality.—Barbados, 209 fathoms, *Blake* Sta. 274.

Distribution.—South Carolina to Curaçao; Porto Rico; 154 to 338 fathoms.

Munida microphthalma A. Milne Edwards

Munida microphthalma A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 51; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 32, Pl. II, figs. 9-13.

Type locality.—St. Vincent, 573 fathoms, *Blake* Sta. 227.

Distribution.—From the Bahamas to Brazil; Kermadec Islands; Ascencion; Culebra; 425 to 683 fathoms.

Munida stimpsoni A. Milne Edwards

Munida stimpsoni A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 47; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 48, Pl. IV, figs. 1-13; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 147.

Type locality.—Off Saba Bank, lat. 17° 31′ N, long. 69° 43′ 30″ W., 150 fathoms, *Blake* Sta. 143.

Distribution.—Otherwise rather well distributed through the West Indies (Greater and Lesser Antilles) to Brazil; St. Thomas and St. Croix; 73 to 1105 fathoms.

Munidopsis Whiteaves

A¹. Abdomen unarmed.

B¹. Posterior margin of carapace armed with spines; gastric area and lateral margins spined. Rostrum elongate triangular..*sharreri*, p. 180

B². Posterior margin of carapace not armed with spines.

C¹. Gastric area spined.....

D¹. Gastric area with two very short conical spines; lateral margins toothed and serrulate, antero-lateral spines or teeth of fair size. Rostrum very broad and flattened.

platirostris, p. 180

D². Gastric area with a pair of long spines; lateral margins in addition to small antero-lateral spine, armed with but one spine either side behind cervical groove. Rostrum elongate, narrow.....*reynoldsi*, p. 180

C². Gastric area without spines, except for antero-lateral spines; lateral margins of carapace unarmed.....

D¹. Spine at antero-lateral angle very short. Rostrum gradually tapering. Meri of chelipeds spined throughout length as well as distally.....*sigsbei*, p. 181

D². Spine at antero-lateral angle long. Rostrum laterally swollen or expanded toward middle of length. Meri of chelipeds with spines confined to distal extremity.....*armata*, p. 179

A². Abdomen armed with spines or tubercles. Posterior margin of carapace not spined.....

B¹. Rostrum armed with a single pair of lateral spines. Lateral margins and dorsum of carapace armed with strong spines. Abdomen with spines either side of median line paired.....*erinacea*, p. 179

B². Rostrum without lateral spines very broadly triangular. Lateral margins, antero-lateral angles and dorsum of carapace unarmed. Pointed tuberculiform processes on abdomen medially placed..*longimana*, p. 179

Munidopsis armata (A. Milne Edwards)

Elasmonotus armatus A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 61; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 104, Pl. VIII, figs. 11-14.

Munidopsis armata Benedict, 1903, Proc. U. S. Nat. Mus., xxvi, p. 316.

Type locality.—St. Croix, 625 fathoms, *Blake* Sta. 137.

Distribution.—Also recorded from off Culebra and Sombrero Island; 390-683 fathoms.

Munidopsis erinacea (A. Milne Edwards)

Galathodes erinacea A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 53.

Munidopsis erinacea Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 67, Pl. VII, figs. 9-12.

Type locality.—Saint Lucia, 422 fathoms, *Blake* Sta. 222.

Distribution.—West Indies: Cuba to Barbados; St. Croix; 151-496 fathoms.

Munidopsis longimana (A. Milne Edwards)

Elasmonotus longimanus A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 60; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 106, Pl. IX, figs. 1-6.

Munidopsis longimana Benedict, 1903, Proc. U. S. Nat. Mus., xxvi, p. 322.

Type locality.—Martinique, 502 fathoms, *Blake* Sta. 195.

Distribution.—West Indies: St. Croix to St. Lucia; and off Cape Catoche, Yucatan; 24-502 fathoms.

Munidopsis platirostris (A. Milne Edwards and Bouvier)

Orophorhynchus platirostris A. Milne Edwards and Bouvier, 1894, Ann. Sci. Nat., Zool., (7), xvi, p. 287; 1897, xix, p. 114, Pl. IX, figs. 12-15, Pl. X, fig. 3; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 148.

Munidopsis platirostris Benedict, 1903, Proc. U. S. Nat. Mus., xxvi, p. 324.

Type locality.—Off Sandy Bay, Barbados, 75-100 fathoms, *Hassler* Stations 1-4. The station numbers given by Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., XIX, No. 2, are not in agreement with the "List of Dredging Stations. . . ." published as Part 1 of the Bull. M.C.Z., VI, 1879, where stations 1-4 are given for Barbados, 100 fathoms, and not 27-30 which lie off the coast of Argentina south of Bahia Blanca and have a depth range of but 17 to 30 fathoms.

Distribution.—Otherwise only known from Mayagüez Harbor, Porto Rico, and off Curaçao, 220 to 250 fathoms.

Munidopsis reynoldsi (A. Milne Edwards)

Galathodes reynoldsi A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 56.

Munidopsis reynoldsi Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 80, Pl. VI, figs. 1-5.

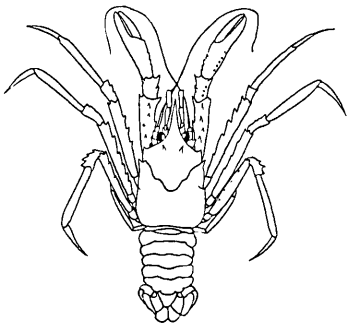

FIG. 42.—*Munidopsis reynoldsi* (after Milne Edwards and Bouvier)

Type locality.—Known only from specimens taken off St. Croix, 2,376 fathoms, *Blake* Sta. 138.

Munidopsis sharreri (A. Milne Edwards)

Orophorhynchus sharreri A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 59.

Munidopsis sharreri Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 71, Pl. VII, figs. 2-5.

Type locality.—St. Croix, 248 fathoms, *Blake* Sta. 134.

Distribution.—Otherwise recorded only from off the Grenadines, 163 fathoms.

Munidopsis sigsbei (A. Milne Edwards)

Galathodes sigsbei A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 56, *Munidopsis sigsbei* Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 83, Pl. V, figs. 8-26.

Type locality.—Martinique, 472 fathoms, *Blake* Sta. 200.

Distribution.—Gulf of Mexico and West Indies, to Brazil; St. Croix; 450-878 fathoms.

Ptychogaster Milne Edwards

Ptychogaster spinifer A. Milne Edwards

Ptychogaster spinifer A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 64; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 118, Pl. IX, figs. 16-22, Pl. X, figs. 4-16.

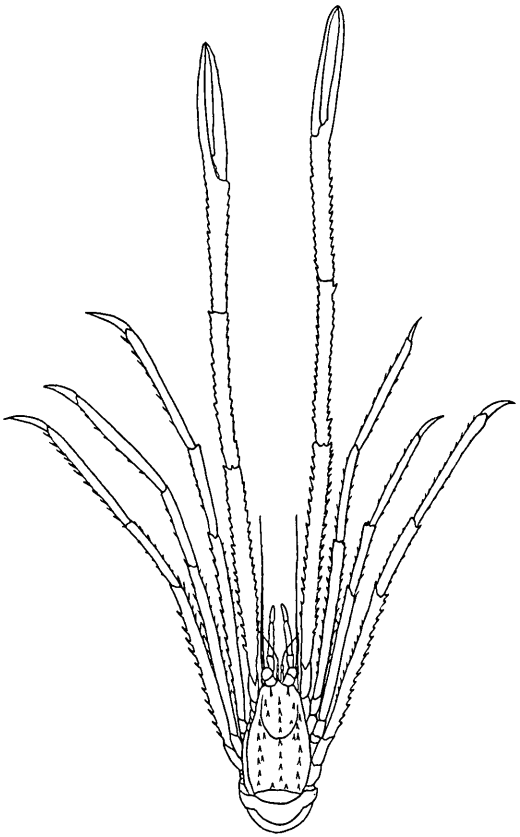

FIG. 43.—*Ptychogaster spinifer* (after Milne Edwards and Bouvier)

Type locality.—Guadeloupe, 183 fathoms, *Blake* Sta. 67.

Distribution.—From off Cape Hatteras to Barbados; St. Croix; 107 to 202 fathoms.

Diagnosis.—Carapace narrow, glabrous, and very spinose; a row of well developed spines marks the median line. Rostrum a very slender spine, slightly longer than the eyes. Chelipeds long, slender, cylindrical, about five times the length of the carapace, covered with longitudinal rows of small spines.

Uroptychus Henderson

A¹. Rostrum about twice as long as the eyes. Carpus of first legs or chelipeds about three times as long as greatest width..... *nitidus*

A². Rostrum scarcely if at all longer than eyes. Carpus of chelipeds nearly or a little more than four times as long as greatest width..... *uncifer*

Uroptychus nitidus (A. Milne Edwards)

Diptychus nitidus A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 62; Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 134, Pl. IX, figs. 21, 22, Pl. XII, figs. 10-16.

Uroptychus nitidus Benedict, 1903, Proc. U. S. Nat. Mus., xxvi, p. 332.

Type locality.—Gulf of Mexico, lat. 25° 33′ N., long. 84° 35′ W., 539 fathoms, *Blake* Sta. 44.

Distribution.—Gulf of Mexico and West Indies, Culebra and Sombrero to Barbados; St. Croix; 88 to 625 fathoms; and in the tropical Pacific and Indian Oceans in 800-1070 fathoms.

Uroptychus uncifer (A. Milne Edwards)

Diptychus uncifer A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 62. Milne Edwards and Bouvier, 1897, Mem. Mus. Comp. Zoöl., xix, No. 2, p. 134, Pl. XI, figs. 21, 22, Pl. XII, figs. 10-16.

Uroptychus uncifer Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 148.

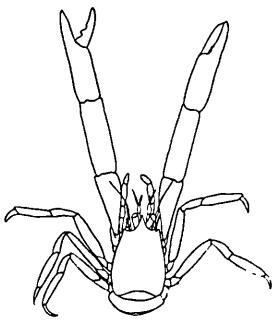

FIG. 44. *Uroptychus uncifer* (after Milne Edwards and Bouvier)

Type locality.—St. Vincent, 124 fathoms, *Blake* Sta. 269.

Distribution.—Bahamas to Barbados; Porto Rico; 97 to 263 fathoms.

PORCELLANIDÆ

Megalobrachium Stimpson

Megalobrachium poeyi (Guérin)

Porcellana poeyi Guérin, 1856 [1857], in La Sagra's Hist. Cuba, Pt. 2, vii, Crustaceos, p. XVI; viii, atlas, Pl. II, fig. 4.

Megalobrachium poeyi Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 136, Pl. III, fig. 8; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 297.

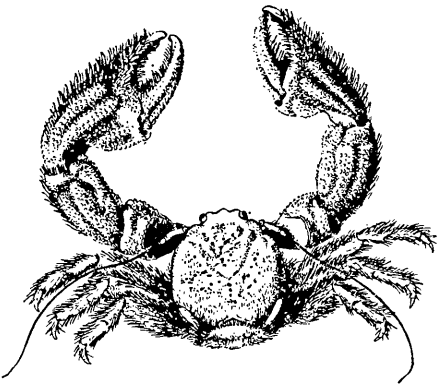

FIG. 45.—*Megalobrachium poeyi* (from Benedict)

Type locality.—Cuba.

Distribution.—Bahamas to Colombia; St. Thomas; to a depth of 25 fathoms.

Specimens collected.—Ensenada: eastern side Harbor entrance, 1; Salinas Cove, 1.

Diagnosis.—Carapace rounded; surface pubescent, along front, between and a little behind eyes, and along antero-lateral region, sharply granular. Front with three lobes that extend but little beyond the eyes, median lobe rounded, not noticeably larger and but a trifle in advance of the lateral lobes, which are more angular. Chelipeds characterized by depressions, two on carpus and three on the palm; surface more or less hairy, and coarsely granulated; hair on lower portion of palm and on the fingers long and coarse, and often covered with dark slime.

Pachycheles Stimpson

A[1]. Chelipeds thickly covered with tufts of short, stout bristles. Carapace about as long as broad.....*pilosa*

A². Chelipeds quite naked.

B¹. Chelipeds thickly and more or less uniformly covered with rounded bead-like granules.....*serrata*

B². Chelipeds otherwise.

C¹. Chelipeds covered with broadly flattened granules or very low, flat tubercles of varying size.....*ackleianus*

C². Chelipeds with thick, irregular ridges with deep pitted and septate channels between.....*rugimanus*

Pachycheles ackleianus A. Milne Edwards

Pachycheles ackleianus A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 36; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 136; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 295, Pl. II, fig. 12, Pl. IV, fig. 2.

Type locality.—Northwest of the Dry Tortugas, Florida, 37 fathoms, *Blake* Sta. 11.

Distribution.—Gulf of Mexico from off Dry Tortugas to Tampa Bay, Florida; Jamaica; St. Thomas; and Barbados; to a depth of 37 fathoms.

Pachycheles pilosus (H. Milne Edwards)

Porcellana pilosa H. Milne Edwards, 1837, Hist. Nat. Crust., ii, p. 255; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 137, Pl. III, fig. 11; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 294.

Type locality.—Charleston, South Carolina.

Distribution.—South Carolina to Curaçao; Porto Rico, St. Thomas; to a depth of 4 fathoms.

Specimens collected.—Ensenada: Ballena Point, 1; reef outside Cayo Maria Langa, Guayanilla Harbor, 1.

Pachycheles rugimanus A. Milne Edwards

Pachycheles rugimanus A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 36; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 136, Pl. III, fig. 9; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 296, Pl. IV, fig. 3.

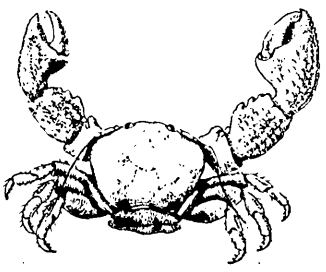

FIG. 46.—*Pachycheles rugimanus* (from Benedict)

Type locality.—Contoy, 12-18 fathoms.

Distribution.—North Carolina to Contoy; St. Thomas; to a depth of 79 fathoms.

Pachycheles serrata (Benedict)

Pisosoma serrata Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 135, Pl. III, fig. 7.

Type locality.—Mayagüez, Porto Rico.

Distribution.—Also recorded from St. Thomas and Cartagena, Colombia.

Petrolisthes Stimpson

A¹. Anterior or inner margin of carpus of chelipeds entire.

B¹. Front low, triangular. Outer angle of hinder margin of carpus ending in a blunt, but slightly produced angle, or low obtuse tooth. *quadratus*, p. 187

B². Outer basal angles of triangular front produced to form a distinct lobiform tooth on either side. Distal extremity of hinder margin of carpus terminates in a sharp spine..... *tridentatus*, p. 187

A². Carpus toothed on anterior margin.

B¹. Carpus armed with three low, distant, spine tipped teeth.

C¹. Epibranchial spine present. Carapace transversely rugose. *armatus*, p. 186

C². No epibranchial spine. Surface of carapace more or less smooth, punctate not rugose..... *polita*, p. 187

B². Carpus armed with four teeth or lobes, not including antero-external angle .....

C¹. Carapace very rough with prominent, transverse piliferous rugae. *galathinus*, p. 186

C². Carapace more or less smooth; pubescent in *P. marginatus*.

D¹. Front triangularly produced. Margins spinuliferous. Epibranchial spine present..... *amœnus*, p. 185

D². Front transverse, only slightly produced (*P. jugosus*), or with median tongue-like, distally rounded lobe. (*P. marginatus*).

E¹. No epibranchial spine..... *jugosus*, p. 186

E². Epibranchial spine present, and followed close behind by a second smaller spine..... *marginatus*, p. 187

Petrolisthes amœnus (Guérin)

Porcellana amœna Guérin, 1856 [1857], in La Sagra's Hist. Cuba, Pt. 2, vii, Crustaceos, p. XVI, viii, atlas, Pl. II, fig. 2.

Petrolisthes ? amœnus Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 135, Pl. III, fig. 3.

Type locality.—Cuba.

Distribution.—Also recorded from Porto Rico; Barbados; Curaçao.

Petrolisthes armatus (Gibbes)

Porcellana armata Gibbes, 1850, Proc. Amer. Ass. Adv. Sci., iii, p. 190 [26].
Porcellana gundlachii Guérin, 1856 [1857], in La Sagra's Hist. Cuba, viii, atlas, Pl. II, fig. 6.
Petrolisthes armatus Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 133.

Type locality.—Cuba.

Distribution.—Bermuda and Florida to Brazil, Lower California to Peru; Indo-Pacific; Porto Rico; St. Thomas; to a depth of 5 fathoms.

Specimens collected.—Guanica Harbor: wharf, Julia Cove, 14; west side of harbor, 1. Mangroves between Ensenada and Guanica, 5. One and a half miles south of Cana Gorda Islands, 1. Guayanilla Playa, wharf 1. Ensenada, 1. Porto Rico, 1.

Petrolisthes galathinus (Bosc)

Porcellana galathina Bosc, 1802, Hist. Nat. Crust., i, p. 233, Pl. VI, fig. 2.
Petrolisthes sexspinosus Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 133.
Petrolisthes galathinus Rathbun, 1920, Rappt. Visscher. en Indust. Zeeprod., Curaçao, Pt. II, p. 327 [11].

Type locality.—Not known.

Distribution.—North Carolina to Brazil; Taboguilla Island, Panama: Porto Rico; Culebra, Vieques; St. Thomas; to a depth of 13½ fathoms.

Specimens collected.—Ensenada: Mangrove Island, Parguera, 8; Ballena Point, 2; Salinas Cove, 1. Tallaboa, 1. Rocks south of Light House beach, Guanica Harbor, 1.

Petrolisthes jugosus Streets

Petrolisthes jugosus Streets, 1872, Proc. Acad. Nat. Sci. Phila., xxiv, p. 134; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 134.

Type locality.—St. Martin, West Indies.

Distribution.—Also recorded from Charlotte Harbor, Florida; Porto Rico; St. Thomas; Barbados.

Specimens collected.—Reef outside Cayo Maria Langa, Guayanilla Harbor, 1.

Petrolisthes marginatus Stimpson

Petrolisthes marginatus Stimpson, 1860, Ann. Lyc. Nat. Hist., N. Y., vii, p. 74 [28]; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 134, Pl. III, fig. 1.

Type locality.—Barbados.

Distribution.—Also recorded from Playa de Ponce, Porto Rico, and Curaçao.

Petrolisthes polita (Gray)

Porcellana polita Gray, 1831, Zool. Misc., p. 14; Griffith, 1833, Animal Kingdom, xiii, p. 312, Pl. XXV, fig. 2; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 293, Pl. I, fig. 7.

Porcellana magnificus Gibbes, 1850, Proc. Amer. Assoc. Adv. Sci., iii, p. 191 [27].

Petrolisthes magnifica Benedict, 1893, Proc. U. S. Nat. Mus., xvi, p. 539.

Type locality.—West Indies; of *P. magnifica,* Vera Cruz, Mexico.

Distribution.—Florida; Mexico; West Indies; Curaçao; St. Thomas; to a depth of 110 fathoms.

Specimens collected.—Guanica Harbor entrance, eastern side on rocks below light house, 1.

Petrolisthes quadratus Benedict

Petrolisthes quadratus Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 134, Pl. III, fig. 4.

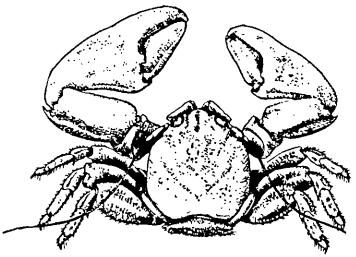

FIG. 47.—*Petrolisthes tridentatus* (from Benedict)

Type locality.—Ponce, Porto Rico.

Distribution.—Also recorded from Curaçao.

Petrolisthes tridentatus Stimpson

Petrolisthes tridentatus Stimpson, 1860, Ann. Lyc. Nat. Hist. N. Y., vii, p. 75 [29], Pl. I, fig. 4; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 134, Pl. III, fig. 2; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 291.

Type locality.—Barbados.

Distribution.—Bahamas, to Trinidad; Taboguilla Island, Panama; St. Thomas.

Pisosoma Stimpson

A¹. Carpus of chelipeds with a ω-shaped impression, opening distally, surface granulated or minutely nodulated; anterior margin armed with five, rarely four, blunt, somewhat flattened conical teeth of which the proximal three are more or less subequal and larger than the others. .....*curaçaoensis*

A². Carpus of cheliped without particular impressions, more or less evenly rounded and generally smooth, though at times granulated, especially toward outer margin; anterior margin divided, often obscurely so, into four flattened, thin, broadly tooth-like lobes or projections of which the first is much the largest.....*riisei*

Pisosoma curaçaoensis Schmitt

Pisosoma curaçoensis Schmitt 1924, Bijd. Dierkunde, Afl. 23, p. 75, Pl. VIII, figs. 1-3.

Type locality.—Hitherto known only from Spanish Bay, Curaçao.

Specimens collected.—Condado Rocks, San Juan, 2.

Pisosoma riisei Stimpson

Pisosoma riisei Stimpson, 1860, Ann. Lyc. Nat. Hist. N. Y., vii, p. 75 [29]; Rathbun, 1900, Proc. Wash. Acad. Sci., ii, p. 146.

Pisosoma glabra Kingsley, 1880, Proc. Acad. Nat. Sci. Phila., xxi, p. 406, Pl. XIV, fig. 2; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 135, Pl. III, fig. 5.

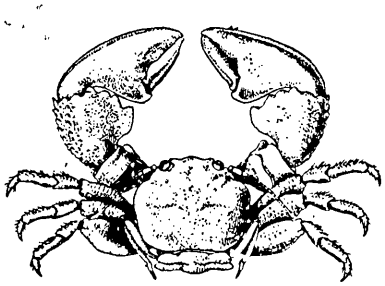

FIG. 48.—*Pisosoma riisei* (from Benedict)

Type locality.—St. Thomas. (Type locality of *P. glabra* Kingsley, Key West, Florida.)

Distribution.—Florida to Brazil; Porto Rico, St. Thomas.

Polyonyx Stimpson

Polyonyx macrocheles (Gibbes)

Porcellana macrocheles Gibbes, 1850, Proc. Amer. Assoc. Adv. Sci., iii, p. 191 [27].
Polyonyx macrocheles Stimpson, 1858, Proc. Acad. Nat. Sci. Phila., x, p. 229; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 138.

Type locality.—South Carolina.

Distribution.—Massachusetts to Florida; Porto Rico. Usually found only in the tubes of the parchment worm *Chaetopterus;* to a depth of 8 fathoms.

Diagnosis.—Carapace ovate, much wider than long. Front little produced and does not interfere with ovoid outline. Chelipeds long and slender; inner margin of carpus produced and entire; hand with a fringe of long hair on lower side.

Porcellana Lamarck

A¹. Epibranchial angle a low, more or less rounded, lobe. Inner angle of carpus of chelipeds a broad lobiform, usually blunted, tooth. Markings in fresh material, round spots or ocellations..... *sayana*

A². Epibranchial angle produced, acute. Tooth near inner angle of carpus usually narrow, spine-tipped. Markings when visible, longitudinal stripes or lines..... *sigsbeiana*

Porcellana sayana (Leach)

Pisidia sayana Leach, 1820, Dict. Sci. Nat., xviii, p. 54.
Porcellana robertsoni Henderson, 1888, Challenger Rept. Zool., xxvii, Pt. LXIX, p. 111, Pl. IX, fig. 6.
Porcellana sayana Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 137, Pl. III, fig. 10; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 291, Pl. I, fig. 3.

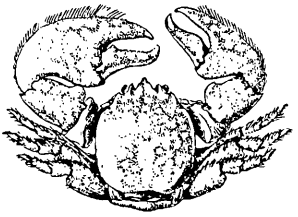

FIG. 49.—*Porcellana sayana* (from Benedict)

Type locality.—Georgia and Florida; of *P. robertsoni,* off Culebra Island, 390 fathoms, *Challenger* Sta. 24, a single female.

Distribution.—North Carolina to Panama; Porto Rico, Culebra, St. Thomas; to a depth of 48 fathoms and perhaps 390 fathoms [?], if my

impression that *P. robertsoni* is identical with *sayana* is confirmed. Neither the figure nor the description appear to exclude the probability.

Specimens collected.—Between Cayo Caribe and Cayo Parguera, Porto Rico.

Porcellana sigsbeiana A. Milne Edwards

Porcellana sigsbeiana A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 35; Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 137; Milne Edwards and Bouvier, 1923, Mem. Mus. Comp. Zoöl., xlvii, No. 4, p. 292, Pl. I, fig. 6.

Type locality.—Off delta of the Mississippi, Lat. N. 28° 51′, Long. W. 89° 1′, 118 fathoms, *Blake* Sta. No. 49.

Distribution.—From off Marthas Vineyard; North Carolina; Gulf of Mexico; Flanagan Passage; 27 to 168 fathoms.

AXIIDÆ

Axiopsis Borradaile

A¹. Rostrum continuous with the gastric region, its sides armed with two or three spines. Antennal thorn large..... .....*inæqualis*

A². Rostrum not continuous with the gastric region, the carapace sloping anteriorly down to the rostrum, sides of the latter unarmed except at the base. Antennal thorns very small.....*defensa*

Axiopsis (Axiopsis) inæqualis (Rathbun)

Axius inæqualis Rathbun, 1901, Bull. U. S. Fish Comm., for 1900, xx, Pt. 2, p. 96, fig. 18.

Axiopsis ? inæqualis Borradaile, 1903, Ann. Mag. Nat. Hist. (7), xii, p. 538.

Axiopsis (Axiopsis) inæqualis de Man, 1925, Siboga Exped., Monog. 39a⁵, pp. 6, 67, 69, 70.

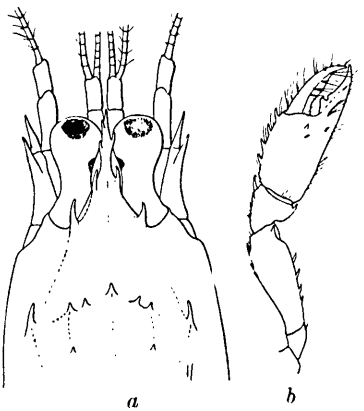

FIG. 50. *Axiopsis (Axiopsis) inæqualis*
a, anterior portion
b, left chela
(from Rathbun)

Type locality.—Known only from Mayagüez Harbor, 161-172 fathoms, *Fish Hawk* Sta. 6066.

Axiopsis (Paraxiopsis) defensa (Rathbun)

Axius defensus Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 95, fig. 17.

Axiopsis ? defensus Borradaile, 1903, Ann. Mag. Nat. Hist. (7), xii, p. 538.

Axiopsis (Paraxiopsis) defensa de Man, 1925, Siboga Exped., Monog. 39a^5, pp. 7, 67, 68, 71.

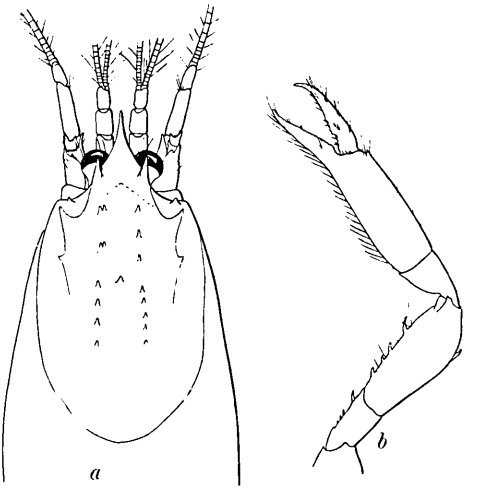

FIG. 51.—*Axiopsis (Paraxiopsis) defensa*
a, anterior portion
b, right cheliped
(from Rathbun)

Type locality.—Known only from off Boca Prieta, 8½ fathoms, *Fish Hawk* Sta. 6075.

Axius Leach

Axius (Eiconaxius) caribbæus carinatus Bouvier

Axius (Eiconaxius) caribbæus carinatus Bouvier, 1925, Mem. Mus. Comp. Zoöl., xlvii, No. 5, p. 465, Pl. IX, fig. 3.

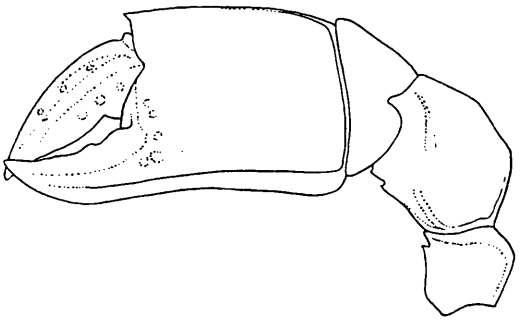

FIG. 52.—*Axius (Eiconaxius) caribbæus carinatus*
Large chela
(after Bouvier)

Type locality.—Female, off St. Croix, 218 fathoms, *Blake* Sta. 139.

Distribution.—Only three specimens of this species are known other than the female type: a male from 88 fathoms off St. Vincent, and two females from 124 fathoms off Milligan Key, Florida, and off Montserrat respectively.

Diagnosis.—Rostrum triangular, broadly rounded at anterior end, lateral margins somewhat turned up, a little roughened but unarmed, prolonged backward to gastric region of carapace, as is dorsal carina of rostrum, which is posterior bifurcate on the gastric region; median crest of carapace and rostrum smooth and unarmed. Flat area of back and cervical groove more or less indistinct. Antennal thorns large. Ischium of large cheliped armed with one or two denticles on upper margin; chela with a very sharp carina which always shows some feebly indicated denticles. Epimera of second and third abdominal somites obtusely pointed.

Metaxius Bouvier

Metaxius microps Bouvier

Metaxius microps Bouvier, 1905, C. R. Acad. Sc. Paris, T. cxli, p. 806; 1925, Mem. Mus. Comp. Zoöl., xlvii, No. 5, p. 470, fig. 29.

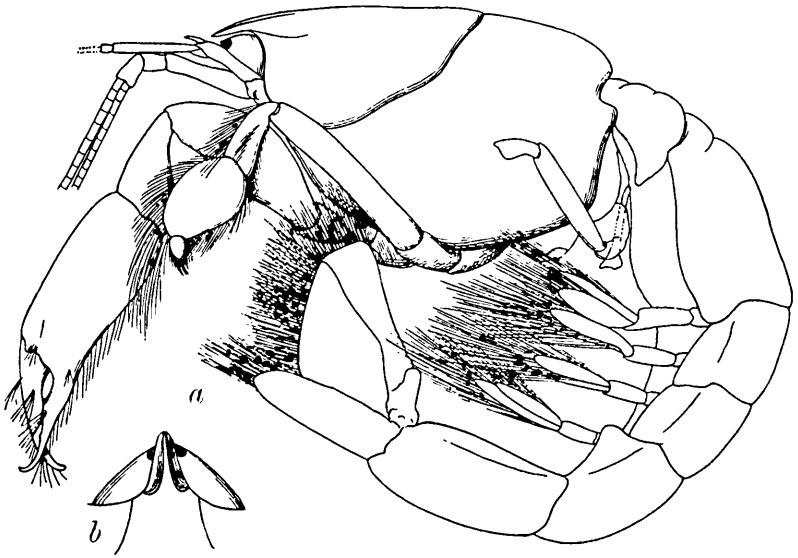

FIG. 53.—*Metaxius microps:* a, lateral view; b, front, from above (after Bouvier)

Type locality.—Known only from a single adult male, from off St. Croix, 115 fathoms, *Blake* Sta. 123.

Diagnosis.—Rostrum triangular, obtuse, and longer than the ocular peduncles; the marginal carinæ are unarmed, a little turned up, prolonged and diverging upon the gastric region; medially there is a longitudinal dorsal carina which broadens out behind, between which and the lateral margins there is a depression either side. The ocular peduncles are contiguous, triangular and a little convex dorsally. Of the first pair of legs only the left is known; the carpus is longer than broad, smooth, and like the merus unarmed; the chela is strongly convex, moderately elevated and without carinæ or ornament; the fingers are strongly crossed and there is a small gape between them basally; on the prehensile edge of the fixed finger there are indications of three teeth. The first abdominal somite is wholly exposed, its pleopods are simple; those of the second to fifth somites are longer, well developed, and fringed with long setæ. The telson is a little longer than broad, rounded posteriorly; the lateral margins are a little irregular.

CALLIANASSIDÆ

Callianidea Milne Edwards

Callianidea lævicauda Gill

Callianidea lævicauda Gill, 1859, Proc. Acad. Nat. Sci. Phila., xi, p. 167; Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 94.

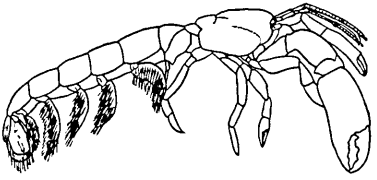

FIG. 54.—*Callianidea lævicauda*

Type locality.—Barbados, under rocks, within coral reefs.

Distribution.—Also recorded from Jamaica; Ensenada Honda, Porto Rico; Culebra; Curaçao.

Specimens collected.—One and one-half miles south of Cana Gorda Island, near Guanica, Ensenada, 1.

Diagnosis.—Front with an equilaterally triangular, obtusely pointed rostrum, and a less prominent obtuse tooth on either side above the insertion of the antennæ.

Carpus of large cheliped, vertical, about twice as high as long; its posterior articulating process about as long as broad and divided into two

unequal parts by a wide groove on the inner side; it projects acutely below and is there denticulate; hand oblong fully three times longer than carpus, with parallel borders; fixed finger about two-thirds as long as palm, dactyl curved and crossing fixed finger, leaving a hiatus. Terminal joint of first pair of pleopods lanceolate; the next four pairs with two broad, oval, laminate branches fringed with cylindrical filaments composed of three joints placed end to end.

Glypturus Stimpson

Glypturus branneri Rathbun

Glypturus branneri Rathbun, 1900, Proc. Wash. Acad. Sci., ii, p. 150, Pl. VIII, figs. 5-8; 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 93; 1920, Rappt. Visscher. en Indust. Zeeprod., Curaçao, Pt. II, p. 328 [12], fig. 3.

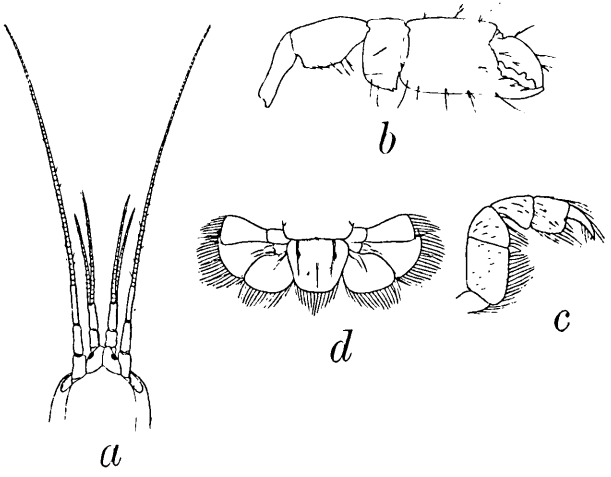

FIG. 55.- *Glypturus branneri: a,* anterior portion; *b,* chela; *c,* third maxilliped; *d,* tail fan (after Rathbun)

Type locality.—Mamanguape Stone Reef, Brazil.

Distribution.—Otherwise only recorded from Hucares, Porto Rico; Pelican Island, Barbados; and Curaçao.

Diagnosis.—Front with a sharp, acute, depressed rostrum, and on either side above insertion of antennæ a shallower subacute projection. Large cheliped finely and inconspicuously dentate on its lower margin; merus twice as long as ischium; carpus nearly as wide as manus and twice as wide as long, palm nearly as wide as long; fingers cross when closed; dactylus with three teeth on prehensile edge.

Callianassa Leach

A¹. Telson oblong triangular. Fixed finger of large chela with a sharp crest on outer surface..... *minima*

A². Telson short and broad. Fixed finger of large chela without sharp crest on outer surface..... *marginata*

Callianassa (Callichirus) marginata Rathbun

Callianassa marginata Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 92, fig. 15.

Callianassa (*Callichirus*) *marginata* Bouvier, 1925, Mem. Mus. Comp. Zoöl., xlvii, No. 5, p. 472; de Man, 1928, Siboga Exped., Monog. 39a⁶, p. 29, 94, 113.

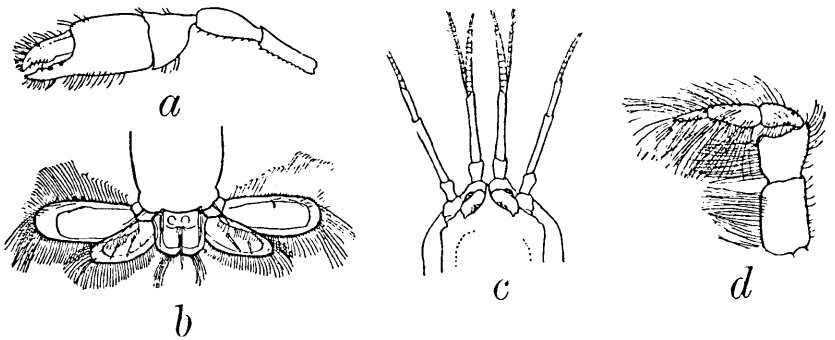

FIG. 56.—*Callianassa* (*Callichirus*) *marginata:* a, chela; b, tail fan; c, anterior portion; d, third maxilliped (after Rathbun)

Type locality.—Mayagüez Harbor, Porto Rico, 161-172 fathoms, *Fish Hawk* Sta. 6066; specimens other than the type were also taken in the harbor at depths varying from 22-76 fathoms.

Distribution.—Otherwise recorded from off Aguadilla, Porto Rico, 137 fathoms, and Barbados, 94 fathoms.

Callianassa (Cheramus) minima Rathbun

Callianassa minima Rathbun, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 92, fig. 16.

Callianassa (*Cheramus*) *minima* de Man, 1928, Siboga Exped., Monog. 39a⁶, p. 26, 94, 97.

Type locality.—Known from Mayagüez Harbor, Porto Rico, 161-172 fathoms, *Fish Hawk* Sta. 6066; also taken near by at Sta. 6062, 25-30 fathoms.

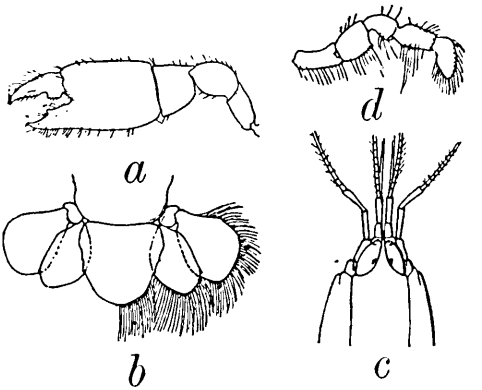

FIG. 57.—*Callianassa* (*Cheramus*) *minima:* a, chela; b, tail fan; c, anterior portion; d, third maxilliped (after Rathbun)

Upogebia Leach

A¹. Antero-lateral border of carapace armed with a small spine on a level with the eyes; fixed finger of chela shorter than movable one .....*affinis*

A². Antero-lateral border of carapace not armed with a spine in line with the eye-stalks; fixed finger of chela the longer.....*operculata*

Upogebia (Upogebia) affinis (Say)

Gebia affinis Say, 1818, Jour. Acad. Nat. Sci. Phila., i, Pt. 2, p. 241.

Upogebia affinis Hay and Shore, 1918, Bull. U. S. Bur. Fish., xxxv, p. 408, Pl. XXIX, fig. 9; de Man, 1927, Capita Zoologica, ii, Pt. 5, p. 50, Pl. VI, figs. 19-19g.

FIG. 58.—*Upogebia* (*Upogebia*) *affinis* (after de Man)

Type locality.—Georgia.

Distribution.—Buzzards Bay, Massachusetts to Florida and Louisiana; West Indies to Brazil.

Specimens collected.—Inside Maria Langa Cayo, near mouth of Guayanilla Harbor, 1.

Remarks.—As de Man has observed, the armature or lack of it on the ventral border of the rostrum is "rather *variable* in this species." I find, too, in smaller specimens that the spine or spines on "the posterior border of the oblique lateral portions of the cervical groove, immediately below the linea thalassinica" may disappear entirely, or be yet undeveloped. In a lot of ten specimens from Buzzards Bay, Massachusetts, of which the largest is 42 mm. long and the smallest 33, three specimens, of which the largest was one, showed no lateral spines, two had a small, more or less

obsolescent spine on one side and none on the other, while five had a well developed spine on the hinder margin of the cervical groove either side of the carapace, and one of these indeed had two spines on one side, though but a single one on the other. Only three individuals had spines on the under side of the rostral projection. Two of these, having respectively one and two ventral rostral spines, were among the specimens with a pair of lateral spines, and the other, also with two ventral spines, had a lateral spine on one side of the carapace only.

The single specimen taken by the Expedition is one of the smallest representatives of the species I have seen. It measures approximately 18 mm. long and is devoid of ventral rostral armature and without lateral spines on the carapace.

Upogebia (Calliadne) operculata Schmitt

Upogebia (*Gebiopsis*) *operculata* Schmitt, 1924, Univ. Iowa Studies Nat. Hist., x, No. 4, p. 91, Pl. V.

Gebiopsis hartmeyeri Balss, 1924, Zool. Anz., lxi, p. 178, figs. 1, 2.

Upogebia (*Calliadne*) *operculata* de Man, 1928, Siboga Exped., Monog., 39a^6, p. 24, 37, 39, 50.

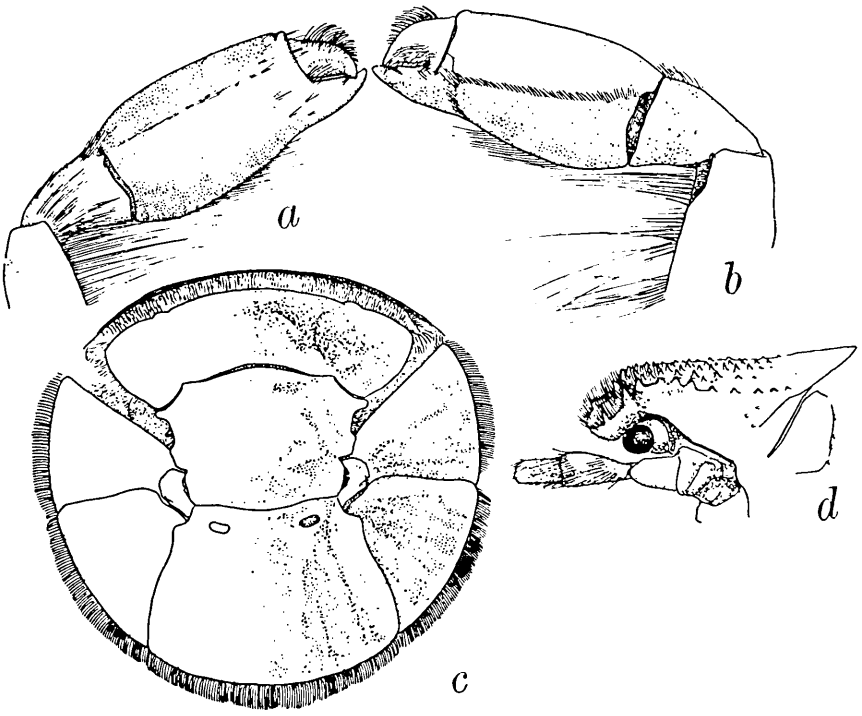

FIG. 59.—*Upogebia* (*Calliadne*) *operculata:* a, b, inner and outer aspects of left chela; c, tail fan; d, anterior portion (after Schmitt)

Type locality.—Okra Reef, Barbados.

Distribution.—Also recorded from St. Thomas, Savannah Passage, and I have seen further specimens from the Dry Tortugas, Florida.

Specimens collected.—Off mouth of Guanica Harbor, southeast of bell buoy, 6 fathoms, 2.

PAGURIDÆ

Calcinus Dana

Calcinus tibicen (Herbst)

Cancer tibicen Herbst, 1791 [1796], Naturg. d. Krabben u. Krebse, ii, p. 25, Pl. XXIII, fig. 7.

Calcinus sulcatus Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 141, Pl. V, figs. 3, 3a.

Calcinus tibicen Rathbun, 1920, Rappt. Visscher. en Indust. Zeeprod., Curaçao, Pt. II, p. 329 [13].

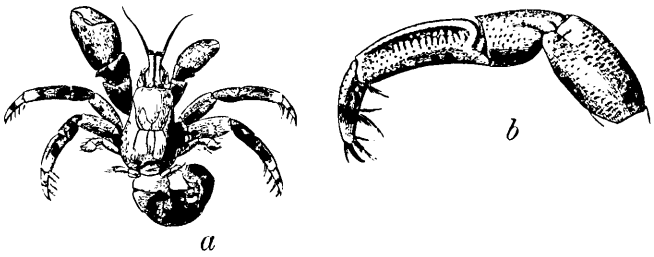

FIG. 60.—*Calcinus tibicen:* a, dorsal aspect; b, outer face of second left ambulatory leg (from Benedict)

Type locality.—Unknown.

Distribution.—Florida to Brazil; Porto Rico, Arroyo, Vieques, St. Thomas; to a depth of 18 fathoms.

Specimens collected.—San Juan: Harbor, below San Antonio R. R. bridge, 1; opposite Fort San Geronimo, 19. Ensenada: Eastern side of Harbor entrance, 1; Pardas Bay, coral reef, 1. Tallaboa and vicinity, 4. Guayanilla Harbor, 5. Coral reef, Ballena Point, 2. Punta Arenas, south of Mayagüez, 5. "La Muella," Ponce, 1.

Diagnosis.—Left cheliped the larger, generally smooth, glabrous and punctate. Propodus of second left ambulatory leg wider than those of other legs, showing a wide longitudinal groove on outer surface. Eyes longer than carapace is wide. A species of medium size.

Clibanarius Dana

I find difficulty in separating preserved specimens of *C. tricolor* in which the color has faded from *C. antillensis* in like condition, nor have I otherwise been able to diagnose differentially the two to my own satisfaction. Therefore, such color notes as have been available, based apparently on comparatively fresh specimens, have been employed in the following key pending a further study of these species.

A¹. Dactyls of ambulatory legs shorter than, or at least not exceeding propodal joints .....

B¹. Ambulatory legs cross banded, joints sky blue, proximally orange, except dactyls which are yellowish white with brown spots; chelipeds brownish, white spotted. A very small species.....*tricolor*

B². Ambulatory legs longitudinally striped more or less olive in color with single white stripe laterally; chelipeds olive with white spines. A small species.....*antillensis*

A². Dactyls of ambulatory legs longer than propodi. Legs more or less yellowish brown to brownish purple, showing laterally two broad longitudinal stripes of white either side of a colored one of equal width; chelipeds olive greenish. A moderately large species.....*cubensis*

Clibanarius antillensis Stimpson

Clibanarius antillensis Stimpson, 1858, Ann. Lyc. Nat. Hist. New York, vii, p. 85 [39]. Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 142, Pl. VI, fig. 1.

Type locality.—Barbados.

Distribution.—Porto Rico, Culebra; Arroyo to Curaçao; Brazil.

Specimens collected.—Ensenada, 1. Guayanilla Harbor, 2. Montalva Bay, 6*. Guanica Harbor, 1. Mangrove Id. at Paraguera, 12.

Clibanarius cubensis (Saussure)

Pagurus cubensis Saussure, 1858, Mem. Soc. Phys. Hist. Nat. Genève, xiv, p. 455 [39].

Clibanarius formosus Ives, 1891, Proc. Acad. Nat. Sci. Phila., xliii, p. 182, Pl. V, figs. 1, 2.

Clibanarius cubensis Rathbun, 1900, Proc. Washington Acad. Sci., ii, p. 144.

Clibanarius sclopetarius Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 142.

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* Tentative identification.

Type locality.—Cuba.

Distribution.—Also recorded from Jamaica, Porto Rico; Panama; Colombia; Brazil.

Specimens collected.—San Juan: 1; near Fort San Geronimo, 1; vicinity San Antonio R. R. bridge, 3; Palo Seco Point, 1. Tallaboa, 1. Ensenada, 1. Near "La Muelle," Ponce, 1.

Clibanarius tricolor (Gibbes)

Pagurus tricolor Gibbes, 1850, Proc. Amer. Acad. Adv. Sci., iii, p. 189 [25].
Clibanarius tricolor Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 142, Pl. VI, fig. 2.

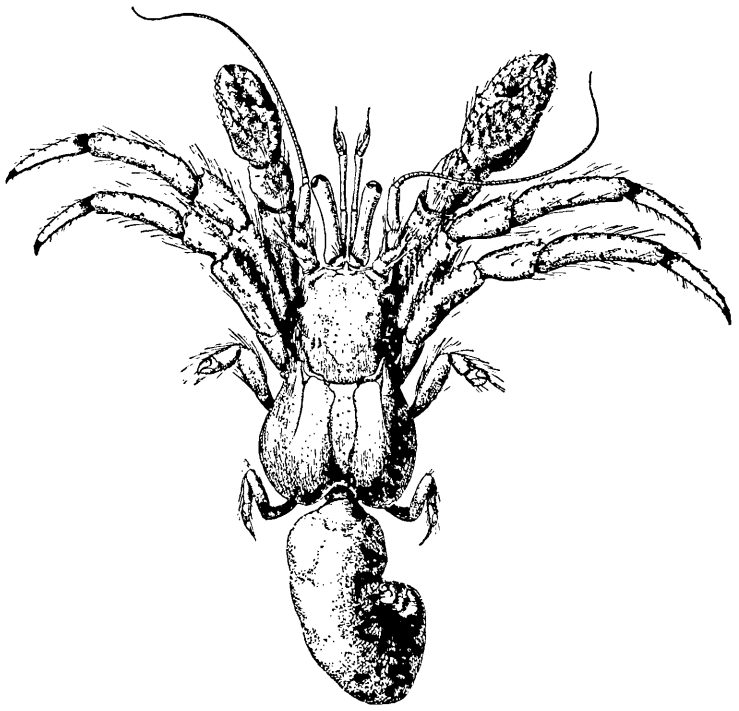


FIG. 61.—*Clibbanarius tricolor* (from Benedict)

Type locality.—Key West, Florida.

Distribution.—Florida, Bermuda, and the Dry Tortugas, to Barbados; Porto Rico.

Specimens collected.—San Juan: near Fort San Geronimo, 3; Condado Bay, 18. Tallaboa, 2*. Montalva Bay, 1*. Parguera, 1*. Caja de Muertos Id., 29†. "La Muelle," Ponce, 4.

Dardanus Paulson

Dardanus venosus (H. Milne Edwards)

Pagurus venosus H. Milne Edwards, 1848, Ann. Sci. Nat., Zool., Paris (3), x, p. 61.

Pagurias insignis Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 141.

Dardanus venosus Rathbun, 1920, Rappt. Visscher. en Indust. Zeeprod., Curaçao, Pt. 2, p. 329 [13].

FIG. 62.—*Dardanus venosus*
Larger left chela and carpus

Type locality.—Guadeloupe.

Distribution.—Florida and Bermuda to Brazil; Arroyo; to a depth of 50 fathoms.

Specimens collected.—Guanica Harbor, 1. Guayanilla Harbor, 1. Cayo Caribe to Cayo Parguera, 3.

Diagnosis.—Left cheliped the larger; hand with numerous tubercles surmounted by a comb-like crest of little tubercles; between large tubercles are fan-shaped fringes of plume-like bristles, which are parallel to the surface; higher up on hand, form of tubercles is a little modified. Propodus and dactyl of second left ambulatory legs are wide; a prominent ridge runs full length of both joints; tubercles, like those of chelipeds, form transverse rows across outer surface, interrupted in middle by a sulcus, at bottom of which is a row of single tubercles. The fan-like arrangement of bristles is repeated here but does not occur on the right cheliped or on any other ambulatory leg. Eyestalks stout, constricted in the middle; measured from margin of front a little more than equal to three-quarters the width of the carapace. One of the large hermit crabs of the West Indies.

* Tentative identification.

† Of the specimens from Caja de Muertos 17 were examined by me; the locality record for the remaining 12 was supplied through the courtesy of Dr. Roy W. Miner.

Paguristes Dana

A¹. Eyestalks measured from the extremity of the rostral point to end of the cornea, longer than the distance between the antero-lateral angles.

B¹. Rostrum acute-triangular, exceeding lateral projections of front.

C¹. Rostrum long and slender, though only exceeding lateral projection of front by about half its length ..... *depressus*, p. 202

C². Rostrum broad triangular, exceeding lateral projections of front by nearly its entire length ..... *sericeus*, p. 203

B². Rostrum a short blunt projection not as far advanced as the lateral projections ..... *moorei*, p. 203

A². Eyestalks measured as above shorter than front.

B¹. Front transverse, outline straight or nearly so.

C¹. Base of rostrum anterior to line of antero-lateral angles; rostrum long and slender, more or less spiniform..... *tenuirostris*, p. 204

C². Base of rostrum posterior to line of antero-lateral angles; rostrum more broadly triangular than preceding, not spiniform. *rectifrons*, p. 203

B². Outline of front much curved at sides, rostrum quite broadly triangular.

C¹. Either margin of rostrum armed with one or more spinules. *grayi*, p. 202

C². Rostrum unarmed, except for acute tip ..... *tortugæ*, p. 204

Paguristes depressus Stimpson

Paguristes depressus Stimpson, 1858, Ann. Lyc. Nat. Hist., New York, vii, p. 87 [41]. Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 144, Pl. IV, fig. 5.

Type locality.—St. Thomas, to a depth of 2 fathoms.

Distribution.—Also recorded from Mayagüez, and off Point Melones, *Fish Hawk* Sta. 6072, Porto Rico to a depth of 7¼ fathoms.

Specimens collected.—Between Ratones and Caribe Islands, off Tallaboa, 3.

Paguristes grayi Benedict

Paguristes grayi Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 146, Pl. V, figs. 1, 1a.

Type locality.—San Antonio Bridge, San Juan, Porto Rico.

Distribution.—Also recorded from Dry Tortugas, Florida, Antigua, and Curaçao.

Specimens collected.—San Juan Harbor, 1.

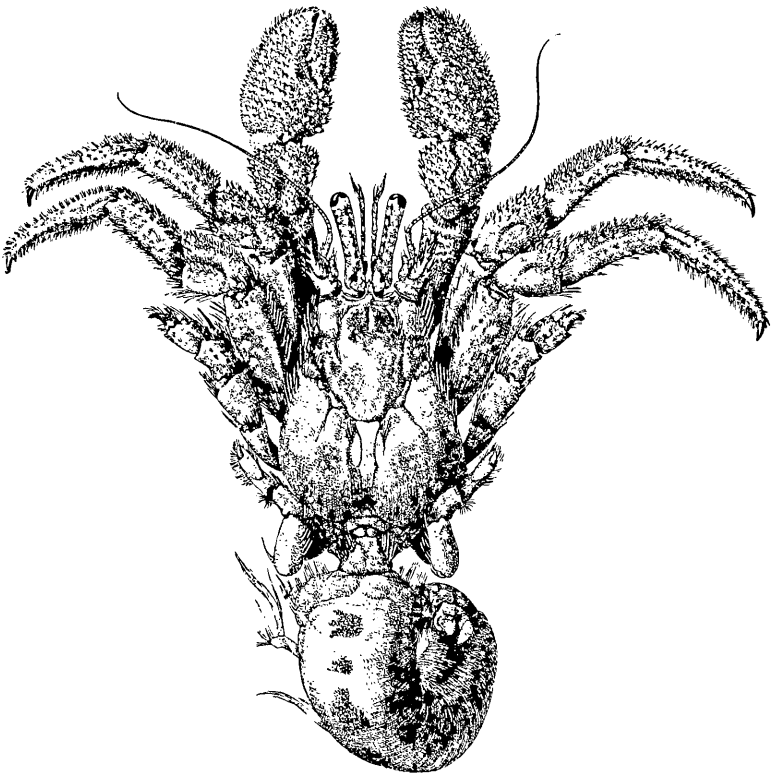


FIG. 63.—*Paguristes grayi* (from Benedict)

Paguristes moorei Benedict

Paguristes moorei Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 144, Pl. IV, fig. 3.

Type locality.—From Porto Rico.

Remarks.—Known only from the type and one other specimen.

Paguristes rectifrons Benedict

Paguristes rectifrons Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 145, Pl. IV, fig. 7.

Type locality.—Off Vieques Id., Porto Rico, Feb. 8, 1899, 14 fathoms, Fish Hawk Sta. 6085.

Distribution.—Also recorded from off Biscayne Key, Florida, and the Straits of Florida to a depth of 75 fathoms.

Paguristes sericeus A. Milne Edwards

Paguristes sericeus A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 44; Milne Edwards and Bouvier, 1893, Mem. Mus. Comp. Zoöl., xiv, No. 3, p.

46, Pl. III, figs. 14-22. Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 143.

Type locality.—Gulf of Mexico, west of Dry Tortugas (lat. 24° 31′ N., long. 83° 16′ W.) 36 fathoms, *Blake* Sta. 12.

Distribution.—Gulf of Mexico and West Indies; Flanagan Passage; 12 to 36 fathoms.

Paguristes tenuirostris Benedict

Paguristes tenuirostris Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 143, Pl. IV, fig. 1.

Type locality.—West coast of Florida, 68½ fathoms, 1889, *Fish Hawk* Sta. 5077.

Distribution.—Found again, for the first time since originally described, by R. W. Miner, on the coral reef, Ballena Point, Ensenada, Porto Rico, June 12, 1915.

Specimens collected.—Condado Bay west of Dos Hermanos Bridge, San Juan, 1.

Paguristes tortugae Schmitt

Paguristes tortugae Schmitt, 1933, Amer. Mus. Novitates, No. 662, p. 7, fig. 4.

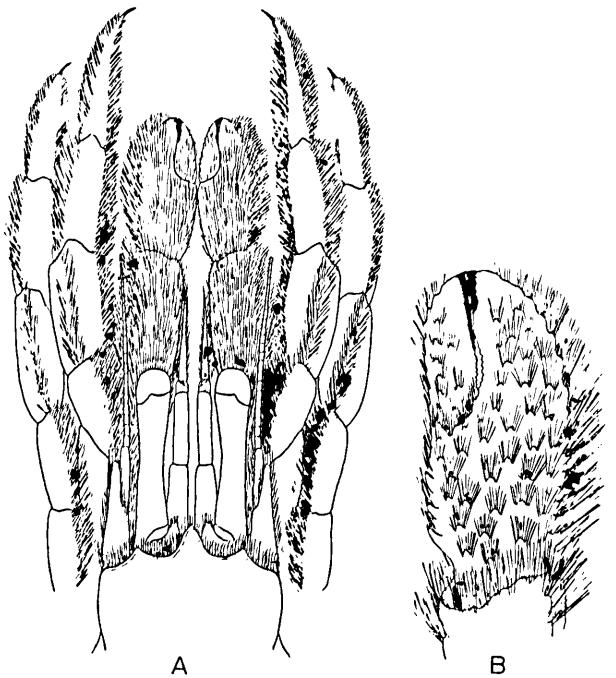


FIG. 64. *Paguristes tortugae*: a, anterior portion to show fringes of hair, and front; b, right chela, with part of pubescence and hairs removed

Type locality.—Interstices of large *Porites* clumps off Fort Jefferson dock, Garden Key, Dry Tortugas, Florida.

Distribution.—Also found in Porto Rico.

Specimens collected.—Ensenada: entrance Guayanilla Harbor, 5; entrance Montalva Bay, 1; mangrove island at Parguera, 1. Near Guanica, 1.

Pagurus Fabricius

A¹. Median or rostral projection of front triangular, subacute, exceeding lateral projections. Larger, right cheliped armed with several well defined rows of stout spines on upper surface, hairy.....*marshi*

A². Median projection broadly rounded off, scarcely exceeding lateral projections. Larger, right cheliped more or less granulated or scabrous above, granules low and somewhat pointed, cheliped spinulose along inner margin only, hairy.....*annulipes*

Pagurus marshi Benedict

Pagurus marshi Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 139, and accompanying text-fig. Schmitt, 1924, Bijd. Dierkunde, xxiii, p. 80.

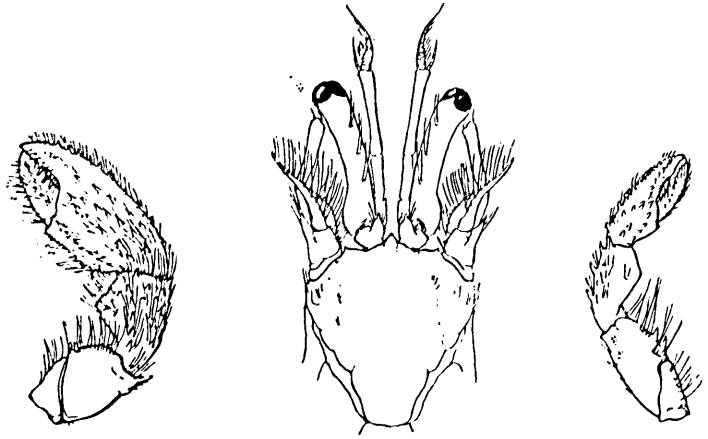


FIG. 65. *Pagurus marshi*: a, b, right and left chela, respectively; c, anterior portion. (after Benedict)

Type locality.—Ponce, Porto Rico.

Distribution. Also recorded from the Dry Tortugas, Florida; Cape San Antonio, Cuba; Caracas Bay, Curaçao.

Specimens collected.—San Juan Harbor, in channel, below San Antonio, R. R. Bridge, 3; Caja de Muertos, 5.

Pagurus annulipes (Stimpson)

Eupagurus annulipes Stimpson, 1860, Amer. Jour. Sci. Art. ser. 2, xxix, p. 243.

Type locality.—Beaufort Harbor, North Carolina.

Distribution.—Massachusetts and Vineyard Sound to Florida; Cuba; Porto Rico; to a depth of 22½ fathoms.

Specimens collected.—San Juan Harbor, 1. Condado Bay, 1. Ensenada: Salinas Cove, 1; coral reef, Ballena Point, 1.

Petrochirus Stimpson

Petrochirus bahamensis (Herbst)

Cancer bahamensis Herbst, 1791 [1796], Naturg. d. Krabben u. Krebse, ii, p. 30.
Petrochirus bahamensis Rathbun, 1897, Ann. Inst. Jamaica, i, p. 42. Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 140.

FIG. 66.—*Petrochirus bahamensis*
Larger right chela and carpus

Type locality.—Bahamas.

Distribution.—North Carolina to Brazil; Porto Rico; to a depth of 8½ fathoms.

Diagnosis.—Chelipeds large and very rough; subequal, the right slightly the larger, carpus has a row of five spines with horny tips on inner margin continuous with a similar row on the hand; surface of carpus broken with swellings bearing small conical spines with horny tips; between swellings are stiff bristles; similar swellings on hand are strongly tuberculous; some near carpus are also spiny. Ambulatory feet stout, about as long as chelipeds and rough with spiny margins; dactyls stout with dense rows of bristles above and below. Eyes measured from front equal anterior portion of front. A large species when fully grown.

Xylopagurus A. Milne Edwards

Xylopagurus rectus A. Milne Edwards

Xylopagurus rectus A. Milne Edwards, 1880, Bull. Mus. Comp. Zoöl., viii, p. 37. Milne Edwards and Bouvier, 1893, p. 108, Pl. VII, figs. 1-13. Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 143.

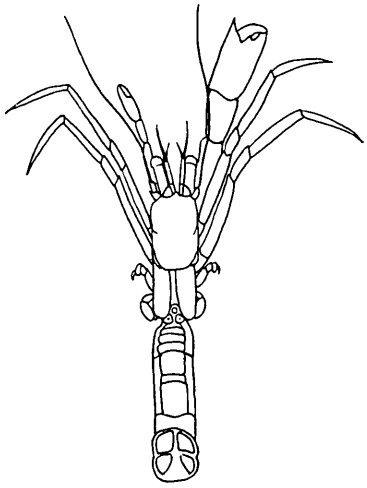


FIG. 67.—*Xylopagurus rectus* (after Milne Edwards and Bouvier)

Type locality.—Dominica, 138 fathoms, *Blake* Sta. 192.

Distribution.—Otherwise recorded from off St. Vincent, and Mayagüez Harbor, Porto Rico; 75 to 146 fathoms.

Diagnosis.—Abdomen quite straight, subquadrate, divided into four or five plates and ending in an operculiform structure formed by last abdominal somite and tail fan. Chelipeds and ambulatory legs much elongated; right cheliped very much larger than left, palm swollen, granular, and sparsely hairy, with upper margin of palm extending over the movable finger in the form of a larger pointed tubercle. All legs free from spines. Eyestalks about three-fourths width of carapace.

CŒNOBITIDÆ

Cœnobita Latreille

Cœnobita clypeatus (Herbst)

Cancer clypeatus Herbst, 1791 [1796], Naturg. d. Krabben u. Krebse, ii, p. 22, Pl. XXIII, fig. 2A, B.

Cœnobita diogenes Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 139.

Cœnobita clypeatus Rathbun, 1920, Rappt. Visscher. en Indust. Zeeprod., Curaçao, Pt. II, p. 329 [13].

Type locality.—Given in error as East Indies. Hilgendorf, 1869, Von der Decken's Reisen in Ost-Afrika, III, p. 98, who has examined the specimen says that Herbst's type is the West Indian species.

Distribution.—Florida; Porto Rico; Culebra; St. Thomas to Venezuela.

FIG. 68.—*Cœnobita clypeatus*
Larger left chela and carpus

Specimens collected.—Coamo Springs, 1. San Juan: San Antonio R. R. Bridge, 1; Condado Bay, 2. Punta Arena, south of Mayagüez, 15. "La Muelle," Ponce, 1. Mona Island, 1. Porto Rico, 1.

Diagnosis.—Eyestalks compressed about as long as anterior border of carapace. Left cheliped the larger ovate, swollen, with a few scattered granules on hand in the larger, more developed specimens; a brush or pencil of hairs on the inner surface of both palms. Ambulatory legs very stout; inferior margin of dactyl and propodus of second ambulatory leg, a sharp, serrate ridge formed of more or less spiniform tubercles in dactyl and blunt tubercles or nodules in the propodus.

ALBUNEIDÆ

Albunea Weber

Albunea gibbesii Stimpson

Albunca symmista Gibbes, 1850, Proc. Amer. Assoc., iii, p. 187 [23].

Albunca gibbesii Stimpson, 1858, Ann. Lyc. Nat. Hist. N. Y., vii, p. 78 [32]. Pl. I, fig. 6. Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 139; 1904, Proc. U. S. Nat. Mus., xxvii, p. 625, figs. 3, 4.

FIG. 69.—*Albunca gibbesii*
(after Benedict)

Type locality.—St. Augustine, Florida (Stimpson). Sullivans Island, Charleston, South Carolina (Gibbes).

Specimens collected.—Salinas Cove, from Don Luis Cayo, 1.

Diagnosis.—Eyestalks lamellate, elongated, triangular, with very small cornea at apex of angle. Carapace broader than long, anterior margins on either side between the eyes and antennæ armed with six to nine sharp spines. Terminal segment of abdomen in male is narrow and acuminate, its extremity forming a long narrow projection equalling one-fourth the length of the joint; terminal joint in female broader, more or less lanceolate, distal extremity obtusely pointed.

Lepidopa Stimpson

A¹. Eye-stalks oblong-oval, diverging, measured on median line from orbital margin, about one and one half or more times as long as greatest width; cornea terminal and very small..... .....*venusta*

A². Eye-stalks nearly rectangular, square, subparallel, slightly wider than long, anterior margin slightly concave; cornea on outer margin just posterior to rounded portion of distal angle..... .....*scutellata*

Lepidopa scutellata (Desmarest)

Albunea scutellata Desmarest, 1825, Consid. Crust., p. 173; Milne Edwards, 1837, Hist. Nat. Crust., ii, p. 204, Pl. XXI, figs. 9-13.

Lepidopa scutellata Stimpson, 1858, Proc. Acad. Nat. Sci. Phila., x, p. 230 [68]; 1858, Ann. Lyc. Nat. Hist., N. Y., vii, p. 79 [33].

Type locality.—Unknown. Stimpson's specimens were collected at St. Thomas.

Remarks.—Since Stimpson's specimens seem no longer to be extant, it is not possible to set at rest questions that have been raised regarding their identity. However, I shall here consider them identical with Desmarest's species, as figured and commented upon by Milne Edwards, for want of other evidence and particularly material from St. Thomas, which might have thrown some light on the matter.

Though Dana and others have reported *L. scutellata* from various places, no specimens that can be definitely identified with the original types seem ever to have come to hand.

Benedict's *scutellata* (1903) at all events is different from Desmarest's. The latter has the eyestalk distinctly wider than long and the greatest width of the carapace applied to the median line about equals the length, rostrum included. The eyestalks of Benedict's specimens are longer than wide and the greatest width of the carapace when applied to the median

line, reaches from the posterior margin to the anterior margin of the eye-stalks. The name should be changed, and that of *benedicti* is here proposed.

Lepidopa venusta Stimpson

Lepidopa venusta Stimpson, 1858, Proc. Acad. Nat. Sci. Phila., x, p. 230 (without description); 1858, Ann. Lyc. Nat. Hist. N. Y., vii, p. 79. Benedict, 1903, Proc. U. S. Nat. Mus., xxvi, p. 892, fig. 2.

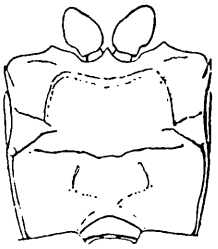


FIG. 70.—*Lepidopa venusta* Carapace with eye-stalks (after Benedict)

Type locality.—St. Thomas.

Distribution.—West coast of Florida; Colombia; St. Thomas.

HIPPIDÆ

Emerita Meuschen, 1778

A check of the Expedition's specimens from Porto Rico led to a re-examination of earlier collections from that island. Thus it was that in each of the bottles of specimens which Dr. Benedict listed as *Emerita talpoida* in his report on "The Anomuran Collections made by the Fish Hawk Expedition to Porto Rico" (Bull. U. S. Fish Comm., 1900 [1901], XX, Pt. 2, p. 138), was found a pencilled slip, "*Emerita,* n. sp.," and in one indeed the designation "*Emerita portoricensis.*" This new species Dr. Benedict never described and the name he suggested has been adopted here. A review of the literature and of the available specimens of *Emerita* has yielded several surprises.

As regards the name of the genus and its author: Opinion 89 of the International Commission of Zoological Nomenclature (Smithsonian Misc. Coll., 1925, LXXIII, No. 3, p. 27), which eliminates the systematic names of Gronow, Zoophylacium, 1763, as of that date, by the same token validates Meuschen's use of *Emerita* (Mus. Gronovianum, 1778, p. 87, cited by Sherborn, Index Animalium, 1902, p. 327) as suggested by Stebbing. Stebbing's suggestion was put forward in the Ann. S. African Museum (1910, VI, Pt. 4, No. 6, p. 366), in which he remarked, "This name was accepted by Benedict, Bull. U. S. Fish Comm. for 1900,

vol. ii, p. 138, but attributed to Gronovius and with this attribution Miss Rathbun appears to agree, only correcting the Gronovian date from 1763 to 1764 (Proc. Biol. Soc., Washington, vol. xvii, p. 171, 1904). I am not in accord with these esteemed carcinologists in regarding Gronovius as any authority for Linnæan nomenclature, but the intervention of Meuschen allows me to follow them in using the name *Emerita.*" Whether the *Emerita emeritus* identified and listed by Stebbing in his General Catalogue of South African Crustacea (*op. cit.*) is the Atlantic species now to be known as *E. brasiliensis,* or another, cannot be determined without specimens.

The original species and type of the present genus seems first to have been recognized by Linnæus (Syst. Nat., edit. 12, 1767, p. 1055 [No. 79]) as "Cancer Emeritus," citing the figures of Gronovius (Zoophylacium Gronovianum, 1764, Pt. 2, p. 234 [species No. 1000] Pl. XVII, figs. 8 and 9) and giving as the type locality, "Habitat in Mari Indico." It is true also that below the Gronovian reference he mentions Petiver's Pteri-graphia Americana, 1715 (?), Pl. XX, fig. 9, but the latter unquestionably had a true *Hippa* (*Remipes* of authors) from Barbados, very probably *Hippa cubensis.*

Fabricius, Latreille, and Lamarck all follow Linnæus even if they may have done no more than copy from him:

FABRICIUS, J. C.

1775. Systema Entomologiæ, p. 416. "*Astacus emeritus,*" "Habitat in mari Indico."

1781. Species Insectorum, i, p. 512. "*Astacus emeritus,*" "Habitat in mari Indico."

1787. Mantissa Insectorum, i, p. 332. "*Astacus emeritus*" only, without reference or locality.

1793. Entomologia systematica, ii, p. 484. "*Astacus emeritus,*" "Habitat in mari Indico."

1798. Supplementum Entomologiæ Systematicæ, p. 370, "*Hippa emeritus,*" "Habitat in mari Indico."

LATREILLE, P. A.

1803. Hist. Nat. Crust., vi, p. 176, pl. 52, fig. 1. "*Hippa emerita,*" "Elle se trouve dans les mers des Indes."

1806. Genera Crustaceorum, etc., i, p. 45. "*Hippa emeritus,*" "Habitat in mari Indico."

1810. Considérations générales des Crustacés, etc. On page 99 the author keys out the genus and on page 422 indicates as the type "*Hippa emeritus* Fab." Neither reference nor locality is cited.

LAMARCK, J. B

1818. Hist. Anim. sans Vert., v, p. 222. "*Hippa emeritus.*" "Habite la mer des Indes."

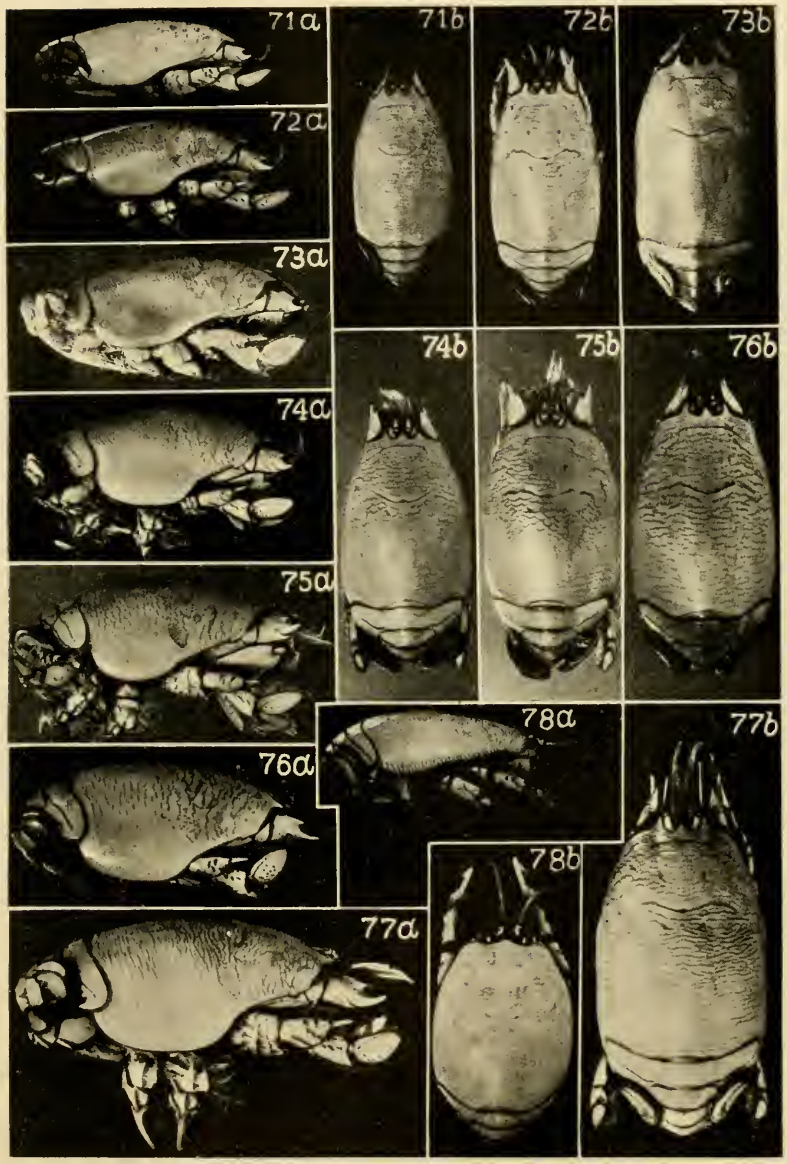
Bosc in his "Hist. Nat. Crust.," 1801-1802, II, p. 12, likewise follows Linnæus, *"Hippa emerita,"* "Se trouve dans le mer des Indes." In the later edition of this work, "Hist. Nat. Crust.," 1830, Vol. I, gotten out by Desmarest, a change of locality is introduced (p. 312), based, it is said, on Latreille, *"Hippa emeritus,"* "Se trouve dans la mer du Sud, et, selon M. Latreille, sur les côtes du Brésil." The latter, so far as I have been able to ascertain, appears to have made no such assertion. Desmarest seems first to have made this remark in his "Consid. génér. Crust.," 1825, p. 174, Pl. XXIX, fig. 2, "Selon M. Latreille, qui réunit les *hippa emeritus* et *adactyla* de Fabricius en une seule espèce, cette espèce habiteroit les côtes du Brésil."

In both these works, Desmarest refers to "Herbst, tab. 22, fig. 3" (Krabben und Krebse, 1791, II, Pt. 1, p. 8, Pl. XXII, fig. 3 [not 4 as stated in text]). Herbst, I am inclined to believe, unwittingly caused whatever confusion that followed regarding identity and home of the Linnæan species by the accidental transposition of the illustrations of his figures 3 and 4 of Plate XXII.*

In the course of this exchange the figured *Emerita* came to be linked with the locality Martinique and so with Atlantic waters, whereas, in truth, no place of origin was actually given for this *Emerita* by Herbst other than the inference that it inhabited the Indian Ocean, inasmuch as he cites Linnæus, Fabricius, and Gronovius, who are all in agreement on this point; but again, as was the case with Linnæus, Petiver's Pl. XX, fig. 9, is also referred to, either as the result of some misapprehension or a lack of knowledge of its real identity or origin.

H. Milne Edwards (Hist. Nat. Crust., 1837, II, p. 209) may have been misled by Desmarest, whom he lists in his synonymy, for Edwards likewise has, under the name *"Hippa emerita,"* "Habite les côtes du Brésil." This undoubtedly is correct for the Atlantic form he had before him and which he thought represented the species described by Linnæus, but to which his synonymy does not, after all, apply. Observing that the Asiatic *"Hippa"* differed from the Atlantic one, he also described the former, giving it, to his mind, the appropriate appellation *asiatica*. So far only a single real *Emerita* has been found throughout the whole Indo-Pacific region. There is little evidence one way or another contained in the collections of the National Museum, for we have but two specimens of *Emerita* from that region, both collected at Benkoelen, Sumatra, by Dr. H. C. Kellers, November, 1925, while a member of the U. S. Naval

* My attention was directed to this state of affairs by Ortmann, 1896, Zool. Jahrb. abt. Syst., ix, p. 228, footnote 2, p. 232, footnote 1.



FIGS. 71a-b.—*Emerita benedicti* (type), from Tampa Bay, Florida.
FIGS. 72a-b.—*Emerita portoricensis* (type), from Mayaguez, Porto Rico.
FIGS. 73a-b.—*Emerita emerita*, from Benkoelen, Sumatra.
FIGS. 74a-b.—*Emerita talpoida*, from Cape Hatteras, North Carolina.
FIGS. 75a-b.—*Emerita analoga*, from Long Beach, California.
FIGS. 76a-b.—*Emerita brasiliensis* (type), from Iguape, São Paulo, Brazil.
FIGS. 77a-b.—*Emerita rathbunæ* (type) from Chame Point, Panama.
FIGS. 78a-b.—*Hippa cubensis*, from Dry Tortugas, Florida.

Eclipse Expedition that year. Both are in accord with Milne Edwards's description. For want of another Indo-Pacific species to which the Linnæan name might be affixed, in view of the locality originally ascribed to it, the name given by Milne Edwards to his *asiatica* material must needs be superseded by the earlier one of Linnæus and the name *emerita* of Milne Edwards must be replaced by another — *brasiliensis* is proposed.

It so happens that *Emerita brasiliensis* is confined to the coast of South and Central America, so far as at present known, finding its northern limit in Yucatan and its southern limit at Praia Grande, São Francisco, Brazil.

Emerita talpoida (Say) is a well founded species. It ranges from Harwich, Massachusetts, along the east coat to Florida, and the west coast of Florida to Pensacola; I have also three specimens from Progreso, Mexico.

The region intervening between the two species preceding, including the West Indies, is occupied by *Emerita portoricensis,* which is found in "South" Florida and at Pensacola; Galveston, and Aransas Pass, Texas; Belize, British Honduras; Sabanilla, Colombia; San Juan, Mayagüez, and Vieques, Porto Rico; Kingston, Jamaica; and Cedros, Trinidad. Three specimens were collected at Palo Seco Point, San Juan, Porto Rico, by the Academy's expedition.

Strange to say, Tampa Bay, West Florida, proves to be the home of still another, hitherto undescribed, but easily recognized, species. I am pleased to name it *Emerita benedicti* in honor of Dr. J. E. Benedict, whose indications caused me to embark on this brief revision of the genus.

On the west coast of America two species of *Emerita* are to be found. The one, in the past called *E. emerita,* also represents a distinct species. From specimens available to me it appears to range from La Paz, Lower California, to Capon, Peru. This species I beg to designate as *Emerita rathbunæ* in honor of Dr. Mary J. Rathbun, dean of American carcinologists.

The second west coast species is *Emerita analoga* (Stimpson). So far as known at present, it ranges from Oregon (Holmes); Drakes Bay, California, to Magdalena Bay, Lower California; and from Salavery, Peru, to Lota, Chile; also reported from the island of Chiloe as *"Hippa talpoides"* (Cunningham, 1871, Nat. Hist. Strait of Magellan, p. 332). In this connection it may be mentioned that the crustaceans described at great length by Miss Boone, 1930, Bull. Vanderbilt Marine Museum, III, p. 67, Pl. XVII, figs. E and F as *Emerita analoga,* do not even belong to this genus.

To further the recognition of these species their salient characters are given below in the form of a diagnostic key and are illustrated in Figs. 71-78 (see p. 213).

DIAGNOSTIC KEY TO THE SPECIES OF EMERITA

A¹. Dactyls of the first legs distally subacute or sharply pointed. Transverse lines of crenulations more or less continuous, close set, and crossing dorsum for the whole of its extent.

B¹. Dactyl broadly ovate, distally pointed, less than twice as long as greatest width. Surface of lateral, epimeral expansion of carapace smooth and punctate. Impressed line just before hinder margin of carapace either side of first abdominal somite, not showing in lateral view below epimeron of second somite. Crenulations of transverse lines on hinder part of carapace numerous, crowded, and very rough to touch when finger is passed over carapace from front to back. The three projections of the front are all quite narrowly triangular and more or less sharply pointed, the median more so than the lateral.

emerita (L.) (*E. asiatica* of Milne Edwards and others). (Type locality: "Habitat in Mari Indico.")

B². Dactyl narrow, subacute, more than twice as long as greatest width. Impressed line just before hinder margin of carapace either side of first abdominal somite, plainly visible below epimeron of second somite, continued to, or almost to, ventral margin of carapace.

C¹. Surface of lateral epimeral expansion of carapace smooth and punctate, merest traces of transverse lines of dorsum showing on upper part of epimeral portion. The median or rostral projection of the front is a quite sharply pointed triangle, a little less in height than equilateral, the lateral projections are elongate and obtuse.

portoricensis, new species. (Type, Cat. No. 65731 U. S. N. M.) (Type locality: Mayagüez, Porto Rico, U. S. Bur. Fish Str. *Fish Hawk*, coll.)

C². Transverse lines of dorsum of hinder portion of carapace continued onto epimera of carapace to its inferior margin. This character at once and without difficulty distinguishes this species from all other members of the genus. The median projection of the front is quite distinctly an equilateral triangle; and the lateral projections more tapering anteriorly than in *portoricensis* and subacute.....*benedicti*, new species.* (Type, Cat. No. 65732 U. S. N. M.) (Type locality: Tampa Bay, Florida, U. S. Bur. Fish. Str. *Fish Hawk*, coll.)

* It is nearest *portoricensis* in general appearance, but tapers appreciably more anteriorly than does that species. This I am certain is no varietal form, for I have examined not less than fifty individuals of the former of various sizes and find no intergradations in the carapacial ornamentation. In the only three specimens of this new species we possess the transverse lines on the epimera are very plainly marked, down to the inferior border on either side.

A². Dactyls of first legs distally rounded off, obtuse. Lateral or epimeral expansions of the carapace for the greater part smooth and punctate.

B¹. A considerable part of the central dorsal portion of the hinder carapace, behind the cervical groove, smooth and shining, at most punctate. Impressed line just before posterior margin of carapace either side of first abdominal somite not showing in lateral view below epimera of second somite.

C¹. Smooth area beginning at or close to cervical groove and extending to or near posterior margin of carapace, except in old, very large or much developed individuals in which there may be a few transverse lines immediately behind the cervical groove, but across the median line or mid-dorsum these are broken or interrupted, leaving smooth and punctate interspaces; there may also be present a series of fine, much less conspicuous lines across the posterior third or less of the hinder portion of the carapace. The crenulations of these lines of the hinder portion are fairly smooth to the touch and arranged in transverse lines which are quite straight. The posterior margin of the carapace is somewhat concave on either side, and where the margin of the lateral expansion of the carapace meets it there is formed a slight backwardly directed lobe. The median rostral projection of the front is more or less subpentagonal in outline. Lobe at anterior inner angle of third maxilliped produced, broadly triangular, distally rounded.

talpoida (Say). (Type locality: "the [East] Coast of the United States.")

C². Anterior third or fourth of dorsum of hinder portion of carapace quite rough, crenulations of transverse lines grouped in short, deep, prominent crescents, which extend backward either side of a more or less smooth posterior median area that reaches the posterior margin of the carapace. Posterior margin of carapace straight. Median rostral projection of front subtriangular. Lobe at anterior inner angle of third maxilliped, broad and low, subsemicircular; this low rounded lobe is quite characteristic of this species.

analoga (Stimpson). (Type locality: "California.")

B². Transverse lines of crenulations cross the whole extent of the dorsum of hinder part of carapace.

C¹. These transverse lines more or less continuous; crenulations closely crowded, upturned to some extent, forming more ridges of crenulations, dorsum noticeably rough to touch, much rougher than in any American species. Impressed line just before posterior margin of carapace either side of first abdominal somite visible in lateral view below the epimeron of the second somite, a well marked and prominent feature in this species. Median rostral projection subtriangular, somewhat blunted.....*rathbunae*, new species. (Type, Cat. No. 47887, U. S. N. M.) (Type locality: Chame Point, Panama. Robert Tweedlie, coll.)

C². The transverse lines are much interrupted, forming short dash-like sections; the crenulations of the lines and the short sections of lines themselves tend to become obsolescent across the hinder part of the dorsum; whole hinder portion of carapace smooth to touch. Intervals between successive rows of "dashes" about twice as great as in other species.* Impressed line just before hinder margin not visible below epimeron of second abdominal somite. Median or rostral projection of front sharply triangular, elongate, subacute.
brasiliensis, new name for *Hippa emerita* Milne Edwards (Type locality: les côtes de Brésil). (Specimen taken as typical of the species, Cat. No. 65735 U. S. N. M., is from Iguape, São Paulo, Brazil, R. Krone, coll.)

Emerita portoricensis, new species

Diagnosis.—In "Key" above.

Type locality.—Mayagüez, Porto Rico, January 19 and 20, 1899, Seine.

Distribution.—South and West Florida; Texas; Honduras; Colombia; Porto Rico; Jamaica; Trinidad.

Specimens collected.—Palo Seco Point, San Juan, 3.

Hippa Fabricius

Hippa cubensis (Saussure)

Remipes cubensis Saussure, 1857, Rev. Mag. Zool. (2), ix, p. 503.
Hippa cubensis Rathbun, 1900b, Proc. U. S. Nat. Mus., xxii, p. 300. Benedict, 1901, Bull. U. S. Fish Comm. for 1900, xx, Pt. 2, p. 138.

Type locality.—Cuba.

Distribution.—Florida to Brazil; West Indies; Ascension Island; Bahamas; West Africa; Porto Rico, Hucares, St. Thomas.

Specimens collected.—St. Croix, 36. San Juan, shore between Boringquen Park and Punta Carolina, 3.

Diagnosis.—Carapace broad, depressed, bordered on sides and front with short oblique lines of bristles which rise from the bottoms of grooves such as would be formed by overlapping scales; the border formed by these lines is broadest at about the posterior third of the carapace; front sinuated, shallowly trilobate, median projection very low. Antennae and eyestalks short.

* In running a needle up the median line or in a line parallel to and not far removed from it on the dorsum of the carapace in this species, one will cross parts or dash-sections of approximately 11 to 16 transverse lines; in *E. portoricensis* from 19 to 29; and in *E. rathbunæ*, 28 to 41. It is expected that these counts will show a greater variation than here recorded, but they are indicative of differences one observes in ornamentation of the hinder portions of the carapaces of these three species.

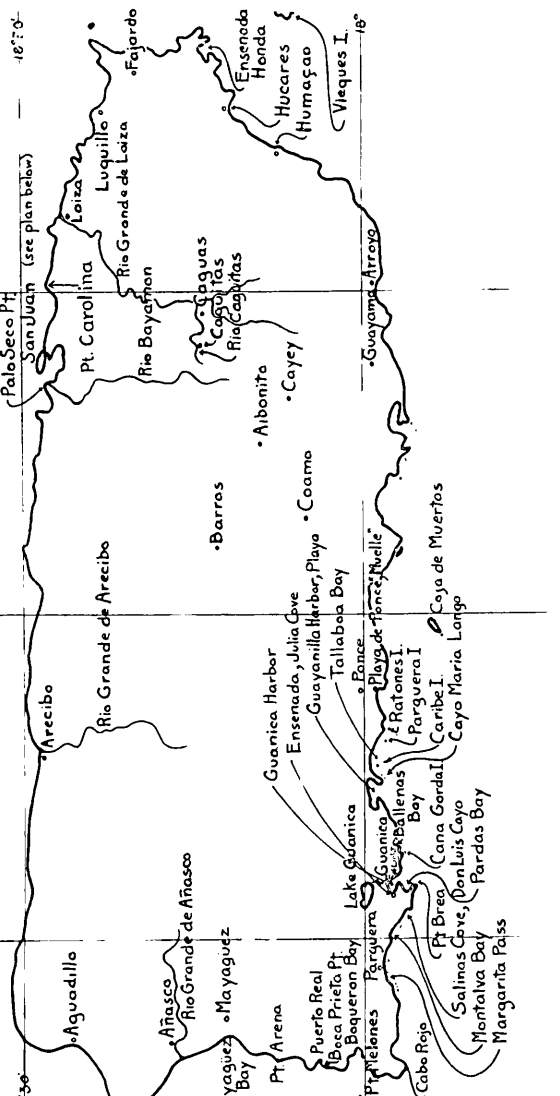


Fig. 73.—Sketch map, Porto Rico and vicinity of San Juan, showing principal localities where collections were made by expeditions of the New York Academy of Sciences in 1914 and 1915, and by the U. S. Fish Commission steamer *Fishhawk* in 1899.

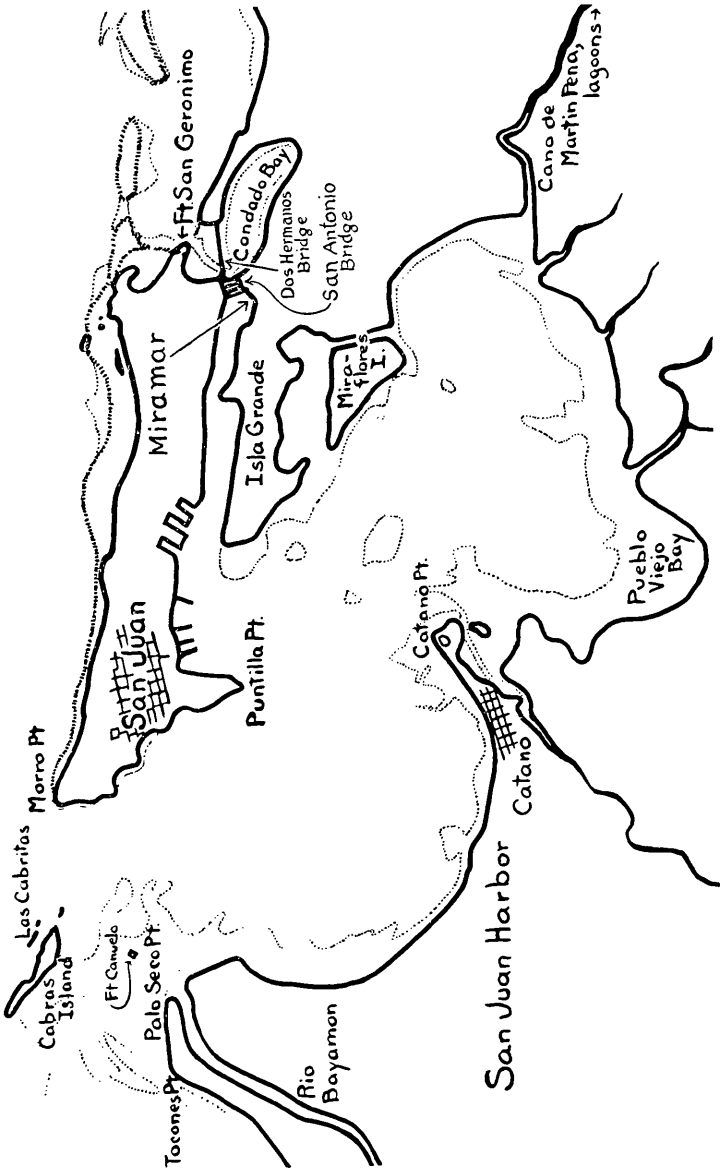


FIG. 80.—San Juan Harbor in detail.

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THE AMPHIPODS OF PORTO RICO AND THE VIRGIN ISLANDS

By Clarence R. Shoemaker

CONTENTS

INTRODUCTION

The Amphipod fauna of Porto Rico and the Virgin Islands is inadequately known, as few collections of these forms have been made in the regions in question. This report is based on specimens collected by R. W. Miner, R. C. Osburn, M. A. Howe, Dario Morcilio, H. Mueller, A. L. Treadwell, C. R. Shoemaker, and H. E. Crampton. I have added what pertinent published records I have been able to secure and a few records which are substantiated by specimens in the collection of the U. S. National Museum. Fourteen families, twenty-one genera, and twenty-four species are here represented.

KEY TO THE AMPHIPODA OF PORTO RICO AND THE VIRGIN ISLANDS DEALT WITH IN THIS PAPER

1. Antenna 1 shorter than antenna 2, first joint stout, with accessory flagellum; mandible, cutting edge almost smooth, with palp; first four side-plates deep; gnathopod 2, third joint elongate; telson short, simple. *Lysianassa*..p. 232
   These characters not combined ..... 2.

2. Front of head narrowly truncate, without rostrum; eyes externally simple, four; antenna 1 without accessory flagellum; telson long, cleft almost to base ..... *Ampelisca*..p. 235
   These characters not combined ..... 3.

3. Head produced to sharp strongly deflexed rostrum; antenna 1 with accessory flagellum; eyes large, dorsally coalesced; side-plate 3 the largest; gnathopods slender, subchelate, palm transverse; telson long, deeply cleft ..... *Syrrhoe*..p. 235
   These characters not combined ..... 4.

4. Head strongly rostrate; last thoracic and first two abdominal segments dorsally dentate; side-plate 1 rudimentary; gnathopod 1 degraded, ending with a feeble linear second joint; gnathopod 2 subchelate; uropod 3, peduncle short, rami subfoliaceous; telson rather short, deeply cleft ..... *Carinobatea*..p. 235
   These characters not combined ..... 5.

5. Antennæ 1 and 2 small, not very unequal; antenna 1 with rudimentary accessory flagellum; mandible without molar, palp slender with short third joint; maxillipeds with outer plates small or rudimentary, inner

plates short, palp well developed, fourth joint long; gnathopod 1 chelate, gnathopod 2 subchelate, sixth joint very large.
Leucothoe..p. 235

These characters not combined..... 6.

6. Side-plate 1 rudimentary; side-plates 2-4 together forming a large lateral shield; maxillipeds with inner plates small, outer plates obsolete; mandible without molar or palp; uropod 3 with a single 2-jointed ramus; telson oval, entire.....*Stenothoe*..p. 237

These characters not combined..... 7.

7. Body more or less slender, pleon segments 4-6 well defined; antennae rather slender, and differing little in the two sexes, accessory flagellum present; mandible with dentate cutting edge and accessory plate, spine-row, molar, and 3-jointed palp; maxillipeds with inner and outer plates and palp well developed; gnathopods 1 and 2 rather powerful, subchelate, larger and stronger in male than female; uropods 1-3 with rami well developed. Telson deeply cleft.....*Gammaridæ*..p. 237

These characters not combined..... 8.

8. Pleon segments 5 and 6 coalesced; pleon segment 4 dorsally produced; antenna 1 with long second joint without accessory flagellum; mandible without palp; maxillipeds, outer plates very long, palp rather short, finger small; gnathopods 1 and 2 feeble, subchelate; fingers of peraeopods 1-5 all pointing backward; telson elongate, deeply cleft.
Polycheria..p. 240

These characters not combined..... 9.

9. Head without rostrum, mouth-parts strongly projecting below; antenna 1 much shorter than antenna 2 without accessory flagellum; antenna 2 having the basal joint coalesced with the head; mandible without palp; maxilla 1, palp very small, 1-jointed; gnathopod 2 in male much stouter than gnathopod 1; uropod 3 with a single 1-jointed ramus.
Talitridæ..p. 240

These characters not combined..... 10.

10. Antenna 1 longer than antenna 2, third joint short with accessory flagellum; mandible with third joint of palp longer than second; maxilla 1 with second joint of palp elongate; gnathopod 1 larger than gnathopod 2, fifth joint sharply produced below; uropods 1-3 biramous, third not elongate; telson short, simple.....*Lembopsis*..p. 245

These characters not combined..... 11.

11. Antenna 1 with third joint short, accessory flagellum either lacking or very short; lower lip with front lobes deeply notched; gnathopods 1 and 2 subchelate, gnathopod 2 the stouter; peraeopod 3 reverted; uropods 1-3 biramous; uropod 3 with short rami, the outer uncinate; telson simple .....*Ampithoidæ*..p. 245

These characters not combined..... 12.

12. Body depressed; fourth, fifth, and sixth abdominal segments coalesced; side-plates very small; antenna 2 much stouter than antenna 1, pediform, much longer and stronger in male than in female; mandible

with 2-jointed palp, each joint carrying a strong plumose seta; maxilla 1, inner plate nearly obsolete; gnathopod 1 slender, the short projecting third joint and long fifth joint densely fringed with long setae; sixth joint narrow, with short palm; gnathopod 2 rather the larger, fourth joint closely attached to hind margin of fifth, the convex hind margin of which is fringed with two rows of very long plumose setae, sixth joint sublinear, without palm; peraeopod 5 long and slender, second joint fringed on both margins with long plumose setae; uropods 1 and 2, rami rather short; uropod 3, peduncle short, ramus single, laminar with some fringing setae; telson very small, simple.

Corophium..p. 250

These characters not combined..... 13.

13. Abdomen narrow, ventrally flexed, fourth joint elongate, fifth and sixth very short; side-plates shallow; eyes prominent, placed at front corners of head; antenna 1 shorter than antenna 2, fringed below with long setae, flagellum much shorter than peduncle, accessory flagellum very small, 1-jointed; antenna 2, flagellum much shorter than peduncle, few-jointed; mandible with palp much longer than trunk, third joint short, distally widened and fringed with many spines; maxilla 1, inner plate obsolete; gnathopods 1 and 2 subchelate, gnathopod 2 much the larger, sixth joint very large; uropods 1 and 2 biramous with one ramus much shorter than the other; uropod 3 reduced to a small shallow plate facing the telson's lateral margin; telson entire, with a process on upper surface carrying spinules.

Podocerus..p. 250

These characters not combined..... 14.

14. Body long and slender; head fused with first segment of thorax; abdomen and its appendages rudimentary; gnathopod 2 larger than gnathopod 1; peraeopods reduced to three posterior pairs; female with marsupial plates only on third and fourth thoracic segments.

Caprella..p. 251

SYSTEMATIC DISCUSSION

GAMMARIDEA

LYSIANASSIDÆ

Lysianassa cubensis (Stebbing)

Lysianax cubensis Stebbing, 1897, Trans. of Linnean Soc. London, (2), vii, Pt. 2, p. 29, Pl. VIIB.

Lysianassa cubensis Stebbing, 1906, Das Tierreich, Amphipoda, i, p. 38. Chilton, 1912, Trans. Roy. Soc. Edinburgh, xlviii, Pt. 2, p. 464, Pl. I, fig. 5. Barnard, 1916, Ann. South African Mus., xv, Pt. 3, p. 120.

Type locality.—Cuba.

Distribution.—Cuba; Florida; Porto Rico; South Africa.

FIG. 1.—*Lysianassa cubensis* (Stebbing) from Pigeon Key Lake, Florida: a, gnathopod 1, ♀; b, gnathopod 2, ♀; c, end of sixth joint of gnathopod 2, ♀, greatly enlarged; d, right mandible; e, spine-row and molar of mandible, greatly enlarged; f, maxilliped

Specimen collected.—Condado Bay, inside Dos Hermanos Bridge, half way up Bay, San Juan, Porto Rico, July 21, 1914 (R. W. Miner), 1.

Remarks.—The single specimen which Mr. Stebbing examined and described was a female, and upon its generic agreement with the females

of *Lysianassa* he transferred it in Das Tierreich, p. 83, to that genus. I have examined a considerable number of specimens from the Gulf of Mexico which I believe to be *L. cubensis,* but the individuals which appeared to be males had second antennæ like those of the female.

The entire body of the specimens which I have examined bears sparsely scattered setæ which are not mentioned by Stebbing.

This species has apparently been confused with *Lysianopsis alba* described by S. J. Holmes from southern New England, as it bears a very close superficial resemblance to that species.

The principal differentiating characters of these two species lie in the mouth-parts and the second gnathopods. In *Lysianassa cubensis* the mandible possesses a very low rounding molar armed with a dense row of very long spines and at its posterior end a conspicuous stout seta armed with many fine teeth and spinules: the spine-row contains three spines. In *Lysianopsis alba* the molar is more oblique with the posterior end produced into a rough spinulose process, and there are four spines in the spine row. On the lower side of the mandible to the right of the molar is a conspicuous rounding process which is absent in *Lysianassa cubensis.* The inner plate of the first maxilla bears no setæ in *L. c.,* but bears two in *L. a.* The inner plate of the second maxilla is narrow and pointed in *L. a.,* but broad and transversely truncate in *L. c.* as figured by Stebbing. The third joint of the second gnathopod in *L. c.* is less than one-half the length of the second joint, while in *L. a.* it is over one-half the length of the second. The sixth joint of this limb is about two-thirds the length of the fifth, and in *L. a.* it is only about one-third the length of the fifth.

I have examined the specimens from Florida (*Fish Hawk* station 7402, Pigeon Key Lake; and *Albatross* stations 2369-2374, between Delta of Mississippi and Cedar Keys) which Prof. A. S. Pearse[1] identified as *Lysianopsis alba* (Holmes) and find that they are *Lysianassa cubensis* (Stebbing). The specimens which he examined from *Fish Hawk* station 7431, Grassy Key Lake, Florida, and those from Key West I have not been able to locate. The figure of the second gnathopod which Pearse has given is undoubtedly that of *Lysianassa cubensis* (Stebbing). The two specimens which were taken at Barbados in 1918 by the Barbados-Antigua Expedition of the University of Iowa,[2] and which I identified as *Lysianopsis alba* (Holmes) are not that species, but *Lysianassa cubensis* (Stebbing).

[1] Proc. U. S. Nat. Mus., xliii, p. 369.

[2] Univ. of Iowa, Studies in Nat. Hist., ix, No. 5, p. 99.

AMPELISCIDÆ

Ampelisca abyssicola Stebbing

Ampelisca abyssicola Stebbing, 1888, Rpt. on Sci. Results of Voyage of "Challenger," Zool., xxix, Pt. 68, p. 1047, Pl. CIV. Chevreux, 1900, Résult. des Campagnes sci. accomp. par Albert Ier, Prince de Monaco, p. 41. Stebbing, 1906a, Das Tierreich, Amphipoda, i, p. 104.

Type locality.—Off Culebra Island, Porto Rico, 390 fathoms.

Distribution.—This species has been reported from St. Thomas and the Azores.

TIRONIDÆ

Syrrhoe papyracea Stebbing

Syrrhoe papyracea Stebbing, 1888, Rpt. on Sci. Results of Voyage of "Challenger," Zool., xxix, Pt. 68, p. 789, Pl. L; 1906a, Das Tierreich, Amphipoda, i, p. 283.

Type locality.—Off Culebra Island, Porto Rico.

Distribution.—This species has not been noted outside the type locality.

BATEIDÆ

Carinobatea cuspidata Shoemaker

Carinobatea cuspidata Shoemaker, 1926, Proc. U. S. Nat. Mus., lviii, Art. 25, p. 21, figs. 14, 15.

Type locality.—Between Water Island and St. Thomas, Virgin Islands.

Distribution.—St. Thomas; off west coast of Florida.

LEUCOTHOIDÆ

Leucothoe spinicarpa (Abildgaard)

Gammarus spinicarpus Abildgaard, 1789, O. F. Müller, Zoöl. Danica, iii, ed. 3, p. 66, Pl. CXIX, figs. 1-4.

Leucothoe spinicarpa, L. articulosa (err.) G. O. Sars, 1892, Crustacea of Norway, i, p. 283, Pl. C; Pl. CI, fig. 1.

Leucothoe spinicarpa Stebbing, 1906a, Das Tierreich, Amphipoda, i, p. 165.

Type locality.—Northern shore of the island of Zealand.

Distribution.—This is a cosmopolitan species and its records include the Arctic and Antarctic regions. It occurs frequently in Ascidians.

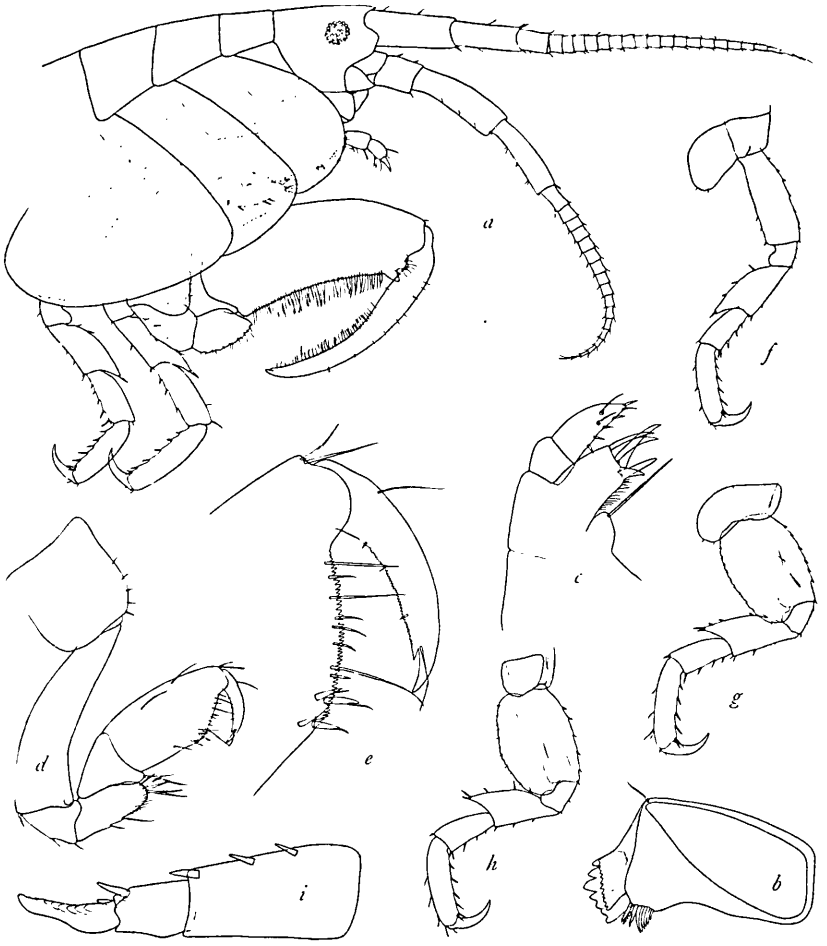

FIG. 2.—*Stenothoe crenulata* Chevreux from Porto Rico: a, front half of animal; b, mandible; c, maxilla 1; d, gnathopod 1; e, end of sixth joint of gnathopod 1, greatly enlarged; f, peraeopod 3; g, peraeopod 4; h, peraeopod 5; i, uropod 3

Specimens collected.—"Cane wharf," Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June, 1915 (R. W. Miner, R. C. Osburn, and M. A. Howe), 26.

Wharves in Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June 23, 1915 (R. W. Miner and R. C. Osburn), 2.

A little over a mile south of Caño Gorda Island near Guanica, Ensenada, Porto Rico, June 23, 1915 (Dario Morcillio), 1.

St. Thomas, taken during 1905, shore, from branchial sac of *Microcosmus exasperatus* Keller, 1.

Stenothoidæ

Stenothoe crenulata Chevreux

Stenothoe crenulata Chevreux, 1907, Bull. Mus. l'Hist. Nat., Paris, No. 6, p. 412; 1908, Mém. Soc. Zoöl. de France, Paris, xx, No. 4, p. 471, figs. 1-3.

Type locality.—Mangareva Island, Gambier Archipelago.

Distribution.—This species has not heretofore been observed outside the type locality.

Specimens collected.—"Cane Wharf," Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June 19, 1915 (R. W. Miner, R. C. Osburn, and M. A. Howe), 7.

Wharf, Guayanilla Playa, Ensenada, Porto Rico, June 25, 1915 (R. W. Miner and R. C. Osburn), 4.

Remarks.—Although Chevreux's specimens of *S. crenulata* were procured at the opposite side of the globe, the present specimens appear to agree very well with them. The distal end of the second side-plate is broader and not so evenly rounded as in Chevreux's specimens. The mandibular palp is replaced by only one seta and not two as in Chevreux's specimens. In the sixth joint of the first gnathopods the posterior and anterior margins are practically parallel and not divergent. In all other characters these specimens appear to agree with Chevreux's species.

Gammaridæ

Key to Genera

Uropod 3, rami nearly equal in length and reaching little if any beyond telson ..... *Elasmopus*

Uropod 3, rami subequal in length, greatly developed and reaching considerably beyond telson ..... *Ceradocus*

Uropod 3, rami very unequal in length, one greatly reduced, the other reaching considerably beyond telson ..... *Melita*

Elasmopus

Key to Adult Males

Posterior margin of the second joint of peraeopod 4 evenly convex and smooth; gnathopod 2, sixth joint powerful, palm very oblique with rounded denticulate lobe near finger-hinge and two widely separated dentiform projections from within the margin ..... *E. rapax*

Posterior margin of second joint of peraeopod 4 evenly convex and smooth; gnathopod 2, sixth joint expanded with bowl-shaped excavation on inner surface for receiving the tip of the finger ..... *E. pocillimanus*

Posterior margin of second joint of peraeopod 4 abruptly narrowing toward the distal extremity, the lower half of the margin being developed into a comb-like fringe; gnathopod 2, sixth joint long-ovate, narrowing distally, palm not defined, thickly furnished with long setae and produced distally to a tubercle..... .....*E. pectenicrus*

Elasmopus rapax Costa

Elasmopus rapax A. Costa, 1853, Accad. della Sci., Napoli, (n. s.), ii, p. 175. G. O. Sars, 1894, Crust. of Norway, i, p. 521, Pl. CLXXXIII. Stebbing, 1906, Das Tierreich, Amphipoda, i, p. 444.

Type locality.—Gulf of Naples.

Distribution.—North Atlantic; South Atlantic; Mediterranean; Gulf of Mexico; South Pacific; Zanzibar; Red Sea.

Specimens collected.—"Cane Wharf," Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June 19, 1915 (R. W. Miner, R. C. Osburn, and M. A. Howe), 3.

Rocks south of Lighthouse Beach, Guanica Harbor, Ensenada, Porto Rico, June 21, 1915 (R. W. Miner and H. Mueller), 1.

Wharves in Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June 23, 1915 (R. W. Miner and R. C. Osburn), 1.

Mangrove Island at Parguera, Ensenada, Porto Rico, June 27, 1915 (R. W. Miner, H. Mueller and M. A. Howe), 1.

Rocks of Guanica Harbor, Ensenada, Porto Rico, May 29, 1915 (A. L. Treadwell), 1.

Elasmopus pectenicrus (Bate)

Moera pectenicrus Bate, 1862, Cat. Amphipodous Crust. Brit. Mus., p. 192, Pl. XXXIV, fig. 8.

Elasmopus pectenicrus Barnard, 1916, Ann. S. African Mus., xv, Pt. 3, p. 197, Pl. XXVIII, fig. 33. Gravely, 1927, Bull. Madras Govern. Mus., (n. s.), Nat. Hist. Sect., i, No. 1, p. 123. Schellenberg, 1928, Trans. Zoöl. Soc. London, xxii, Pt. 5, p. 647.

Type locality.—New Guinea.

Distribution.—New Guinea; Ceylon; Zanzibar; Suez; Natal; False Bay, Cape Colony; Gulf of Manaar (Gravely); Dar-es-Salaam, Tanganyika Territory (Schellenberg).

Specimens collected.—"Cane Wharf," Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June 19, 1915 (R. W. Miner, R. C. Osburn, and M. A. Howe), 12.

Three-fourths mile south of Ballena Point, near Guanica, Porto Rico, June 23, 1915 (R. C. Osburn), 1.

Wharf, Guayanilla Playa, Ensenada, Porto Rico, June 25, 1915 (R. W. Miner and R. C. Osburn), 6.

Remarks.—This is the first record of the occurrence of this species in the Western Hemisphere.

Elasmopus pocillimanus (Bate)

Mocra pocillimanus Bate, 1862, Cat. Amphipodous Crust. Brit. Mus., p. 191, Pl. 34, fig. 7.

Elasmopus pocillimanus Stebbing, 1906a, Das Tierreich Amphipoda, i, p. 443. Chevreux and Fage, 1925, Faune de France, ix, p. 246, fig. 257.

Type locality.—Genoa.

Distribution.—Mediterranean; Bermuda; east coast of the United States from southern New England to the Gulf of Mexico (specimens in U. S. Nat. Mus. collection); Annobon Island, West Africa.

Specimens collected.—Coral reefs and lagoons 4 miles east of Ensenada, Porto Rico, June 23, 1915 (R. W. Miner and R. C. Osburn), 7.

Rocks south of Lighthouse Beach, Guanica Harbor, Ensenada, Porto Rico, June 21, 1915 (R. W. Miner and H. Mueller), 2.

Ceradocus species

Specimen collected.—1½ miles south of Caño Gorda Island, near Guanica, Ensenada, Porto Rico, 1, June 23, 1915 (R. C. Osburn).

Remarks.—This specimen is young, measuring only 5 mm., and lacks the third uropods. Pleon segment 3 has the lateral margin serrate throughout, pleon segments 1 and 2 have a few serrations on the lower portion of the lateral margin. The first four pleon segments have no dorsal serrations, but the fifth has a single small backward-pointing tooth. The oblique palm of the second gnathopod is divided by two rather shallow indentations into three low flat teeth. The first antennæ have a 3-jointed accessory flagellum.

Melita fresnelii (Audouin)

Gammarus fresnelii Audouin, 1826, Hist. Naturelle, i, Pt. 4, p. 93, Crust. Pl. XI, fig. 3.

Melita valida + *M. setipes* + *M. anisochir* + *M. fresnelli* Bate, 1862, Cat. Amphipodous Crust. Brit. Mus., p. 185, Pl. XXXIII, fig. 7; p. 186, Pl. XXXIII, fig. 8; p. 186, Pl. XXXIV, fig. 1; p. 186, Pl. XXXIV, fig. 2.

Dulichella spinosa Stout, 1912, First Ann. Report of Laguna Marine Labor., Pomona College, p. 141, figs. 79, 80.

Melita fresnelii var. *subchelata* Schellenberg, 1925, Beiträge zur Kenntnis der Meeresfauna Westafrikas, iii, Pt. 4, Crustacea VIII, p. 153.

Type locality.—Egypt.

Distribution.—Egypt; Indian Ocean; Australia; British East Africa; Natal: Southwest Africa; Brazil; Gulf of Mexico; southeast coast of the United States; Bermuda; California.

Specimens collected.—"Cane Wharf," Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June 19, 1915 (R. W. Miner and R. C. Osburn). 26.

Wharves in Julia Cove, Guanica Harbor, Ensenada, Porto Rico, June 23, 1915 (R. W. Miner and R. C. Osburn), 1.

DEXAMINIDÆ

Polycheria antarctica (Stebbing)

Dexamine antarctica Stebbing, 1875, Ann. & Mag. Nat. Hist., (4), xv, Art. 23, p. 184, Pl. XVa, fig. 1. *Polycheria antarctica* Della Valle, 1893, Fauna und Flora des Golfes von Neapel, etc., monographie 20, p. 580, Pl. LVIII, figs. 83, 84.

Type locality.—Lat. 77° 30′ S., Long. 175° E.

Distribution.—Antarctic Ocean, 77° 30′ S.; Australia; New Zealand; Kerguelen Island; Puget Sound; Monterey Bay, California; Ceylon; Maldive Islands; McMurdo Sound; Seychelles Islands, and Wasin, B. E. A.; South Orkneys; South Georgia; Saldanha Bay, South Africa; Dutch Southwest Africa.

Specimens collected.—St. Thomas, from pockets in the surface of a purplish-gray sponge, in 1½-2½ fathoms, July 15, 1915 (C. R. Shoemaker), 2.

Remarks.—This is the first record of the occurrence of this species in the West Indies and marks a great northward extension of its range in the Atlantic, the most northern record previously reported being Dutch West Africa.

TALITRIDÆ

KEY TO GENERA

A¹. Telson simple.

B¹. Gnathopod 2 of male, fifth joint not produced between fourth and sixth; gnathopod 1 in female subchelate.....*Orchestia*

B². Gnathopod 2 of male, fifth joint narrowly produced between fourth and sixth; gnathopod 1 in female subchelate.....*Hyalella*

A². Telson, cleft.

B¹. Uropod 3, the single ramus 1-jointed.....*Hyale*

B². Uropod 3, the single ramus 2-jointed.....*Parhyale*

KEY TO THE ADULT MALES OF ORCHESTIA

Gnathopod 2 subchelate.....*O. platensis*
Gnathopod 2 chelate.....*O. costaricana*

Orchestia platensis Kröyer

Orchestia platensis Kröyer, 1845, Naturhist. Tidsskrift., (2), i, p. 304, Pl. II, fig. 2.

Orchestia agilis S. I. Smith, in A. E. Verrill, 1873, Report U. S. Fish Comm., i, p. 555, Pl. IV, fig. 14.

Orchestia platensis Stebbing, 1900, Fauna Hawaiiensis, ii, Pt. 5, p. 527.

Orchestia anomala Chevreux, 1901, Mém. de la Soc. Zoöl. de France, xiv, p. 393, figs. 8-12.

Orchestia platensis Stebbing, 1906, Das Tierreich, Amphipoda, i, p. 540. Schellenberg, 1926, Deut. Südpolar-Exped. 1901-1903; Die Gammariden, p. 371.

Type locality.—Banks of Río de la Plata (N. W. of Montevideo).

Distribution.—Atlantic coast of North and South America from the Bay of Fundy to the Plata River, Argentina; Bermuda; Mediterranean; Lake of Tiberias, Palestine; Belgian Congo; Angola; Low Archipelago; Chilka Lake; Hawaiian Islands; Maldive Islands; Seychelles Islands.

Specimens collected.—On steel supports of San Antonio R. R. Bridge, San Juan, Porto Rico, July 10, 1914 (R. W. Miner), 2.

Rubbish heap including cocoanut husks, near ferry dock close to water's edge, San Juan, Porto Rico, July 11, 1914 (R. W. Miner), 1.

Shore between Boringuen Park and Punta Carolina, San Juan, Porto Rico, July 19, 1914 (R. W. Miner), 80.

Remarks.—The second gnathopods of the males are of the form figured by Chevreux for *O. anomala,* which, as Walker has already pointed out (The Fauna and Geography of the Maldive and Laccadive Archipelagoes. XI, supplement 1, p. 924), "appears to differ from this species, *O. platensis,* only in the averted point of the dactylus of the second gnathopods of the male."

Orchestia costaricana Stebbing

Orchestia costaricana Stebbing, 1906, Proc. U. S. Nat. Mus., xxxi, No. 1490, p. 501, text-figs. 1 and 2, Pl. XI.

Type locality.—Boca Jesus Maria, Costa Rica.

Specimens collected.—Porto Rico, Jan. 19, 1914 (H. E. Crampton), 2 (1 male and 1 female).

Remarks.—This is the second record of the occurrence of this species. The type specimens were taken on the Pacific coast of Costa Rica in mangroves in the mud under trunks of trees. Unfortunately the label accom-

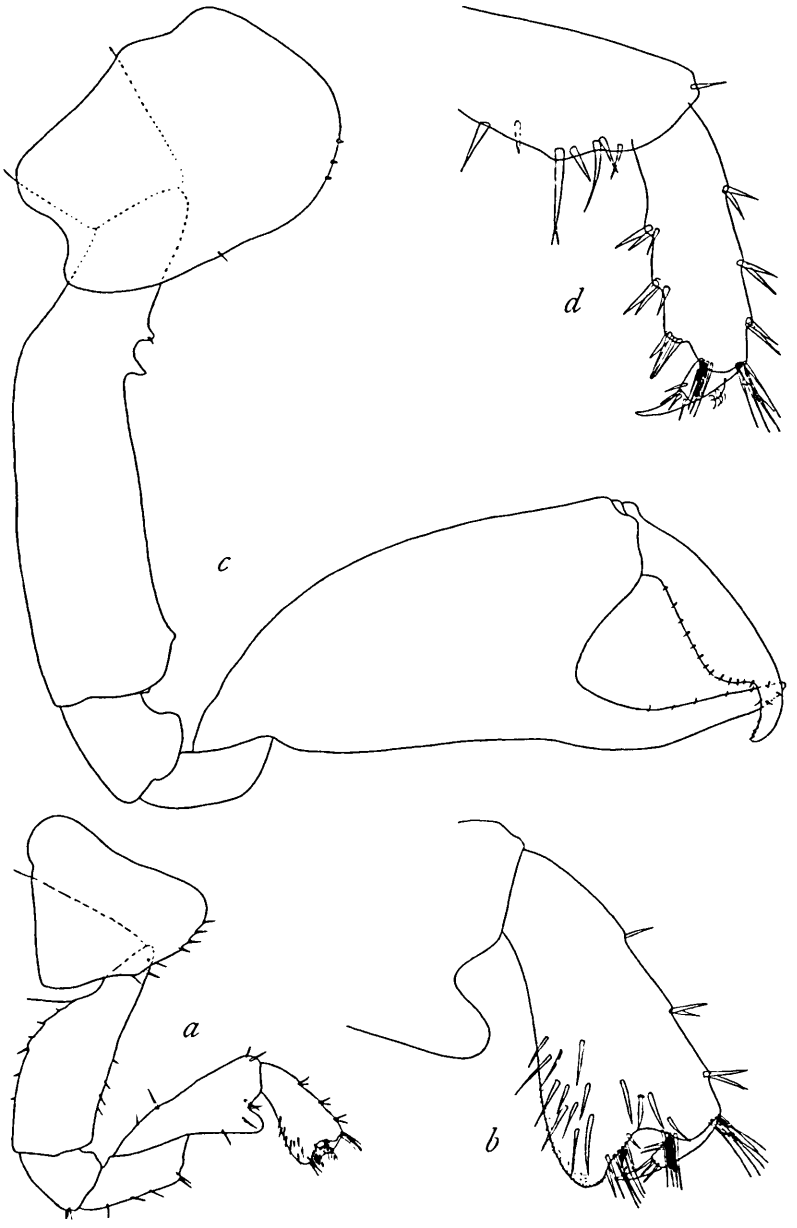

FIG. 3.—*Orchestia costaricana* Stebbing from Porto Rico: a, gnathopod 1, ♂; b, end of gnathopod 1, ♂, greatly enlarged; c, gnathopod 2, ♂; d, end of gnathopod 1, ♀, greatly enlarged

panying the present specimens does not give a specific locality or the nature of habitat in which they were found. The male measures 13 mm. and the female somewhat less, while the largest specimens measured by Mr. Stebbing were only 9 mm.

KEY TO ADULT MALES OF HYALE

A¹. Gnathopod 1, seventh joint furcate at apex.....*H. diplodactyla*

A². Gnathopod 1, seventh joint not furcate at apex.

B¹. Gnathopod 2, sixth joint elongate, palm extending the entire length of the hind margin, seventh joint when closed reaching fourth. *H. macrodactyla*

B². Gnathopod 2, sixth joint not elongate, seventh joint short, equaling in length the well-defined oblique palm.

C¹. Peraeopod 5, front margin of sixth joint with stout serrate spine near center.....*H. media*

C². Peraeopod 5, front margin of sixth joint without stout spine near center.....*H. perieri*

Hyale macrodactyla Stebbing

Hyale macrodactyla Stebbing, 1899, Trans. Linnean Soc. London, (2), vii, Pt. 8, p. 404, Pl. XXXI*D*. Chevreux, 1901, Mém. de la Soc. Zoöl. de France, xiv, p. 397, figs. 13, 14.

Type locality.—St. Thomas, W. I.

Distribution.—St. Thomas; Río de Janeiro; Seychelles; Egmont reef, Chagos Archipelago; Praslin reef, Seychelles Islands; South Africa; Senegal.

Specimens collected.—Wharf, Guayanilla Playa, Ensenada, Porto Rico, June 25, 1915 (R. W. Miner and R. C. Osburn), 2.

Hyale media (Dana)

Allorchestes media J. D. Dana, 1853, U. S. Explor. Exped. under Wilkes, xiii, Pt. II, p. 898, Pl. LXI, figs. 4a-g, l-n.

Hyale media Stebbing, 1906, Das Tierreich, Amphipoda, i, p. 569. Walker, 1916, Ann. & Mag. Nat. Hist., (S), xvii, p. 346.

Type locality.—Río de Janeiro Harbor.

Distribution.—Mr. Stebbing gives the following distribution for this species: Río de Janeiro Harbor; St. Thomas, W. I.; Cape Verde Islands; Tierra del Fuego.

Specimens collected.—Condado Rocks directly opposite Fort San Geronimo, San Juan, Porto Rico, July 5, 1915 (H. Mueller), 1.

4: Caja de Muertos Island, Porto Rico, (of which 1 was secured along shore), July 8, 1915 (R. C. Osburn).

Hyale diplodactyla Stebbing

Hyale diplodactylus Stebbing, 1899, Trans. Linnean Soc. London, (2), vii, Pt. 8, p. 403, Pl. XXXIC; 1906, Das Tierreich, Amphipoda, i, p. 562.

Type locality.—St. Croix.

Distribution.—This species has not been observed outside the type locality.

Hyale perieri (H. Lucas)

Orchestia perieri H. Lucas, 1846, Hist. Nat. des Animaux Articulés, i, Pt. I, p. 52, Pl. V, fig. 1.

Hyale perieri Stebbing, 1906, Das Tierreich, Amphipoda, i, p. 570. Chevreux and Fage, 1925, Faune de France, ix, Paris, p. 284.

Type locality.—Bab-Azoun and Bône, Algeria.

Distribution.—Chevreux and Fage give the following distribution: Mediterranean; Azores; Canary Islands; Senegal; Belgian Congo; St. Thomas, W. I.; Bermuda; Connecticut.

Parhyale fascigera Stebbing

Parhyale fasciyera Stebbing, 1897, Trans. Linnean Soc. London, (2), vii, Pt. 2, p. 26, Pl. VI; 1906, Das Tierreich, Amphipoda, i, p. 556. Schellenberg, 1925, Beiträge zur Kenntnis der Meeresfauna Westafrikas, iii, Pt. 4, Crustacea, VIII, p. 162.

Type locality.—Mr. Stebbing in his description of this species used specimens from Antigua and St. Thomas, but did not state which was the type locality.

Distribution.—Antigua; St. Thomas; Victoria, Cameroon.

Hyalella azteca (Saussure)

Amphitoe azteca Saussure, 1858, Mém. de la Soc. Phys. et d'Hist. Nat. de Genève, xiv, Pt. 1, p. 474, Pl. V, fig. 33.

? Allorchestes knickerbockeri + *Amphithoë azteca* Bate, 1862, Cat. Amphipodous Crust. Brit. Mus., p. 36, p. 250, Pl. VI, fig. 1.

Hyalella azteca Stebbing, 1906, Das Tierreich, Amphipoda, i, p. 575.

Type locality. Cistern at Vera Cruz, Mexico.

Distribution.—This species inhabits streams, lakes and stagnant water. It has been found over the entire United States; White Horse, Yukon

Territory, Alaska; Lake 48 miles north of Rampart House, Alaska; Hydra Lake, Vancouver Island; Brent's Lake, Okanagon, British Columbia; Six-mile Lake, Okanagon, British Columbia; Miquelon Lake, Alberta; Last Mt. Lake, Saskatchewan; Oak Lake, Manitoba; Lake Manitoba; near Ottawa, Ontario; Charlton Island, James Bay, Hudson Bay; Gamachi Lake and Lake Princeton, Anticosti Island, Province Quebec; Richibucto, New Brunswick; Cape Breton Island; Grand Lake Newfoundland; Alexander Bay, Thousand Islands; Ensenada, Lower California; Mexico; Lake Olemego, El Salvador; Costa Rica; Lake Titicaca, Peru; Porto Rico.

Specimens collected.—Guanica, Ensenada, Porto Rico, January 12, 1915 (H. E. Crampton), 18.

Aoridæ

Lembopsis spinicarpus Pearse

Lembopsis spinicarpus Pearse, 1912, Proc. U. S. Nat. Mus., xliii, No. 1936, p. 372, fig. 4.

Type locality.—Key West, Florida.

Distribution.—There are in the collection of the U. S. National Museum specimens from Florida; Porto Rico; Bermuda.

Ampithoidæ

Ampithoe species

Specimens collected.—1: One mile south of Caño Gorda Island, near Guanica, Porto Rico, June 23, 1915 (Dario Morcilio).

Remarks.—This specimen is very young and has lost the antennæ and third uropods so that a specific identification is scarcely possible.

Grubia filosa (Savigny)

Cymadusa filosa Savigny, 1816, Mém. Animaux sans Vertèbres, i, p. 51, 109; Pl. IV, fig. 1 a, b, e, i, o, u.

Amphithoe filosa Audouin, 1826, Planches Crust. l'Egypte et Syrie. Descript. Egypte, i, Pt. 4, p. 93. Crust. Pl. XI, fig. 4, 25.

Amphithoe setosa Haswell, 1879, Proc. Linn. Soc. N. S. Wales, iv, p. 270.

Grubia hirsuta Chevreux, 1900, Bull. Soc. Zool. France, xxv, p. 95, fig. 1 to 5.

Grubia longicornis Walker, 1903, Nat. Hist. Sokotra, ii.—Decapods and Sessile-eyed Crust. from Abd-el-Kuri, p. 226, Pl. XIVB, fig. 3a to 3e.

Grubia coci Kunkel, 1910, Tr. Conn. Acad. Arts and Sci., xvi, p. 97, fig. 38.

Grubia compta Pearse, 1912, Proc. U. S. Nat. Mus., xliii, p. 376, fig. 6.

Grubia filosa Schellenberg, 1928, Tr. Zool. Soc. London, xxii, Pt. 5, p. 666, fig. 206.

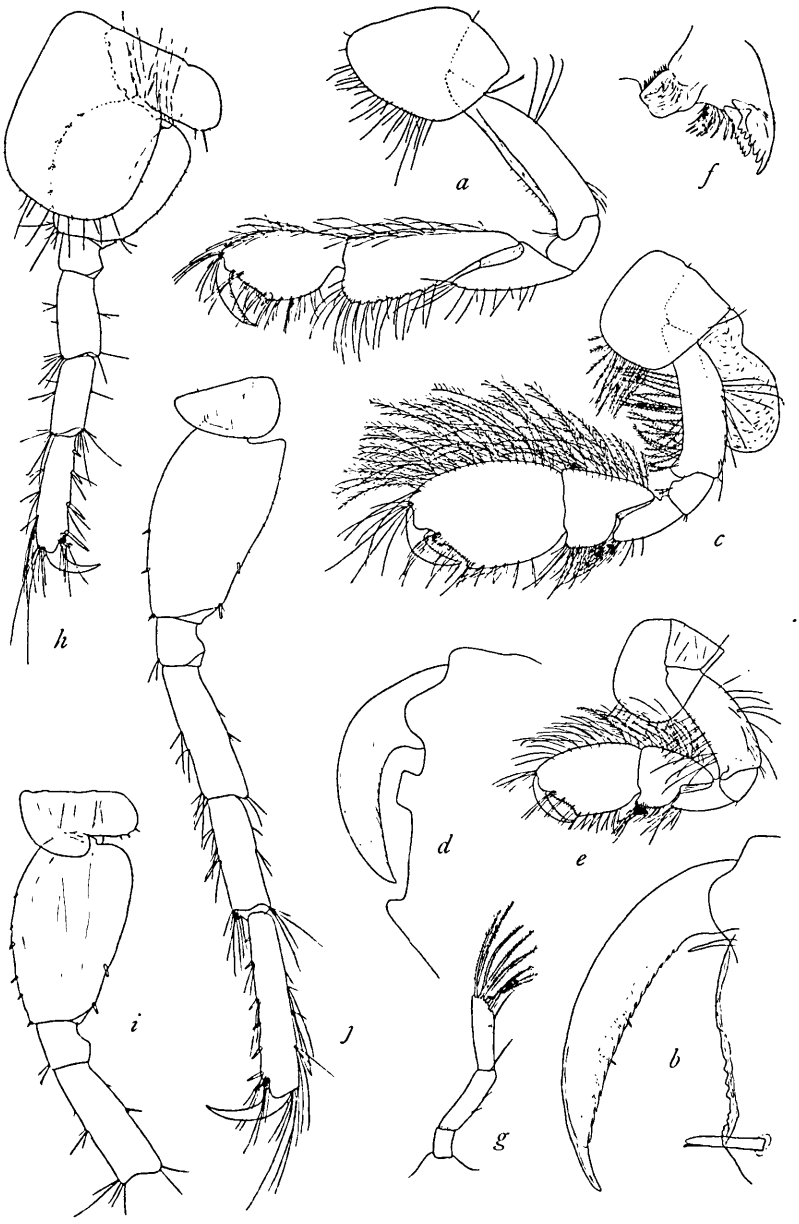

FIG. 4.– *Grubia fllosa* (Savigny) from Florida: a, gnathopod 1, ♂; b, palm and seventh joint of gnathopod 1, ♂, greatly enlarged; c, gnathopod 2, ♂; d, palm and seventh joint of gnathopod 2, ♂, greatly enlarged; e, gnathopod 2, immature ♂; f, mandible; g, mandibular palp; h, peraeopod 3; i, peraeopod 4; j, peraeopod 5

Type locality.—Mediterranean or Red Sea.

Distribution.—Schellenberg says "If one accepts the aforementioned identity of the several forms, the distribution stretches from the east coast of America through the Mediterranean and the Indian Ocean as far as East Australia."

There are in the collection of the U. S. National Museum specimens from Florida; Porto Rico; Tortugas; Old Providence; Bermuda.

Specimens collected.—Condada Bay, inside Dos Hermanos Bridge, half way up Bay, San Juan, Porto Rico, July 21, 1914 (R. W. Miner), 2.

Entrance to Guanica Harbor, Ensenada, Porto Rico, June 14, 1915 (R. W. Miner and H. Mueller), 1.

"Cane Wharf," Julia Cove, Guanica Harbor, Ensenada, Porto Rico. June 19, 1915 (R. W. Miner, R. C. Osburn and M. A. Howe), 3.

Mangroves between Ensenada and Guanica, Porto Rico, June 23, 1915 (R. W. Miner), 2.

One mile south of Caño Gorda Island, near Guanica, Porto Rico, June 23, 1915 (Dario Morcilio), 1.

Mangrove Island and coral reef at entrance to Montalva Bay, Ensenada, Porto Rico, June 27, 1915 (R. W. Miner, H. Mueller and M. A. Howe), 1.

Description of male.—Eyes oval and colorless in alcoholic specimens. Antenna 1 about as long as body, peduncle about one-third the length of flagellum, first joint stouter but equal in length to second, third joint one-third the length of second, flagellum composed of forty-five joints, accessory flagellum composed of one long and one short joint. Antenna 2 shorter than 1, fifth joint of peduncle a little shorter than fourth, fourth and fifth joints densely clothed with many groups of plumose spines, flagellum very little longer than peduncle. Mandibles with secondary plate well developed, both primary and secondary plates strongly dentate, seven spines in spine-row of right mandible (in the male here described) and 9 in spine-row of left mandible, molar of moderate size, palp with second and third joints equal in length and width, a group of terminal plumose spines on the third joint. Maxilla 1, outer plate with ten spine-teeth, inner plate with five to eight lateral plumose setæ, palp with rounding apex bearing from eight to eleven spine-teeth. Maxilla 2 normal. Maxillipeds, inner plate reaching to about the middle of first joint of palp, distal end and inner margin bearing a row of plumose setæ and a single spine-tooth on distal edge, outer plate reaching to about end of second joint of palp, and bearing about seventeen spine-teeth on inner margin, palp with second and third joints expanded on inner edge, dactyl bearing a single terminal spine and carrying several on inner margin. Lower lip normal and with

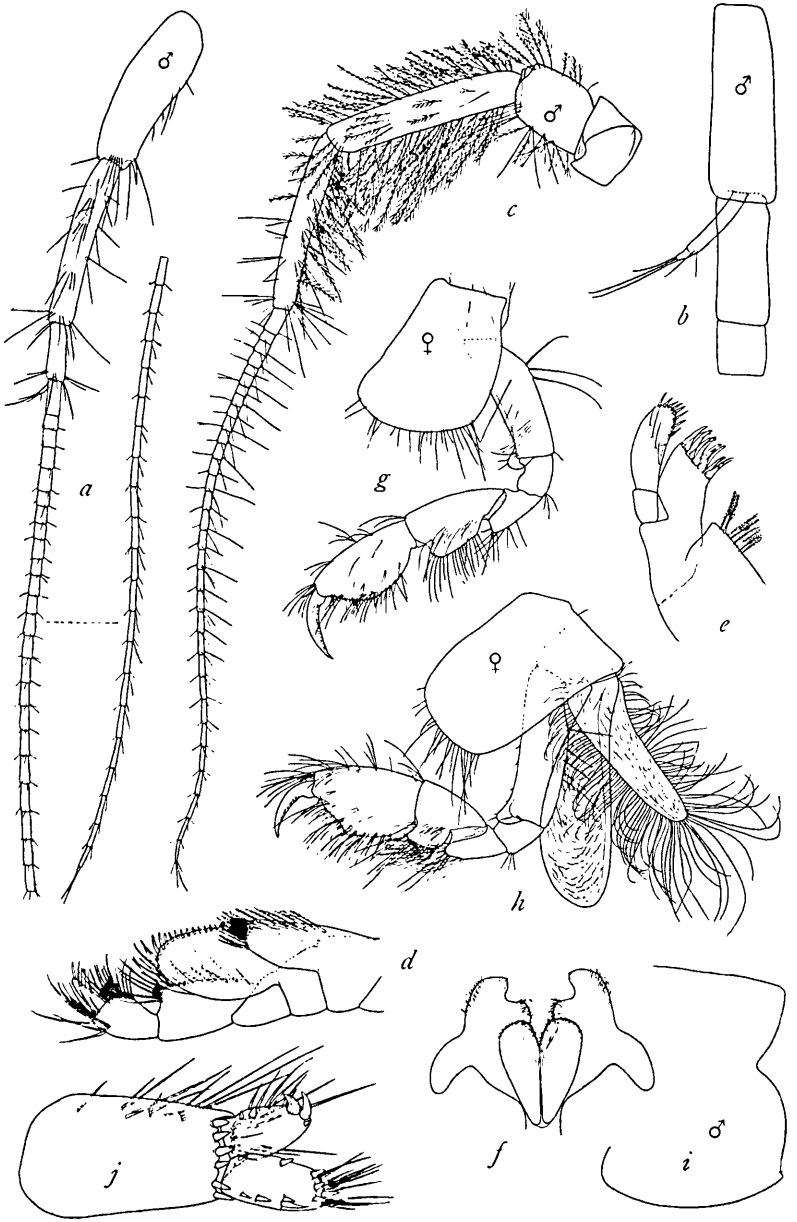

FIG. 5.—*Grubia filosa* (Savigny) from Florida: a, antenna 1, ♂; b, end of peduncle and accessory flagellum of ♂, greatly enlarged; c, antenna 2, ♂; d, maxilliped; e, maxilla 1; f, lower lip; g, gnathopod 1, ♀; h, gnathopod 2, ♀; i, abdominal segment 3; j, uropod 3, greatly enlarged

mandibular processes and inner lobes very well developed. Gnathopod 1 longer than, but not as stout as 2, second joint long and slender, anterior distal corner produced into a lobe, fourth joint with lower distal corner produced into a narrow angular lobe, fifth joint much longer than sixth and about equal in length to second with lower border expanded into a broad lobe bearing many spines, sixth joint about oval in outline, palm forming an oblique compound curve, defined by a blunt angle and a single stout spine, seventh joint slightly overlapping palm. Gnathopod 2 bearing groups of long plumose setæ on the anterior margins of the joints, second joint with anterior distal angle produced into a lobe, fourth joint with lower distal corner produced into a rather blunt angular lobe bearing a group of bristles on under surface, fifth joint much shorter than sixth with lower margin produced into a broad lobe with lower edge straight and thickly beset with bristles, sixth joint perhaps a little longer than second and oval in outline, palm oblique, defined by a low blunt tooth, and bearing a low flat-topped tooth near the hinge of the seventh joint (but absent in immature males), seventh joint strong, much curved and not quite reaching end of palm. Peraeopods 1 to 5 about normal. Peraeopod 4, second joint with hind margin not much expanded, upper corner broadly rounding. Peraeopod 5, second joint with hind margin little expanded, upper corner angular. Side-plate 1 somewhat produced anteriorly. Abdominal segment 3, posterior-lateral angle produced into a minute tooth bearing a minute setule just above it, margin above tooth convex. Uropods 1 and 2 about normal. Uropod 3 with inner ramus very nearly half the length of the peduncle. Length of male 15 mm.

The female is much like the male except as follows: Antenna 2 and gnathopod 2 without plumose setæ, except in the very largest specimens, and then the setæ are not so densely distributed. Gnathopod 1 very little if any longer than 2, fifth joint a very little shorter than sixth, sixth joint with palm oblique, convex and defined by a spine but continuous with hind margin. Gnathopod 2 much as in male, fifth and sixth joints proportionately smaller and weaker, sixth formed very much like that of gnathopod 1 of male, with palm forming an oblique compound curve defined by a blunt angle and a stout spine, but without the tooth near the hinge of the seventh joint, the palm and hind margin of sixth joint in the very largest specimen bearing long plumose setæ. Length of female 15 mm.

Corophiidæ

Ericthonius brasiliensis (Dana)

Pyctilus brasiliensis Dana, 1853 and 1855, U. S. Explor. Exped. under Wilkes, xiii, Pts. 1-2, p. 976, Pl. LXVII, figs. 5a-h.

Ericthonius bidens Costa, 1853, Accad. della Sci., Napoli, (n. s.), ii, p. 177.
Ericthonius abditus G. O. Sars, 1894, Crustacea of Norway, i, p. 602, Pl. CCXV.
Ericthonius brasiliensis Stebbing, 1906, Das Tierreich, Amphipoda, i, pp. 671 and 740.

Type locality.—Río de Janeiro Harbor.

Distribution.—South and west coast of Norway; Denmark; English Channel; west coast of Ireland; Mediterranean; Canary Islands; Senegal; Cape Colony; Amirante Islands; Seychelles Islands; Zanzibar; Suez; Ceylon; New Zealand; San Francisco, California; Chile; Brazil; Venezuela; Martinique; Porto Rico; New England coast; Bermuda; Azores.

Specimens collected.—Wharf, Guayanilla Playa, Ensenada, Porto Rico, June 25, 1915 (R. W. Miner and R. C. Osburn), 4.

Remarks—This is the first record of the occurrence of this species in Porto Rico.

Corophium acherusicum A. Costa

Podocerus cylindricus Say, 1818, Journ. Acad. Nat. Sci., Phila., i, Pt. 2, p. 387.
Corophium acherusicum A. Costa, 1857, Mem. Accad. Scienze, Napoli, i, p. 232.
Corophium cylindricum S. I. Smith, in A. E. Verrill, 1873, Report U. S. Fish Comm., i, p. 370; 566. Holmes, 1905, Bull. Bur. Fisheries for 1904, xxiv, p. 521, text-fig. Kunkel, 1918, Conn. Geol. and Nat. Hist. Survey, Bull. 26, p. 171, fig. 52.
Corophium acherusicum Shoemaker, 1934, Proc. Biol. Soc. Wash., xlvii, p. 24.

Type locality.—Gulf of Naples.

Distribution.—Dr. Schellenberg in 1928: "Known from Holland to Senegal and from the Mediterranean; also from the east coast of Cape Colony and from Dar es Salaam." Recently I have reported this species from the east coast of America where it occurs from Baffins Bay to Brazil.

Specimens collected.—Wharf, Guayanilla Playa, Ensenada, Porto Rico, June 25, 1915 (R. W. Miner and R. C. Osburn), 6.

PODOCERIDÆ

Podocerus brasiliensis (Dana)

Platophium brasiliense Dana, 1853 and 1855, U. S. Explor. Exped. under Wilkes, xiii, Pt. 1, 2, p. 838, Pl. LV, fig. 9a-1.
Podocerus brasiliensis Stebbing, 1899, Ann. and Mag. Nat. Hist., (7), iii, p. 239. Schellenberg, 1928, Trans. Zoöl. Soc. London, xxii, Pt. 5, p. 674.

Type locality.—Río de Janeiro Harbor.

Distribution.—Porto Rico; Barbados; Durban; Dar-es-Salaam, Tanganyika Territory; Zanzibar; Ceylon; Suez; Falkland Islands; Río de Janeiro Harbor.

Specimens collected.—Wharf, Guayanilla Playa, Ensenada, Porto Rico, June 25, 1915 (R. W. Miner and R. C. Osburn), 35.

CYAMIDEA

CAPRELLIDÆ

Caprella species

Specimens collected.—Wharf, Guayanilla Playa, Ensenada, Porto Rico, June 25, 1915 (R. W. Miner and R. C. Osburn), 2.

Remarks.—The specimens are too young and imperfect to warrant a specific identification.

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Recognized names are in Roman type, synonyms in Italics.

a

b

a. Looking westward toward San Juan from wireless tower. Shore of Atlantic Ocean at right; San Juan Harbor at left. Dr. Miner collected along the outer shore; Dr. Miner and Mr. J. T. Nichols dredged in San Juan Harbor.

b. Rocks at entrance of Condado Bay, showing Fort San Geronimo. Considerable shore collecting was done among these rocks in 1914.

a

b

a. Dr. M. A. Howe collecting marine algae among the mangrove roots in Guayanilla Bay in 1915. Dr. Miner collected many invertebrates characteristic of the mangrove association.

b. Dr. M. A. Howe and Dr. Roy W. Miner collecting among the rocks at Salinas Cove, Porto Rico, in 1915.

a

b

a. Lighthouse on Caja de Muertos Island. Dr. Raymond C. Osburn did extensive dredging off this island.

b. View looking eastward along the summit of a coral reef south of Guanica Harbor entrance. Extensive collecting was carried on along this reef by the American Museum expedition of 1915.

a

b

a. View of the land-locked Guanica Harbor from the hilltops back of Ensenada. The expedition of 1915, under Dr. R. W. Miner and Dr. R. C. Osburn, made its headquarters at Ensenada and collected extensively both inside and outside the entrance of this harbor. Extensive coral reefs are situated about two miles out in the Caribbean Sea, south of the harbor entrance.

b. Looking toward the entrance of Guanica Harbor from Ensenada. The sloop and motor boat shown were used by Dr. Miner and Dr. Osburn during the expedition of 1915.

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