

CATALOGUE OF THE CRABS OF THE FAMILY PERICERIDÆ IN THE  
U. S. NATIONAL MUSEUM.

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(With Plates XXVIII-XL.)

The classification adopted in the following catalogue is that established by Mr. E. J. Miers, in the *Journal of the Linnaean Society of London*, Vol. XIV, pp. 662 to 667, 1879, and modified by him in the *Challenger Report, Zoölogy*, Vol. XVII, 1886. His descriptions of *Libinia* and *Pericera* have been amended to receive new species which do not appear to be generically distinct.

In the key are included all the genera supposed to belong to the family. The characters distinguishing those genera which have not been seen by the writer are inclosed in parentheses. In the key to species only those represented in the National Museum are enumerated. At the end of the catalogue a list is given of the species of Periceridæ not in the Museum, for the benefit of future students of the group, and also to call attention to the deficiencies of the collection in the hope that it may be enriched in this direction through gifts and exchange.

Of the forty-eight species of Periceridæ contained in the National Museum, one is European, two are East Indian, and the remainder American. Of the latter, eleven are found on the Pacific coast, from the Gulf of California to the Galapagos Islands, and thirty-four on the Atlantic coast. Of the Atlantic forms, two only range from Massachusetts southward. The remainder inhabit the southern Atlantic States and the West Indies, in many cases extending to Brazil. Fifteen species are described as new, of which six are from the Gulf of California, and, with two exceptions, represented by a single specimen each.

In addition to the specimens in the National Museum, the writer was enabled to examine also the Periceridæ in the Museum of Union College, Schenectady, N. Y., and those contained in a collection made in the Bahama Islands by Mr. Frederick Stearns, of Detroit, Mich., in 1888, and kindly lent by him for study. The latter collection yielded an additional species, which is here described. The writer is indebted

to Mr. James E. Benedict for valuable aid in the preparation of this paper.

In the synonymy, quotations not verified are inclosed in parentheses. Numbers in parentheses after localities are taken from the catalogue books of the museum.

The drawings were made by Mr. A. H. Baldwin, excepting those of *Libinia emarginata* and *dubia*, which are republished from "The Fisheries and Fishery Industries of the United States," through the courtesy of the U. S. Fish Commissioner.

In an appendix are given descriptions of Periceridæ collected by the North Pacific Exploring Expedition, preliminary notices of which were published by Dr. William Stimpson, in the Proceedings of the Philadelphia Academy of Natural Sciences, 1857. The specimens were destroyed in the Chicago fire. The figures have been copied and enlarged by Mr. Baldwin from the drawings accompanying the original manuscript.

### PERICERIDÆ.

Maioid brachyurans with eyes retractile in complete and well-defined orbits. Basal antennal joint well developed and forming the greater portion of the inferior wall of the orbit.

#### KEY TO SUBFAMILIES.

- A' Carapace more or less subtriangular. Rostrum well developed. Second joint of antennæ not dilated. Fingers acute at tips.....*Pericerinae*.  
 A'' Carapace suboblong; interorbital space very broad. Rostrum very small. Second joint of antennæ enlarged. Fingers excavated at tips.....*Othoniinae*.  
 A''' Carapace broadly triangular, sometimes transverse. Rostrum usually short. Second joint of antennæ not dilated. Fingers excavated at tips...*Mithracinae*.

#### KEY TO GENERA.

##### *Pericerinae.*

- A' Rostrum not divided to the base.  
 B' Præocular spine distinct.....*Libinia*.  
 B'' Præocular spine absent.....*Prionorhynchus*.  
 A'' Rostrum composed of two distinct spines.  
 B' Basal joint of antennæ without spine at distal extremity.  
 C' (Horns of rostrum lamellate) .....*Pyria*.<sup>\*</sup>  
 C'' Horns of rostrum flattened, contiguous, produced at their extremities in a lateral lobe.....*Lissa*.  
 C''' Horns of rostrum slender and divergent .....*Picroceroides*.  
 C'''' (Horns of rostrum very slender and contiguous) .....*Leptopisa*.  
 C''''' (Horns of rostrum small, parallel to each other).....*Sisypus*.<sup>\*</sup>  
 B'' Basal joint of antennæ with one or more spines at distal extremity.  
 C' Carapace narrow and elongated, suboval.  
 D' (Nearly vertically deflexed in front of gastric region).....*Cyphocarcinus*.  
 D'' (Not deflexed in front of gastric region).....*Podohucnia*.

<sup>\*</sup> May belong to the Maiidæ.

C'' Carapace subtriangular.

D' Carapace with a series of lateral spines or teeth.

E' Lateral margins with sharp spines.....*Pericera*.E'' (Lateral margins laminate and dentate).....*Anaptychus*.

D'' Carapace without a series of lateral spines or teeth.

E' Spines of rostrum very slender and contiguous.....*Tiarinia*.

E'' Spines of rostrum slender and more or less divergent.

F' (Spine at antero-external angle of antennal joint very short and not visible from above).....*Tylocarcinus*.F'' Spine at antero-external angle of antennal joint very long and visible from above.....*Microphrys*.E''' Spines of rostrum parallel or nearly so. Orbits tubular..*Macrocaloma*.E'''' (Spines of rostrum short, divergent, obliquely deflexed)..*Eutomonyx*.*Othoniinae.*A' Carapace with margins regularly dentated.....*Othonia*.A'' (Carapace with margins not dentated).....*Cylocaloma*.*Mithracinae.*A' Ambulatory legs dilated and compressed. Rostrum minute.....*Thoe*.

A'' Ambulatory legs not dilated and compressed.

B' (Basal antennal joint without spines at distal end).....*Parathoe*.

B'' Basal antennal joint with one or more spines at distal end.

C' Lateral margins with tubercles or spines.....*Mithrax*.C'' (Lateral margins without tubercles or spines).....*Paramaya*.\*

## KEY TO SPECIES EXAMINED.

*Libinia.*

A' Carapace with margin evenly rounded behind the front.

B' Orbital fissures open; carapace narrowly pyriform.....*mexicana*.

B'' Orbital fissures closed; carapace broadly ovate.

C' Rostrum deflexed.

D' Median spines six.....*dubia*.D'' Median spines nine.....*emarginata*.C'' Rostrum pointing obliquely upward.....*setosa*.

A'' Carapace distended at the hepatic regions.

B' Legs spinous.....*spinimana*.B'' Legs unarmed.....*macdonaldi*.*Prionorhynchus.*Praeocular spine absent.....*edwardsii*.*Lissa.*Gastric region divided by deep grooves from the cardiac and branchial regions..*chiragra*.*Picroceroides.*Horns of rostrum slender and divergent.....*tubularis*.\* This genus is doubtfully referred to the *Pericerae*.

*Pericera.*

- A' Carapace with strong median spines.  
 B' Carapace oblong-ovate ..... *atlantica*.  
 B'' Carapace triangulate ..... *triangulata*.  
 A'' Carapace without strong median spines.  
 B' Rostral horns divergent from the base ..... *cornuta*.  
 B'' Rostral horns divergent at tips only ..... *contigua*.

*Tiarinia*

- Carapace covered with prominent warty tubercles ..... *cornigera*.

*Microphrys.*

- A' Rostral horns short, flattened ..... *Microphrys*, sp.  
 A'' Rostral horns long, thickened ..... *bicornutus*.

*Macrocarloma.*

- A' Carapace with dorsal spines besides the epibranchial and posterior spines.  
 B' Carapace subtriangular.  
 C' Carapace with four spines at summit.  
 D' Rostrum strongly deflexed ..... *septemspinosa*.  
 D'' Rostrum almost horizontal ..... *camptocera*.  
 C'' Carapace with spiny ridge between epibranchial spines ..... *subparallela*.  
 C''' Carapace with two spines on the intestinal region ..... *tenuirostra*.  
 B'' Carapace subtrapezoidal ..... *eutheca*.  
 A'' Carapace without dorsal spines except the epibranchial and posterior spines.  
 B' Epibranchial spine two-lobed ..... *diplacantha*.  
 B'' Epibranchial spine not lobed ..... *trispinosa*.

*Othonia.*

- A' Antero-lateral teeth rounded ..... *aculeata*.  
 A'' Antero-lateral teeth acute.  
 B' Carapace smooth, pubescent ..... *therminieri*.  
 B'' Carapace densely granulous ..... *rotunda*.  
 B''' Carapace tuberculous.  
 C' Carapace broadest at fourth pair of teeth ..... *nicholsi*.  
 C'' Carapace broadest at third pair of teeth ..... *carolinensis*.

*Thoe.*

- Antero-lateral margin straight or a little concave ..... *puella*.

*Mithrax.*

- A' Carapace with dorsal sulci.  
 B' Antero-lateral margins with spines only.  
 C' Carapace longer than broad ..... *cinclimanus*.  
 C'' Carapace broader than long ..... *foreeps*.  
 B'' Antero-lateral margins with lobes, or lobes and spines.  
 C' Carapace much broader than long; lateral margins angular.  
 D' Lateral angle formed by a spine hooked forward ..... *denticulatus*.  
 D'' Lateral angle formed by a lobe ..... *coronatus*.  
 C'' Carapace slightly broader than long; lateral margin rounded.  
 D' Lateral margin with three large lobes followed by a spine ..... *nodosus*.  
 D'' Lateral margin with four small lobes ..... *sculptus*.



## A'' Carapace without dorsal sulci.

## B' Manus with spines.\*

C' Carapace with much flattened, setigerous granules..... *aculeatus*.C'' Carapace punctate and spiny..... *spinosissimus*.C''' Carapace densely hairy..... *pilosus*.

## B'' Manus without spines.

## C' Rostrum tuberculiform.

D' Ambulatory legs with a thin lamellate crest..... *Mithrax*, sp., Miers.

D'' Ambulatory legs without a thin lamellate crest.

E' Carpus with inner margin armed with two or three blunt spines. *verrucosus*.

E'' Carpus with surface tuberculous.

F' Basal antennal joint with a spine at its antero-lateral angle... *sinensis*.F'' Basal antennal joint with a lobe at its antero-lateral angle... *crisulipes*.F''' Basal antennal joint with a truncate tooth at its antero-lateral angle..... *braziliensis*.E''' Carpus with surface uneven..... *hispidus*.

## C'' Rostrum short and sharp.

D' Carapace strongly tuberculous. Lateral margins heavily armed... *hemphilli*.D'' Carapace pubescent. Lateral margins almost unarmed..... *bahamensis*.

## C''' Rostrum long and sharp.

D' Carapace strongly tuberculous..... *acuticornis*.D'' Carapace with scattered tubercles..... *spiniipes*.

## Subfamily PERICERINÆ.

*Libinia* Leach (amended.)

Leach, Zoöl. Misc., II, p. 129, 1815. Say, Jour. Acad. Nat. Sci. Phila., I, p. 76, 1817.

Latreille, Règne Anim., III, p. 21, 1817 (2nd. ed., IV, p. 61); translation, III, p.

46, 1831. (Desmarest, Consid. sur les Crust., p. 161, 1825.) Milne Edwards,

Hist. Nat. des Crust., I, p. 298, 1834. De Haan, Fauna Japonica, Crust., p. 86.

De Kay, Crust. of N. Y., p. 1, 1844. Dana, Crust. U. S. Ex. Ex., I, p. 80, 1852.

A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 127, 1875. Miers, Jour.

Linn. Soc. London, XIV, p. 662, 1879; Challenger Rept., Zoöl., XVII, p. 72, 1886.

Carapace convex; tuberculous or spinous; triangular-orbiculate and evenly rounded behind the frontal region, or oblong-orbiculate and constricted behind the hepatic regions which are dilated laterally. Preocular spine usually distinct. Rostrum emarginate or bifid at the apex. Orbits small, nearly circular, sometimes with an open fissure in the upper and lower margins. Basal antennal joint moderately enlarged. Merus of exterior maxillipeds truncate at the distal end. Chelipeds well developed; palm elongated; fingers evenly denticulated on inner margins. Ambulatory legs well developed, sometimes elongated; joints subcylindrical, usually unarmed.

*Libinia emarginata* Leach.

Plate XXXI, fig. 2.

*Libinia emarginata* Leach, *op. cit.*, p. 130, pl. 108. (Desmarest, *op. cit.*, p. 162.)

White, Cat. Brit. Mus. Crust., p. 4, 1847. Smith, Trans. Conn. Acad., V, p. 45,

1879; Verrill's Check List of N. Amer. Invert., p. 1, 1879; Rept. U. S. Commr.

of Fisheries for 1885 (1887), p. 627. Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI,

p. 386, 1879. Miers, Jour. Linn. Soc. London, XIV, p. 662, 1879; Challenger

\* In young specimens and females, the spines are not always evident.

Rept., Zoöl., xvii, p. 72, 1886. Andrews, Trans. Conn. Acad., vi, pp. 99-121, pls. xxv-xxvii, 1883 (anatomy). R. Rathbun, Fishery Industries of United States, sec. 1, p. 778, pl. 269, fig. 4, 1884. Kendall, Bull. U. S. Fish Comm., ix, p. 303, 1889 (1891).

*Libinia canaliculata*. Say, *op. cit.*, p. 77, pl. iv, fig. 1. Milne Edwards, *op. cit.*, p. 300; (Atlas Règne Anim. de Cuvier, Crust., pl. xxiii, fig. 1). Gould, Invert. of Mass., p. 327, 1841. De Kay, *op. cit.*, p. 2 (partim). White, *loc. cit.* Gibbes, Proc. Amer. Assoc. Adv. Sci., 3, p. 169, 1850. Streets, Proc. Acad. Nat. Sci. Phila., xxii, p. 105, 1870. Cones, Proc. Acad. Nat. Sci. Phila., p. 120, 1871. Smith, Rept. U. S. Commr. of Fisheries for 1871 and 1872 (1874), p. 548. A. Milne Edwards, *op. cit.*, p. 128. Kingsley, *op. cit.*, p. 316, 1878.

*Libinia affinis*. Randall, Jour. Acad. Nat. Sci. Phila., viii, p. 106, 1839. Gibbes, *op. cit.*, p. 170. Stimpson, Boston Jour. Nat. Hist., vi, p. 455, 1857. Streets, *loc. cit.*

A variety from Charlotte Harbor, Florida, collected by the U. S. Fish Commission schooner *Grampus*, approaches somewhat the *dubia* type. It has the rostrum of *emarginata*, as well as the hepatic, the two intestinal, and the four median gastric spines; but the three branchial spines and those of the lateral margin, as well as some of the median spines, are long and strong as in *dubia*.

One specimen from St. Augustine, Florida, has a rostrum with three spines instead of two, one median, the others regularly diverging on either side.

Occasionally this species occurs in such numbers on the oyster grounds of Long Island Sound, and so interferes with the operations of the steam oyster dredgers that work is abandoned until the crabs (which are known to the oystermen as "spiders") have passed over.

#### RECORD OF SPECIMENS EXAMINED.

Massachusetts; U. S. Fish Commission:

Wellfleet and Provincetown (2978); Provincetown (3898, 5875); Cape Cod (2025); south of Cape Cod, 27 fathoms (12852); east of Martha's Vineyard, 3 to 7 fathoms (9376); Vineyard Sound, shore to 9 fathoms; Wood's Holl (6704); Menemsha Bight (6710); Buzzards Bay, 5½ fathoms (4054); Mattapoisett Harbor (5825).

Rhode Island; U. S. Fish Commission:

Narragansett Bay, shore to 15 fathoms.

Connecticut; U. S. Fish Commission:

Noank (5874); New Haven (3843); Savin Rock (4102); oyster beds of H. C. Rowe, mouth of New Haven Harbor (3042); oyster grounds off Milford, Stratford, Bridgeport, and Norwalk (16023).

Long Island:

Fort Pond Bay, U. S. Fish Commission (14582); Fire Island beach, Dr. T. H. Bean (8916).

Virginia; U. S. Fish Commission:

Chesapeake Bay (5870); Hampton Roads, 11 to 12 fathoms (12452).

North Carolina:

Beaufort (Union College Coll.); Middle Sound, near Wilmington, U. S. Fish Commission (3375).

South Carolina; U. S. Fish Commission:

Bull Creek (16074); Charleston Harbor (3911); west end of Skull Creek (16075); Calibogue Sound (16073).

## Florida:

St. Augustine, J. G. Hewitt (2018); Southern Florida, Silas Stearns (3147); Florida Reefs, Lieut. J. F. Moser, U. S. Navy, U. S. C. S. S. *Bache* (14998); 4 miles east of Cape Romano, 18 feet, Lieut. J. F. Moser (13059); Marco, H. Hemphill (15122); Charlotte Harbor, U. S. Fish Commission (15203); W. H. Dall (15125); Sarasota Bay, H. Hemphill (15124), (Union College Coll.).

This species is found as far north as Casco Bay.

**Libinia dubia** Milne Edwards.

Plate XXXI, fig. 1.

*Libinia dubia* Milne Edwards, Hist. Nat. des Crust., I, p. 300, pl. 14 bis, fig. 2, 1834. Gibbes, *op. cit.*, p. 169. Streets, *op. cit.*, p. 101. Smith, *loc. cit.* A. Milne Edwards, *op. cit.*, p. 129, pl. XVIII, fig. 5. Kingsley, *op. cit.*, p. 316, 1878; XXXI, p. 386, 1879. R. Rathbun, *op. cit.*, p. 778, pl. 269, fig. 5, 1884. Miers, *loc. cit.* Kendall, *loc. cit.* Ives, Proc. Acad. Nat. Sci. Phila., p. 178, 1891. Aurivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, 1, p. 53, 1889.

*Libinia canaliculata* De Kay, *loc. cit.* (partim).

*Libinia distincta* Guérin, La Sagra's Hist. of Cuba, VII, p. XII, 1856. Capello, Jor. Sci. Lisbon, III, p. 263, pl. 3, fig. 2, 1871. Martens, Archiv. für Natur., XXXVIII, p. 79, pl. IV, figs. 1a, 1b, 1872.

*Libinia rhomboidea* Streets, *op. cit.*, p. 106. A. Milne Edwards, *op. cit.*, p. 131. Miers, *loc. cit.*

? *Libinia inflata* Streets, *loc. cit.*

Among five specimens from near Cedar Keys, Fla., there is one in which the upper orbital fissures are open as in the species of the second section of *Libinia* enumerated by Miers, *op. cit.*, p. 73. The lower margin of one orbit has a very narrow open fissure; in the other orbit, however, the fissure is closed, as in typical specimens.

A specimen from Merida, Yucatan, presents most of the characters of Streets's *rhomboidea*. A. Milne Edwards is probably right in considering this a variety of *dubia*. The specimen has the depressed median spines; the irregular transverse row on the gastric region; the strong spine on the hepatic region, forming with the lateral spines almost a semicircle; and the four strong spines arranged in a rhomboid on the branchial region, a character possessed by many of our specimens of *dubia*. On one side there is an additional smaller spine placed a little in front of the posterior spine of the rhomboid and nearer the median line. The præocular spine is prominent. The rostral spines are slightly divergent as in the typical *dubia*, from which this specimen does not differ essentially except in the strong hepatic spine.

This species is not uncommonly covered with foreign matter, such as worm tubes, oysters, hydroids, and algæ. A female from Barnegat, N. J., about 3 inches long, is encrusted with tubes of *Serpula*, which conceal the carapace with the exception of the posterior margin, the intestinal spine, and the orbits, rendering the identification doubtful. The rostrum is broken. The mass of tubes is about 3 inches high and of greater width. Another female from Great South Bay, Long Island, has an oyster growing vertically on the frontal region, the hinge being

attached to the hepatic region. Still another female, from Barnegat, has an oyster attached to the subhepatic region and extending horizontally forward.

RECORD OF SPECIMENS EXAMINED.

Massachusetts; U. S. Fish Commission:

Woods Holl (4905, 5839); Buzzards Bay, 7 fathoms (4551); Mattapoisett Harbor (15121).

Long Island; Dr. T. H. Bean:

Fire Island (8920); Patchogue (8915).

New Jersey:

Barnegat, William Calverly (5491, 5497); Ocean City, Dr. T. H. Bean (13012); Great Egg Harbor, Dr. William Stimpson (2066); Beesleys Point (2149).

Maryland: Crisfield, U. S. Fish Commission (3261).

Virginia:

Willoughby Point, U. S. Fish Commission (5877); Hungers Wharf, Dr. J. F. Wilkins (4152); Hampton Roads, 12 fathoms (15158); Norfolk (15824); Cape Henry, William Evans (2278).

North Carolina: Beaufort (Union College Coll.).

South Carolina:

Charleston, C. C. Leslie (3141); east end of Sullivans Island, Whiteside and Leslie (3186); oyster grounds, U. S. Fish Commission, 1891 (16076).

Florida:

Cards Sound (15201), Little Gasparilla Pass (15202); U. S. Fish Commission, 1889. Four miles northeast of Key West; Dr. E. Palmer (9252). Key West; D. S. Jordan (5845); H. Hemphill (8962); U. S. Fish Commission (16155). Off Cape Sable (13756), near Cedar Keys (12471); Lient. J. F. Moser, U. S. Navy, U. S. C. S. S. *Bache*. Marco (15118), Punta Rassa (6436), Charlotte Harbor (15119); Sarasota Bay (6422), Goodland Point (15120), Pass a Grille Reef (6441), Boca Ceiga Bay, inner shore of Pine Key (6445), Cedar Keys (6411); H. Hemphill. Charlotte Harbor; W. H. Dall (12446). Tampa Bay; James Newman (13109). Clearwater (3259). Pensacola; Silas Stearns (4506).

Yucatan: Merida; A Schott (2169).

*Libinia setosa* Lockington.

Plate XXVIII.

*Libinia setosa* Lockington, Proc. Cal. Acad. Sci., p. 68, 1876. Streets and Kingsley, Bull. Essex Inst., 9, p. 108, 1877. Miers, Challenger Rept. Zoöl., xvii, p. 73, 1886.

*Libinia semizonale* Streets, Bull. U. S. Nat. Mus., No. 7, p. 103, 1877.

Lower California (2300). Type of Streets's *semizonale*.

*Libinia macdonaldi*, sp. nov.

Plate XXIX.

Entire surface, except the fingers and the tips of the ambulatory legs, densely covered with short, soft hairs, which in alcohol are brown, the surface being much lighter when the hairs are removed. Carapace broadly ovate, somewhat contracted behind the hepatic region, which is distended outwardly, a character not common to any of the species

described hitherto. A conspicuous groove defining the inner angle of the branchial region ends anteriorly in a round pit and is interrupted posteriorly at the widest part of the cardiac region, behind which point it is continued almost to the posterior margin and unites with a broad irregular depression occupying the posterior portion of the branchial region; another short groove on the branchial region near the inner angle. There is a pit at the inner angle of the hepatic region, and another further back, between the gastric and branchial regions.

The spines of the carapace are stout and blunt pointed. There are nine on the median line: four on the gastric, one on the genital, two on the cardiac, and two on the intestinal region. There is a spine on the frontal region on either side of the median line from which a ridge extends forward to the rostrum, which is either tuberculous or armed with a small spine. Between these ridges there is a broad, shallow depression. On each gastric region there is a spine which forms a T with those on the median line. There is a line of seven spines beginning at the summit of the hepatic region and terminating with the last antero-lateral spine. There two other strong antero-lateral spines, one at the prominent angle of the hepatic region, and one on the branchial region midway between the other two. There are four additional spines on the branchial region: one between the first and second lateral spines, but a little higher up and smaller; one, small, near the anterior border; two larger, of which one is near the inner angle, and one at some distance posterior, and nearer the margin; a fifth, near the cardiac region, is sometimes wanting, and in one specimen is accompanied by another at a little distance. On the anterior margin of the hepatic region at the base of the lateral spine are one or two small irregular spines directed forward. In some specimens there is a small spine on the postero-lateral margin just back of the last antero-lateral spine.

Rostrum depressed, flattened vertically, composed of two broad spines coalesced for from one-third to more than one-half their length, their outer margins slightly converging.

Orbits with a single closed fissure above and below and prominent præocular and postocular spines. Orbital opening very small in proportion to the size of the carapace. Basal antennal joint broad, with a spine at the base of the second joint, directed downward and forward, and a little smaller spine on the anterior margin near the outer angle.

Merus of external maxilliped strongly notched at its antero-internal angle, slightly rounded at its antero-external angle. Tooth near the distal extremity of the inner margin of the exognath large, acute.

There are several tubercles on the pterygostomial region, and sometimes a small spine on the subbranchial above the base of the first ambulatory leg. Abdomen with a longitudinal carina which is broader in the female than in the male; a spine or spiny tubercle on the first segment, and a tubercle on the second,



Chelipeds slender, not so long as the first pair of ambulatory legs. Merus subcylindrical, with a row above of four spines and a few tubercles; inner, outer, and inferior surfaces, each with a longitudinal row of tubercles. Carpus obscurely tuberculate, with a crest of four tubercles above. Hands compressed, upper and lower margins parallel in the male, tapering in the female. Fingers meeting along their inner edges, evenly dentate.

Ambulatory legs slender, decreasing successively in length. Dactyls slightly arched, shorter than the penultimate joints.

Dimensions of a male in millimeters: Length, including rostrum, 88; width, without spines, 70; length of cheliped, 122; length of first ambulatory leg, 144; length of fourth ambulatory leg, 81.

## RECORD OF SPECIMENS EXAMINED.

Gulf of California; U. S. Fish Commission, 1889:

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	°	Nature of bottom.
16069	3016	29 40	112 57 00	76	59	gn. M.
16070	3015	29 19	112 50 00	145	54.9	br. M.
16071	3011	28 07	111 39 45	71	57.9	fine. gy. s. brk. Sh.

This species is named after the Hon. Marshall McDonald, U. S. Commissioner of Fish and Fisheries.

*Libinia spinimana*, sp. nov.

Plate xxx.

Carapace the same general shape as the preceding, studded with numerous sharp spines and covered, excepting on the distal half of the spines, with a dense pubescence, the hairs being lighter and shorter than in *macdonaldi*. The depressions and grooves are placed similarly to those of *macdonaldi*, but are more shallow. There are about twelve prominent spines on the median line; five on the gastric region, two on the genital, two on the cardiac, two on the intestinal, and one on the posterior margin. On the frontal region there are two or three small spines placed longitudinally on either side of a broad shallow groove. On each gastric region there is a spine which forms a transverse line with the second median spine. There is no continuous line of lateral spines, but near the margin there are prominent spines arranged as follows: Three on the hepatic region, the longest at the external angle, the other two on the anterior border and directed forward; two near the anterior portion of the branchial region, and two farther back. There is an irregular row of small spines near the posterior margin. The entire carapace is covered with spines of different sizes, varying with the specimen.

Rostrum but slightly deflexed, flattened vertically, composed of two sharp divergent spines coalesced for about one-third their length.

Orbits as in *macdonaldi*; præocular and postocular spines more prominent than in that species. Basal antennal joint shaped as in *macdon-*



*aldi*, and bearing besides the two spines of that species a third on the outer margin behind the anterior angle.

Maxillipeds much as in *macdonaldi*. Pterygostomian region armed with a few spines. Abdomen carinated, with a median spine on the first two segments in both sexes. On each side of the second, third, and fourth segments in the female, there is one prominent tubercle, and in some cases one or two smaller ones. In the male there are inconspicuous tubercles on either side of the first three segments.

Chelipeds shorter than the first pair of ambulatory legs; pubescent, except the fingers and distal half of the hand, which are smooth. Ischium with a few short spines. Merus with four longitudinal, equidistant rows of irregular spines, those of the upper margin being the longer. Between these rows are scattered a few small spines. Carpus spiny. Hands and fingers shaped as in *macdonaldi*. Hand with small spines on the proximal half of the upper margin, more prominent in the male than in the female, and sometimes arranged in two rows, which become more divergent toward the distal end, the spines decreasing to small tubercles; inner and lower surfaces finely tuberculate or granulate, with a few stout tubercles in the male at the proximal end of the lower margin.

Ambulatory legs resembling those of *macdonaldi*; pubescent, except the distal two-thirds of the dactyls. Merus of the first pair with a longitudinal row of four or five sharp spines on the upper surface, two on the outer side of the anterior margin, and six or eight smaller scattered spines. Meral joints of the remaining legs with a sharp spine on the outer side of the anterior margin, and one or more minute spines on the anterior portion. Carpal joints of first pair with a few small spines; of remaining pairs sometimes with faint tubercles. Other joints unarmed.

Dimensions of male in millimeters, as follows: Length, including rostrum, 86; width, without spines, 69; length of cheliped, 114; length of first ambulatory leg, 147; length of fourth ambulatory leg, 98.

There is a small male from the Gulf of Mexico, measuring 52 millimeters long and 36 wide, which differs from the three large specimens collected off Cape Lookout, North Carolina, in the following particulars: The dorsal spines are fewer and longer; there is only one spine on the genital region, and one on the anterior margin of the hepatic. The rostral spines are proportionally longer and more divergent. In other respects, however, this specimen agrees with the types.

## RECORD OF SPECIMENS EXAMINED.

Cat. No.	Station.	Lat. N.			Long. W.			Fathoms.	Nature of bottom.
		°	'	"	°	'	"		
14029	2602	34	38	30	75	33	30	124	S. R.
16053	2403	28	42	30	85	29	00	88	gy. M.

This species and the preceding differ from all other species of *Libinia* in the prominent hepatic regions, and in the sharp postocular spine directed outward, characters which hardly seem to justify the formation of a new genus. Excepting *L. rostrata* Bell, they are the only species having long rostral horns in connection with closed orbital fissures. *L. spinimana* is peculiar in having spines on the hands.

*Libinia mexicana*, sp. nov.

Plate XXXI, fig. 3.

Carapace pyriform, covered with a short pubescence and bearing twelve long spines besides the præocular. Median spines four: two on the gastric region (the posterior the longer), one on the cardiac, and one on the intestinal. There is a small spine on each side of the anterior median gastric spine, a tubercle on the genital, and one on the cardiac behind the spine. There are two long spines on each branchial region, one on each side of the genital region, pointing outward and a little forward, the others further from the median line and nearly in line with the cardiac spine, but pointing backward and outward. Lateral spines two: one on the hepatic region, one on the anterior part of each branchial; further back on the margin there is an inconspicuous spiny tubercle.

Rostrum rather long, nearly straight, the distal half bifurcated. Horns tapering; outer margins slightly divergent; interspace V-shaped.

Orbits with an open fissure above and below; præocular spine prominent; postocular well developed, obtuse.

Basal antennal joint rather narrow, with a triangular acute spine at its distal extremity, pointing downward and forward. Second and third joints rather stout. Remaining portion wanting. There is a short spine and two or three tubercles on the pterygostomial region.

Legs short, covered with a close pubescence; joints unarmed. Chelipeds, in a young male, weak, almost as long as the first pair of ambulatory legs. Palms compressed, not dilated. Fingers narrowly gaping, their distal half finely toothed.

Length, without rostrum, 10<sup>mm</sup>; breadth, 7.5<sup>mm</sup>; length of rostrum about 3.5<sup>mm</sup>; length of cheliped about 8.5<sup>mm</sup>.

Collected in the Gulf of California, off Shoal Point, Mexico, near the mouth of the Colorado River, lat. 31° 33' N., long. 114° 20' 30" W., 10½ fath., fine gray sand, broken shells, station 3029, U. S. Fish Commission, 1889 (16072).

This species is nearest to *L. smithii* Miers, but differs in the narrower carapace, the less divergent rostral horns, the shorter ambulatory legs. The lateral branchial spine is also farther forward in *mexicana*, and the twelve long spines are nearly equal in length, while in *smithii* the cardiac, intestinal, and second lateral spines are longer than the others. The marginal spine of the basal antennal joint is wanting in *mexicana*.

*Libinia mexicana* belongs to that section of the genus having open orbital fissures, a section which should perhaps form a new genus and be transferred to the Maiidae.

*Prionorhynchus edwardsii* Jacquinet and Lucas.

Voy. au Pole Sud, Zool., III, Crust., p. 8, pl. 1, fig. 1, 1853. (Filhol, Rec. Vénus, III, Abth. 2, p. 367, 1886.) Miers, Jour. Linn. Soc. London, XIV, p. 662, 1879.

Upper surface coarsely and densely granulous and closely set with short, coarse hairs. Dimensions in millimeters: Length, 107; width, including teeth, 97.

Auckland Island; Otago University Museum, Dunedin, New Zealand; one male (16297).

*Lissa chiragra* (Fabricius).

*Cancer chiragra* (Fabricius, Ent. Syst. 409, 47). Herbst, Natur. der Krabben und Krebse, I, p. 243, pl. 17, fig. 96, 1790.

*Inachus chiragra* (Fabricius, Sup. Ent. Syst., p. 357, 1798).

*Lissa chiragra* Leach, Zool. Misc., II, p. 70, pl. 83, 1815. (Desmarest, Consid. sur les Crust., p. 147, 1825.) (Risso, Hist. Nat. de l'Europe Mérid., V, p. 23). (Costa, Fauna Napoli, p. 17.) Milne Edwards, Hist. Nat. des Crust., I, p. 310, 1834. (Latreille, III. Ed. Règ. Anim., pl. 29, fig. 1.) (Heller, Crust. S. Europe, p. 47, pl. 1, fig. 26, 1863.) Miers, Jour. Linn. Soc. London, XIV, p. 663, 1879. Aurivillius, K. Sv. Vet.-Akad. Handl., Bd. 23, I, p. 53, pl. 3, fig. 5, 1889.

*Pisa chiragra* (Latreille, Encyc., t. 10, p. 143).

*Maiia chiragra* (Risso, Crust. Nice, p. 47, 1816).

An adult male from Naples (14508) was presented to the National Museum by the Rev. A. M. Norman.

*Tiarinia cornigera* (Latreille?) Dana.

*Pisa cornigera?* Latreille (Encycl. Meth., X, p. 141, 1825).

*Pericera cornigera?* Milne Edwards, Hist. Nat. des Crust., I, p. 335, 1834. Adams and White, Voy. Samarang, p. 18, 1848.

*Tiarinia cornigera* Dana, Crust. U. S. Expl. Exped., I, p. 110, pl. 3, fig. 5, 1852. Stimpson, Proc. Acad. Nat. Sci. Phila., IX, p. 217, 1857. Miers, Jour. Linn. Soc. London, XIV, p. 664, 1879; Ann. Mag. Nat. Hist. (5), V, p. 228, 1880. Haswell, Cat. Austral. Crust., p. 28, 1882.

Japan; H. Loomis; one female (16271).

This species is distributed throughout the East Indies and the Indian Ocean.

*Pericera* Latreille (amended).

Latreille, Règne Anim. (2d ed., IV, p. 58, 1829); translation III, p. 43, 1831. Milne Edwards, Hist. Nat. des Crust., I, p. 334, 1834. Dana, Crust. U. S. Ex. Ex., I, p. 83, 1852. Sanssüre, Mém. Soc. Phys. de Genève, XIV, p. 426, 1857 (partim). A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 49, 1873. Miers, Jour. Linn. Soc. London, XIV, p. 664, 1879; Challenger Rept., Zool., XVII, p. 76, 1886.

Carapace subpyriform, tuberculated or spinose, with a series of lateral spines. Præocular spine well developed. Spines of rostrum long and more or less divergent. Interorbital space broad. Basal joint of antennæ very much enlarged, usually with two small distant spines at its distal end, not visible from above; sometimes, however,

the spine at the antero-external angle is long and visible from above. Anterior legs long, palm slender and elongated, fingers slightly or not at all gaping.

*Pericera cornuta* (Herbst).

*Cancer corundo* Herbst, Natur. der Krabben u. Krebsse, III, pt. 4, p. 6, pl. LIX, fig. 6, 1804.

*Maia taurus* Lamarck, Hist. des Anim. sans Vert., v, p. 242, 1818.

*Pericera cornuta* Latrèille, Règne Animal (2d ed., IV, p. 58); translation, III, p. 44, 1831. Milne Edwards, Hist. Nat. des Crust., I, p. 335, pl. 14 bis, figs. 4, 5, 1834; (Atlas du Règne Animal de Cuvier, Crustacés, ed. 3, pl. XXX, fig. 1). Gibbes, Proc. Amer. Assoc. Adv. Sci., p. 172, 1850. Guérin, in La Sagra's Hist. of Cuba, p. 11, 1856. Saussure, Mém. Soc. Phys. de Genève, XIV, p. 426, 1857. Stimpson, Ann. Lye. Nat. Hist. N. Y., VII, p. 183, 1860; Bull. Mus. Comp. Zool., II, p. 113, 1870. (Desbonne and Schramm, Crust. de la Guadeloupe, p. 12, 1867). Streets, Proc. Acad. Nat. Sci. Phila., p. 131, 1872. Martens, Arch. für Natur., XXXVIII, p. 84, 1872. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 51, 1873. Miers, Jour. Linn. Soc. London, XIV, p. 664, pl. XIII, figs. 4, 5, 1879; Challenger Rept., Zool., XVII, p. 76, 1886. Aurivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, I, p. 54, pl. 2, fig. 3, 1889.

*Chorinus armatus* Randall, Jour. Acad. Nat. Sci. Phila., VIII, p. 108, 1839.

Dimensions of largest specimen in millimeters: Length, from tip of rostrum to tip of posterior spine, 146.5; width, including spines, 93; length of rostrum, about 53; length of cheliped, 215.

RECORD OF SPECIMENS EXAMINED.

Savannah, Georgia (Buffalo Soc. Nat. Sci.).

? Gulf of Mexico (5843).

Jamaica (Buffalo Soc. Nat. Sci.); U. S. Fish Comm. (7670); T. H. Morgan, 1891.

St. Thomas; A. H. Riise (2458); U. S. Fish Comm. (16177).

A. Milne Edwards records this species as far south as Bahía.

*Pericera cornuta cælata* (A. Milne Edwards).

*Pericera cælata* A. Milne Edwards (Bull. Soc. Philom., June, 1878, p. 5); Miss. Sci. au Mexique, pt. 5, I, p. 200, pl. xv A, fig. 3, 1879; Bull. Mus. Comp. Zool., VIII, p. 1, 1880. Miers, Challenger Rept., Zool., XVII, p. 76, 1886.

*Pericera cornuta* (?) and *Pericera*, sp., Kendall, Bull. U. S. Fish Commission, IX, p. 303, 1889 (1891).

A comparison of a series of specimens from different localities seems to indicate that *Pericera cælata* A. Milne Edwards is only a variety of *P. cornuta* (Herbst), as Miers has suggested (*loc. cit.*). A. Milne Edwards says of *cornuta* that the rostral horns are shorter, the interorbital space narrower and the carapace smoother than in *cælata*. In this collection there are specimens of typical *cornuta*, and a large series of specimens with prominent tubercles on the carapace, in many cases more spiny than in A. Milne Edwards's *cælata*. In a specimen from the Gulf of Mexico (?), the carapace is smooth, and the rostral horns longer than in any specimen with tuberculous carapace; distally the horns are somewhat convergent. In another smooth specimen, from St. Thomas, the rostral horns are shorter than in many tuberculous specimens,

and do not converge. The comparative length of the rostrum in the two forms is, therefore, not constant. Most of the tuberculous forms have more divergent horns and greater interorbital breadth, but a specimen from Pensacola offers an exception to this rule, having horns no more divergent and a frontal breadth no greater than in the typical *cornuta*. There is then no additional character by which the tuberculous forms can be separated from the smooth. A. Milne Edwards's specimen was 36 millimeters long, including the rostrum. We have specimens of the same size which agree well with his description and figure; but larger specimens differ in having a number of the tubercles spiny; in all cases, however, the tubercles are disposed as in the typical *cornuta*.

In the collection of the museum, *P. cornuta calata* ranges from 21 to 30 fathoms in the Gulf of Mexico and Caribbean Sea (A. Milne Edwards records it from 175 fathoms); while *cornuta* is found in shallower water.

The young specimens of both varieties it is almost impossible to separate, and under the supposition that the variation in the adults is the result of the different range in depth, I propose to make the deep water form a subspecies of *cornuta* as the best arrangement that can be made with our present knowledge.

Length of largest specimen, from tip of rostrum to tip of posterior spine, 91; width, including spines, about 65; width, without spines, 47.5; length of rostrum, about 30; length of cheliped, 87 millimeters.

## RECORD OF SPECIMENS EXAMINED.

Pensacola, Florida, from stomach of fish; Silas Stearns (4505, 9373).  
Gulf of Mexico; U. S. Fish Commission, 1885, 1889:

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	Nature of bottom.
		° ' "	° ' "		
16045	2370	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.
15144	2373	29 14 00	85 29 15	25	Co.
15145	2374	29 11 30	85 29 00	26	S. G. brk. Sh.
15147	2405	28 45 00	85 02 00	30	gy. S. brk. Co.
15146	2406	28 46 00	84 49 00	26	crs. S. Co.
9803	2407	28 47 30	84 37 00	24	Co. brk. Sh.
15148	2409	27 04 00	83 21 15	26	crs. gy. S. brk. Sh.
15205	5110	26 19 00	82 50 00	21	Sh. S. bk. Sp.
15150	2412	26 18 30	83 08 45	27	fne. gy. S. bk. Sp. brk. Sh.
15149	2413	26 00 00	82 57 30	24	fne. S. bk. Sp. brk. Sh.
16068	5070	25 23 00	82 54 30	26 <sup>1</sup> / <sub>2</sub>	Sh. S.
15276	5063	25 17 00	82 54 30	27	Sh. S.
9847	2414	25 04 30	82 59 15	26	fne. wh. S. brk. Sh.

Off Cape Catoche, Yucatan; U. S. Fish Commission, 1885:

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	Nature of bottom.
		° ' "	° ' "		
9592	2366	22 28 00	87 02 00	27	fne wh. Co.
16051	2365	22 18 00	87 04 00	24	wh. R. Co.
9567	2860	22 08 30	86 49 00	26	wh. Co.
15143	2363	22 07 30	87 06 00	21	wh. R. Co.



*Pericera triangulata*, sp. nov.

Plate XXXII, fig. 1.

Carapace triangular-ovate, covered with a short, close pubescence. Median spines nine; four on the gastric region, of which the one next the posterior is the longest; one, tuberculous, on the genital region; two on the cardiac, the anterior one the longest of the median spines; and two on the intestinal, the last one projecting almost horizontally over the posterior margin. There are two long spines arranged lengthwise through the center of each branchial region, the anterior one being much nearer the median line. A little farther forward on the branchial region, and in a transverse line with the posterior gastric spine, there is a tubercle. On the branchial there is also a tubercle just above the margin midway between the first and second lateral spines; and a line of three faint tubercles, almost parallel with the antero-lateral margin and between the margin and the dorsal branchial spines. There is a small tubercle on the hepatic region, and a spiny tubercle on the anterior part of each gastric region, almost in line with the first median spine.

Rostral horns straight, widely divergent, with fine hairs on the margins. Preocular spine long, acuminate, strongly upturned; postocular sharp; sinus wide.

Antero-lateral margin slightly convex, armed with three triangular acute spines: one on the hepatic region; one at the lateral angle of the carapace pointing outward and backward; the other half way between, almost parallel with the hepatic spine. From the last lateral spine to the last median spine the margin is marked by an almost straight ridge.

Basal joint of the external antenna with a short tooth at its antero-external angle, and a tubercle at the insertion of the next joint. Remaining joints with a few long marginal cilia. Antenna a little longer than the rostrum and inserted underneath it.

Abdomen of immature female with an uneven carina through the center, caused by a tubercle on each segment.

Chelipeds no longer than first pair of ambulatory legs, slender. Merus tuberculous above; hand long, slender, somewhat compressed, slightly tapering. The chelipeds, with the exception of the hands and fingers, and the ambulatory legs, are clothed with a soft, thick pubescence.

Entire length, 18.7; width, including second lateral spines, 13.2; width without spines, 10.2; width between tips of postocular spines, 8.3 millimeters.

A single specimen was dredged in the Gulf of California, lat. 28° 28' N., long. 112° 04' 30" W., 29 fathoms, gray sand, temperature 62.9°, station 3014, 1889 (16066).



*Pericera atlantica*, sp. nov.

*Pericera*, sp., Smith, Rept. U. S. Commr. of Fisheries for 1885 (1887), p. 627.

Carapace oblong-ovate; spines of the dorsal surface and margin in number and position corresponding to those of *triangulata*; but the spines are shorter and weaker, the two dorsal branchial spines are arranged more longitudinally, and there is no tubercle on the hepatic region and none on the branchial region above the margin. Width of front greater than in *triangulata*. In addition to the close pubescence of the surface, the carapace is covered with long curved hairs. Color in alcohol very light, while *triangulata* is a reddish brown. In other respects this species agrees with *triangulata*, of which it appears to be the Atlantic analogue. It resembles in form specimens of *P. cornuta* of equal size, but the series of dorsal spines, the wider orbital fissures and shorter rostrum separate it from that species.

Entire length, 17; width, including second-lateral spines, 12.3; width without spines, 10.3; width between tips of postocular spines, 9 millimeters.

The above description is made from a young female collected off Key West, Florida, lat.  $24^{\circ} 25' 45''$  N., long.  $81^{\circ} 46'$  W., 45 fath., coral, temperature  $75^{\circ}$ , station 2318, by the U. S. Fish Commission in 1885 (15142). A smaller female was collected in lat.  $35^{\circ} 10' 40''$  N., long.  $75^{\circ} 06' 10''$  W., 68 fath., gray mud, temperature  $71.3^{\circ}$ , station 2268, 1884 (7220).

Two very small specimens from the Gulf of Mexico, lat.  $29^{\circ} 27' 30''$  N., long.  $87^{\circ} 48' 30''$  W., 30 fath., coarse sand, black specks, shells, station 2390, U. S. Fish Commission, 1885 (16044) have been doubtfully referred to this species. They have the form and orbits of *atlantica*, but are too small for exact determination.

*Pericera contigua*, sp. nov.

Plate XXXII, fig. 2.

Carapace oblong-ovate, narrower at the orbits than posteriorly; pubescent; armed with three lateral spines: one on the hepatic, one a little above the margin at the postero-lateral angle of the carapace, and the other, the longest, situated halfway between the two.

Protuberances of the dorsal surface arranged as follows: Three spiny tubercles in a triangle on the gastric, the posterior one on the median line most prominent. On each branchial region a spine in a transverse line with the posterior border of the gastric; another spine midway between this and the lateral epibranchial spine; a spiny tubercle close to the posterior-lateral border of the cardiac region; behind the last a rounded tubercle near the posterior margin; and a spiny tubercle on the anterior portion. On the intestinal region, a spiny tubercle, and

behind it another directed upward just over the posterior margin. The cardiac region has a spine at its summit.

Rostrum slightly deflexed, about one-fifth of the entire length of the carapace. Horns somewhat scythe-shaped, thick, regularly tapering, acuminate; convex to each other, separated at base by a slight cavity, then curving inward and in contact for about two-fifths of their length, finally diverging. Præocular spine prominent, long pointed; postocular acute. Basal joint of antenna broad, armed with one long triangular spine, parallel with the præocular spine and visible in a dorsal view.

Pterygostomian regions pubescent, with a few tubercles. Abdomen carinated.

Chelipeds slender, pubescent, a little longer than the first pair of ambulatory legs; merus with an irregular spiny ridge above; hands tapering; fingers slender, in contact for nearly their whole length. Ambulatory legs stout, very pubescent.

In spite of the long spine of the basal antennal joint, I have placed this species in the genus *Pericera*, because it has the orbits of *Pericera* and the lateral row of spines. The prominence of the antennal spine can hardly be said to be a character sufficient to distinguish *Pericera* and *Macrocaloma*, as there is at least one species of *Macrocaloma* in which it is not visible from above, *M. diplacantha* Stimpson. Besides this character, *contigua* can readily be separated from the other known species of *Pericera* by the peculiar rostrum.

Length including rostrum, 28; width without spines, 16.3; width with spines, 21; width between tips of postocular spines, 14 millimeters.

One female from the Gulf of California, lat.  $25^{\circ} 02' 45''$  N., long.  $110^{\circ} 43' 30''$  W., 21 fathoms, sand, shells, coralline, station 3005, U. S. Fish Comm., 1889 (16067), and two males from lat.  $31^{\circ} 21'$  N., long.  $113^{\circ} 49'$  W., 11 fathoms, sand, broken shells, gravel, temperature  $67^{\circ}$ , station 3024 (16975).

#### *Picroceroides tubularis* Miers.

(Challenger Rept., Zool., xvii, p. 77, pl. x, fig. 1, 1886.

In one male the rostral horns and præocular spines are longer than in the specimen figured by Miers. The largest specimen, a female, measures 20.5 millimeters in length from the base of the horns and 13.5 millimeters in width at the branchial regions. Collected off Havana, Cuba, lat.  $23^{\circ} 10' 25''$  N., long.  $82^{\circ} 20' 24''$  W., 33 fathoms, station 2324, coral, temperature  $79.1^{\circ}$ ; by the U. S. Fish Commission steamer *Albatross*, 1885 (9495); also at station 2138, 1884, lat.  $17^{\circ} 44' 05''$  N., long.  $75^{\circ} 39'$  W., 23 fathoms, coral, broken shells (6928).

This species was collected on the coast of Brazil by the *Challenger*.

**Macrocoeloma trispinosa** (Latreille).

*Pisa trispinosa* (Latreille, Encycl. Méth. Hist. Nat., x, p. 142, 1825).

*Pericera trispinosa* Guérin, Icon. des Crust., pl. 8, fig. 3. Milne Edwards, Hist. Nat. des Crust., i, p. 336, 1834. Saussure, Mém. Soc. Phys. de Genève, xiv, p. 426, 1857. Martens, Archiv. für Natur., xxxviii, p. 84, pl. iv, figs. 4a, 4b, 1872. A. M. Edwards, Miss. Sci. au Mexique, pt. 5, i, p. 52, pl. xv, fig. 2, 1873, and synonymy; Bull. Mus. Comp. Zool., viii, p. 1, 1880. Aurivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, 1, p. 55, pl. 2, fig. 2, 1889. Ives, Proc. Acad. Nat. Sci. Phila., p. 178, 1891.

*Macrocoeloma trispinosa* Miers, Jour. Linn. Soc. London, xiv, p. 665, 1879; Challenger Rept., Zool., xvii, pp. 79, 80, 1886.

In most of our specimens of this variable species the rostral horns are parallel and deflexed for two-thirds of their length, and then become divergent and upturned. In an individual from Fernando de Noronha, the four lobes at the summit of the carapace are very distinct and defined by deep depressions.

## RECORD OF SPECIMENS EXAMINED.

Off North Carolina, U. S. Fish Comm., 1885:

Lat. 33° 42' 45" N., long. 77° 31' W., 17 fath., sand, pebbles, sta. 2616 (16178).

Lat. 33° 37' 15" N., long. 77° 35' 30" W., 17 fath., coarse yellow sand, broken shells, sta. 2618 (16179).

Florida:

Key West, on rocks, low tide; H. Hemphill, 1885 (9279), (Union College Coll.). Eastern Dry Rocks; Dr. E. Palmer, 1884 (9280). Dry Tortugas; Dr. E. Palmer, 1884 (14004). Cedar Keys; Lieut. J. F. Moser, U. S. N., U. S. C. S. S. *Bache*, 1887 (15137). Pensacola; Silas Stearns (4497).

Gulf of Mexico; U. S. Fish Comm., 1885:

Lat. 26° N., long. 82° 57' 30" W., 24 fath., fine sand, black specks, broken shells, station 2413 (15136).

Lat. 27° 04' N., long. 83° 21' 15" W., 26 fath., coarse gray sand, broken shells, station 2409 (16055).

Jamaica, T. H. Morgan, 1891.

St. Thomas; U. S. Fish Comm., 1884 (16180).

Curaçao; U. S. Fish Comm., 1884 (16181).

Brazil; R. Rathbun, Hartt Explorations, 1875-1877:

Fernando de Noronha.

Bay of Bahia, 3 to 4 fathoms.

Found also in the Bermudas.

**Macrocoeloma camptocera** (Stimpson).

Plate XXXIII, fig. 2.

*Pericera camptocera* Stimpson, Bull. Mus. Comp. Zool., ii, p. 112, 1870. A. M. Edwards, Miss. Sci. au Mexique, pt. 5, i, p. 57, 1873.

*Macrocoeloma camptocera* Miers, Challenger Rept., Zool., xvii, pp. 79, 80, 1886.

This species is distinct from *trispinosa*, as in a series from eight localities most of the differences pointed out by Stimpson hold good. The rostrum, however, though usually longer than in the specimens of *trispinosa* examined, varies in length, being from more than one-half to less than one-third the length of the post-frontal portion of the carapace.

The difference in the size of the antennæ, noted by Stimpson, is not constant, but varies with the specimen. The four spines of the dorsal surface are situated on the cardiac, gastric, and at the inner angle of the branchial region. In addition to the close pubescence of the carapace, the front, the gastric region and the lateral portions of the branchial region are clothed with long hairs curved at the extremities. The lateral and posterior spines are longer, more slender and upturned than in *trispinosa*.

Total length of large male, 37 millimeters; total width, 29.5 millimeters.

RECORD OF SPECIMENS EXAMINED.

Florida:

Indian Key, among rocks, near low tide; H. Hemphill (15140). Key West; U. S. Fish Commission, 1885 (15141). Off Cape Sable; Lieut. J. F. Moser, U. S. Navy, U. S. C. S. S. *Bache*, 1887 (13757). Marco; H. Hemphill (15139). Lat. 28° 43' N., long. 82° 56' W., 17 feet (13055), lat. 28° 50' N., long. 83° W. (13043), lat. 28° 56' N., long. 82° 55' W., 19 feet (13064), Cedar Keys (15138); Lieut. Moser.

*Macroceloma diplacantha* (Stimpson).

*Pericera diplacantha* Stimpson, Ann. Lyc. Nat. Hist. N. Y., VII, p. 183, 1860. (Desbonne and Schramm, Crust. de la Guadeloupe, p. 16, pl. v, figs. 16-18, 1867.) A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 55, pl. XIII, fig. 2, 1873.  
*Macrocoloma diplacantha* Miers, Challenger Rept., Zool., XVII, p. 79, 1886.

RECORD OF SPECIMENS EXAMINED.

Key West, Florida; H. Hemphill, 1885; one female (9365).  
St. Thomas; U. S. Fish Comm., 1884; one male (16182).  
Old Providence; U. S. Fish Comm., 1884 (9136).

Recorded from Guadeloupe.

*Macroceloma subparallela* (Stimpson).

*Pericera subparallela* Stimpson, Ann. Lyc. Nat. Hist. N. Y., VII, p. 182, 1860. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 54, pl. XIII, fig. 3, 1873.  
*Pericera vilpini* (Desbonne and Schramm, Crust. de la Guadeloupe, p. 12, pl. v, figs. 14, 15, 1867).  
*Macrocoloma subparallela* Miers, Challenger Rept., Zool., XVII, p. 79, 1886.

A male from Florida (?) (16054), 26 millimeters long, has on the posterior portion of the carapace, back of the transverse row of spines and tubercles, the short, tough pubescence arranged in irregular ridges separated by a network of grooves. This character is less strongly marked in the two females from St. Thomas (16183) and Old Providence (16184), U. S. Fish Commission, 1884.

Recorded from Guadeloupe.

*Macroceloma septemspinosa* Stimpson.

*Pericera septemspinosa* Stimpson, Bull. Mus. Comp. Zool., II, p. 113, 1870. A. M. Edwards, Miss. Sci. au Mexique, pt. 5, I, pp. 59, 200, pl. XV A, fig. 2, 1873.  
*Macrocoloma septemspinosa* Miers, Challenger Rept., Zool., XVII, pp. 79, 80, 1886.

## RECORD OF SPECIMENS EXAMINED.

The specimens were all collected by the U. S. Fish Commission steamer *Albatross* in 1885.

Off South Carolina.

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	Temp.	Nature of bottom.
15127	2311	32 55 00	77 54 00	79	59.1	crs. S. bk. Sp.

Off Key West, Florida.

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	Temp.	Nature of bottom.
15129	2318	24 25 45	81 46 00	45	75	Co.
15128	2317	24 25 45	81 46 45	45	75	Co.

Gulf of Mexico.

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	Nature of bottom.
15135	2407	28 47 30	84 37 00	24	Co. brk. Sh
15134	2406	23 46 00	84 49 00	26	crs. S. Co.
15133	2405	28 45 00	85 02 00	30	gy. S. brk. Co.
15132	2373	29 14 00	85 29 15	25	Co.
15131	2372	29 15 30	85 29 30	27	G.
15130	2370	29 18 15	85 32 00	25	crs. gy. S. brk. Sh.

Found as far south as Bahia.

*Macrocoeloma eutheca* (Stimpson).

*Pericera eutheca* Stimpson, Bull. Mus. Comp. Zool., II, p. 112, 1870. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, pp. 58, 200, pl. xv A, fig. 1, 1873. Aurivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, 1, p. 55, pl. 2, fig. 1, 1889.

*Macrocoeloma eutheca* Miers, Challenger Rept., Zool., xvii, pp. 80, 82, 1886.

To this species I have referred an adult male from off Havana, lat. 23° 10' 51" N., long. 82° 19' 03" W., 163 fath., white and brown coral, station 2323, U. S. Fish Commission, 1885 (9492); also a young male from near Aspinwall, lat. 9° 32' N., long. 79° 54' 30" W., 34 fath., broken shells, station 2146, 1884 (7780); and a young female from lat. 23° 10' 36" N., long. 82° 20' 20" W., 122 fath., coral, station 2168 (7756).

The adult male differs from Stimpson's description in its slightly narrower carapace, longer rostrum with divergent horns, and in the presence of tubercles instead of spines on the gastric region. A. Milne Edwards figures, without remark, a specimen which he calls *eutheca*, although it is much narrower than the one in question, the posterior half of the carapace is much rounded, and the rostral horns are separated by a triangular interspace.

The specimen under examination has the carapace very much narrower posteriorly than in *M. concava* Miers (*Op. cit.*, p. 81, pl. x, fig. 2),



from which it differs also in the protuberances of the carapace. In its proportion it approaches nearer the figure given by Aurivillius (*loc. cit.*). A detailed description of the individual is given below, as a series may in the future connect these two species. The two small specimens in the collection offer no essential differences.

Carapace with a scattered pubescence, subtrapezoidal, concave at the hepatic region; outline of branchial region rounded. The protuberances of the carapace are as follows: three tubercles forming a triangle on the gastric region, the posterior one large and on the median line, the other two inconspicuous; a spiny tubercle on the cardiac region; another longer on the intestinal; on the branchial region, a prominent slender spine just above the margin and behind the broadest part of the carapace; above this spine another very small; on the lateral margin an irregular row of small spines and spiny tubercles, one on the hepatic and about five on the branchial, the one next to the last being the longest, but only two-thirds as long as the epibranchial spine; a branch of this marginal row is continued on the pterygostomian region, which is covered with small tubercles.

Rostrum thin, almost straight; horns separated by a triangulate space; their distal half slender, acuminate; proximal half broad, subtriangular, with convex outer margin.

Orbital sheaths long, prominent. Distance between the tips of the postocular spines a little greater than the width of the carapace at the branchial regions exclusive of spines. On the upper orbital margin there is a tooth above the postocular; and a small spine on the lower margin. Basal joint of external antennæ armed with two sharp spines.

Chelipeds moderate. Merus tuberculous, with a row of four small spines above. Hands long, compressed, finely pubescent. Fingers arched, partially gaping; distal third brown. First pair of ambulatory legs barely reaching the manus.

Entire length, 25; length of rostrum, 6; width at the branchial regions, without spines, 15.6; length of cheliped, 28; length of first ambulatory leg, 20 millimeters.

*M. cutheca* has been collected at the Tortugas, Florida Straits, 12 to 115 fathoms, Santa Cruz, besides other localities.

**Macrocceloma tenuirostra. sp. nov.**

Plate XXXIII, fig. 1.

Carapace much longer than broad, subrectangular, slightly convex; finely pubescent. Epibranchial spine short, slender; posterior margin with a slender upturned spine. Dorsal surface with a blunt median spine above the posterior margin; a tubercle occupying the cardiac region; another far back on the gastric region; remainder of the surface with small depressed tubercles, which on the antero-lateral margin form an indistinct row.



Rostrum very slender, more than half as long as the remainder of the carapace. Horns subcylindrical, tapering to a fine point; outer margin spinulose for its posterior half; a narrow interspace at base; horns contiguous for the middle third; slightly divergent at tips.

Orbits slightly projecting. Præocular and postocular teeth distinct, acute. Basal antennal joint with a short spine at the antero-external angle, visible from above. There is a tooth at the insertion of the second joint, pointing downward; and an obtuse tooth on the outer margin. Remaining joints very slender.

Chelipeds long, slender, pubescent except on the fingers. Merus and carpus tuberculate. Hand long, compressed, not dilated, granulate. Fingers in male gaping at base; tips brown; a short broad tooth on the dactyl. Ambulatory legs very slender, pubescent. First pair much longer than the others. Dactyls spinulose beneath.

Length of carapace, including rostrum and posterior spine, 22; length of rostrum, 7.5; branchial width, including spines, 10; without spines, 8.5; width between tips of præocular teeth, 6 millimeters.

One individual, a male, was taken in the tangles, between Jamaica and Hayti, lat. 17° 44' 05" N., long. 75° 39' W., 23 fathoms, coral, broken shells, station 2138, 1884, U. S. Fish Commission (6929).

This species can not be confounded with any other described species of the genus, on account of its narrow, elongated carapace and slender rostrum.

#### *Microphrys bicornutus* (Latreille).

*Pisa bicornuta* (Latreille, Encyc. Méth., x, p. 141, 1825).

*Pericera bicorna* Milne Edwards, Hist. Nat. des Crust., I, p. 337, 1831.

*Pisa bicorna* Gibbes, Proc. Amer. Assoc. Adv. Sci., 3, p. 170, 1850.

*Pericera bicornuta* Guérin, in La Sagra's Hist. of Cuba, p. XII, 1856. Martens, Arch. für Natur., XXXVIII, p. 85, pl. IV, fig. 5, 1872.

*Pericera bicornis* Sausurre, Rev. et Mag. de Zool., (2), IX, p. 501, 1857; Mém. Soc. Phys. Genève, XIV, p. 428, pl. 1, fig. 3, 1857.

*Milnia bicornuta* Stimpson, Ann. Lye. Nat. Hist. N. Y., VII, p. 180, 1860; Bull. Mus. Comp. Zool., II, p. 111, 1870. Smith, Trans. Conn. Acad., II, pp. 1, 33, 1869; Amer. Jour. Sci., XLVIII, p. 389, 1869.

*Pisa galibica* (Desbonne and Schramm, Crust. de la Guadeloupe, p. 18, 1867).

*Pisa purpurea* (Desbonne and Schramm, *loc. cit.*).

*Onalucantha hirsuta* Streets, Proc. Acad. Nat. Sci. Phila., (3), I, p. 238, 1871. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 65, 1873.

*Microphrys bicornutus* A. Milne Edwards, Nouv. Archiv. Mus. Hist. Nat., VIII, p. 247, 1872; Miss. Sci. au Mexique, pt. 5, I, p. 61, pl. XIV, figs. 2-4, 1873. Miess, Challenger Rept., Zool., XVII, p. 83, 1886. Heilprin, Proc. Acad. Nat. Sci. Phila., p. 318, 1888. Aurivillius, K. Sv. Vet.-Akad. Handl., Bd. 23, I, p. 55, pl. 2, fig. 4, 1889. Pocock, Jour. Linn. Soc. London, XX, p. 507, 1890. Ives, Proc. Acad. Nat. Sci. Phila., p. 178, 1891. Kendall, Bull. U. S. Fish Comm., IX, p. 303, 1889 (1891).

*Microphrys bicornuta* Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 386, 1879.

#### RECORD OF SPECIMENS EXAMINED.

##### Florida:

Cape Florida; Dr. E. Palmer, 1884 (9360). Key Largo; H. Hemphill (15116). Lower Matacumbe Key, among grass, below low tide; H. Hemphill (15114). Indian Key; H. Hemphill (15117). Florida Bay (Union College Coll.).

Key Vacaas (11070). Nights Key (15112), No Name Key (15111), Big Pine Key (15113); H. Hemphill. Harbor Key (Union College Coll.). Key West Harbor; Dr. E. Palmer, 1884 (15115). Key West; D. S. Jordan, 1883 (5749); H. Hemphill (9354); U. S. Fish Commission (11390), (Union College Coll.). Plantation Key (Union College Coll.). Dry Tortugas reefs, from corals and sponges; Dr. E. Palmer, 1884 (9362). Garden Key, Tortugas (15825). Marco; H. Hemphill (16056). Bird Key; U. S. Fish Commission, 1889 (15207).

Bermudas:

Tuckers Island; Dr. George Hawes (13796). Dr. F. V. Hamlin, Wesleyan University (4024).

Bahamas: Andros Island (Stearns Coll.); New Providence, U. S. Fish Commission, 1886 (11369).

Jamaica; T. H. Morgan, 1891.

West Indies, U. S. Fish Commission:

Jamaica (16057); St. Thomas (16186); Curaçao (7580); Old Providence (16185); near Aspinwall, lat.  $9^{\circ} 32' N.$ , long.  $79^{\circ} 54' 30'' W.$ , 34 fathoms, broken shells, sta. 2146 (16187).

Barbados; U. S. Eclipse Expedition to West Africa, 1890 (14883).

Sabanilla, U. S. of Colombia; U. S. Fish Commission, 1884 (16058).

Brazil; R. Rathbun, Hartt Explorations, 1875-1877; Pernambuco; Rio Formoso, Pernambuco; Plataforma, Bahia, in tide pools; Fernando de Noronha.

*Microphrys*, sp.

Carapace broadly triangulate. Regions well defined, tuberculous. There is one sharp spine at the lateral angle of the carapace; a little nearer the median line are two spiny tubercles. Anterior portion of branchial region much swollen in an oblong tuberculous lobe. There are small tubercles on the margin of the hepatic region and on the subbranchial region.

Rostrum depressed, short, reaching to the middle of the third joint of antennæ. Horns narrowly triangular, acute, separated by a narrow V-shaped notch. Præocular angle distinct.

Basal antennal joint with two marginal teeth separated by a narrow sinus; the anterior tooth long, flat, procurved, subacute.

Chelipeds in young female weak, not much longer than first pair of ambulatory legs. Merus with four tubercles on upper margin; carpus tuberculous on outer surface; margins of hand subparallel; fingers evenly dentate, gaping at base.

Ambulatory legs with meral joints spinous above and tuberculous on outer face; carpal joints with one spine above; propodal joints with a broad, rounded, lamelliform process for the articulation of the dactyl, as in *platysoma*.

Length, including rostrum, 12 millimeters; width, without spines, 9 millimeters.

Gulf of California, lat.  $28^{\circ} 16' N.$ , long.  $111^{\circ} 54' W.$ , 22 fathoms, fine gray sand, temperature  $63^{\circ}$ , station 3012, U. S. Fish Commission, 1889 (16774).

This species appears to be nearest to *bicornutus*. The species described from the Pacific coast are so numerous and the literature so inad-

equate that the writer, with only one immature specimen at hand, hesitates to give a name to a species perhaps already overburdened.

Subfamily OTHONINÆ.

*Othonia aculeata* (Gibbes).

Plate XXXIV, figs. 1 and 2.

*Hyas aculeata* Gibbes, Proc. Amer. Assoc. Adv. Sci., 3, p. 171, 1850.

*Othonia aculeata* Stimpson, Ann. Lyc. Nat. Hist., N. Y., VII, p. 49, 1859; Bull. Mus. Comp. Zool., 11, p. 116, 1870 (partim). A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 115, pl. XXIV, fig. 4, 1875. Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 388, 1879 (partim). Anrivillius, K. Sv. Vet.-Akad. Handl., Bd. 23, 1, p. 56, 1889.

See remarks under *Othonia lherminieri* Schramm.

RECORD OF SPECIMENS EXAMINED.

Florida:

Key Largo (14049), Lower Matacumbe Key (15809), Indian Key (14054), Key Vacaas (14072), Nights Key (15089); H. Hemphill. Key West; H. Hemphill (9283); D. S. Jordan (5751), U. S. Fish Commission (7518). Dry Tortugas; Dr. E. Palmer (13896). Sarasota Bay, one young specimen (Union College Coll.).

Bahamas; U. S. Fish Commission, 1886:

Nassau (11401); New Providence (16309).

Found also at St. Thomas.

*Othonia lherminieri* Schramm.

Plate XXXIV, figs. 3 and 4.

*Othonia lherminieri* (Schramm, Crust. de la Guadeloupe, p. 20, 1867). A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 116, pl. XXIV, fig. 5, 1875.

*Othonia aculeata* Stimpson, Bull. Mus. Comp. Zool., 11, p. 116, 1870 (partim). Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 388, 1879 (partim).

*Othonia anisodon* Martens, Archiv. für Natur., p. 83, pl. IV, fig. 3, 1872.

An examination of numerous lots of this species proves it to be very distinct from *O. aculeata* (Gibbes), with which it has been confounded by some authors.

The front is much narrower than in *aculeata*, rostrum more advanced and less deflexed. In *aculeata* a groove runs from the tip of the inner upper angle of the orbit along the margin of the front to the base of the rostrum. This groove is very slight in *lherminieri*. Orbital angles less produced and less conspicuous in *lherminieri*. In both species the basal article of the external antenna has the anterior margin more or less dentate. Second article, in *lherminieri*, with an external lobe which is shorter than in *aculeata* and directed forward rather than outward. Antero-lateral teeth sharp, while in *aculeata* they are obtuse.

Appendages of the male abdomen with the distal third of a light brown color, and gradually tapering; and arranged in the form of a lyre, widely spreading at the tips (Pl. XXXIV, fig. 4). In *aculeata*, the appendages are brown for about the distal half, the brown parts in con-

tact for one-half their length, diverging at the extremities in slight curves convex to each other, each appendage terminating in a right-angled hook, the point of which is directed toward the median line of the carapace (Pl. XXXIV, fig. 2).

The chelipeds are variable, in full grown males usually slender, shorter than the first pair of ambulatory legs and not much stronger than in the female; but in five out of fifteen large males the chelipeds are from one and a half times to nearly twice as long as the carapace, and are of the same character as in *aculeata*. The palms are, however, longer and narrower, and the merus more cylindrical and less angled than in *aculeata*, in which species the merus has three depressed tubercles on the upper margin. The two species agree in the widely gaping fingers of the male, with a tooth near the base of the dactyl, and in the short, weak chelipeds of the female, with fingers evenly dentate and in contact.

The carpal joints of the ambulatory legs are longer and more slender than in *aculeata*, and have a shallow groove on the outer surface which in *aculeata* is broad and deep, leaving a conspicuous ridge on either side.

The carapace of *therminiери* is smoother and more pubescent; that of *aculeata* more tuberculous; a character most noticeable in very young specimens.

#### RECORD OF SPECIMENS EXAMINED.

##### Florida:

Key Largo (15090), Lower Matacumbe Key (14085), No Name Key (14077); H. Hemphill. Harbor Key (Union College Coll.). Key West; H. Hemphill (9286); D. S. Jordan (15093), U. S. Fish Commission (15092). South Florida; S. Stearns (3463). Marco (15091), Punta Rassa (13837), Charlotte Harbor (15096); H. Hemphill. Charlotte Harbor, young (Union College Coll.). Sarasota Bay; H. Hemphill (6424, 6431); (Union College Coll.). Boca Ceiga Bay; H. Hemphill (15094). Off northwest end St. Martins Reef; Lieut. J. F. Moser, U. S. N. (15097). Cedar Keys; H. Hemphill (15095).

Jamaica; T. H. Morgan, 1891.

West Indies; U. S. Fish Commission, 1884:

Jamaica (16188); St. Thomas (16189); Curaçao (16190); Old Providence (9133). Sabanilla, United States of Colombia; U. S. Fish Commission, 1884 (15820).

On the west coast of Florida where *therminiери* is abundant, *aculeata* rarely occurs, but one small specimen in the Union College collection representing that region.

*O. therminiери* has been recorded from Guadaloupe and Cuba.

*Othonia carolinensis*, sp. nov.

Plate XXXV, figs. 1 and 2.

The following description is based on two imperfect male specimens collected off Charleston, S. C., by Mr. R. E. Earll, U. S. Fish Commission, 1880:

Carapace nearly as broad as long, tapering posteriorly, broadest at the third antero-lateral tooth; regions well defined. Width of front intermediate between that of *aculeata* and *therminiери*. Carapace with



scattered tubercles, six or eight on the branchial region, four or five on the mesogastric, two or three on the gastric, and a row near the posterior margin. The rostrum and the inner and outer orbital angles are about equally advanced. Orbital angles acute.

Antero-lateral teeth five, the first three prominent, acute, the fourth smaller, the fifth almost obsolete. Sinus between the second and third not so deep as between the first and second, making a partial coalescence of the second and third teeth, which, however, is very slight as compared with the coalescence of the same teeth in *aculeata* and *therminieri*, where the second tooth is much more feeble than the first and third.

Basal article of the antenna with a shallow emargination on its anterior border outside the insertion of the second article, which is narrower than in *therminieri*, the outer lobe produced forward but little beyond the inner lobe. Remaining articles wanting in our specimens.

Appendages of the male abdomen in contact at about three-fifths of the distance from the distal end, then separating slightly in faint curves concave to each other, and again converging before they finally spread out at the tips. Distal three-fifths yellow, very slender, tapering gradually to a fine point (pl. xxxv, fig. 2).

Chelipeds small, longer than the first pair of ambulatory legs. Merus somewhat angled, unarmed. Palms about one and a half times as long as broad, tapering slightly toward the distal end. Fingers with distal half minutely dentate and in contact; proximal ends gaping, a slight tooth at the base of the dactyl. Ambulatory legs short, sparsely hairy, a longitudinal depression on the carpal joints as in *aculeata*.

Length, 14.2 millimeters; width, 14 millimeters; width of front, 8.7 millimeters.

#### RECORD OF SPECIMENS EXAMINED.

Near Charleston Harbor, 1 to 12 fathoms (3158).

Blackfish Bank, off Charleston, 12 fathoms, from stomach of fish (5755).

An egg-bearing female from Jamaica, T. H. Morgan, 1891, has been doubtfully referred to this species. The carapace is wider posteriorly and narrower in the center, sparsely pubescent. The basal antennal joint is dentate on its anterior margin.

#### *Othonia nicholsi*, sp. nov

Plate xxxv, fig. 3.

Carapace oblong, outline of anterior portion much as in *aculeata*, broader posteriorly. Carapace with strongly marked tubercles of which the larger are arranged as follows: Two on the median line of the mesogastric, the anterior one the smaller; two transversely on the anterior part of the cardiac region; three or four on each branchial region, where they have a tendency to become spiny. Of smaller tubercles, there is one on each gastric lobe, two transversely at the

posterior end of the mesogastric, one on the anterior edge of the cardiac. There is a long line of stout granules a little above the posterior margin; a shorter line of granules behind this; a curved line of four granules just back of the middle of the cardiac region, arranged concave to the posterior margin; and two lines of granules on the posterior half of the branchial region, one following the general direction of the posterior margin, the other shorter, along the inner boundary of the branchial region and meeting the first line at an acute angle. There are other granules scattered on the carapace, but no conspicuous protuberances on the hepatic region.

Lobes of the rostrum acute, emarginate on their inner margins near the tips. Orbital angles sharp, the inner one produced in a line with the tip of the rostrum, the outer angle less produced.

Antero-lateral teeth five, irregular, the second small and somewhat coalesced with the third at its base. Carapace broadest at the fourth tooth. Fifth tooth small.

Basal joint of antenna with its anterior margin cut into three irregular teeth. Second joint with the lobe at its outer angle projecting laterally, but not so long as in *aculeata*.

Meral joint of outer maxillipeds longer than broad; antero-external angle produced; no perceptible notch at internal angle.

Chelipeds in the young female slender, no longer than the first pair of ambulatory legs. Merus somewhat angled; carpus compressed; upper and lower margins of hand subparallel; fingers finely dentate, with a narrow hiatus at their base.

Ambulatory legs with a fine scattered pubescence. Carpal joints distended as in *aculeata* with an uneven ridge above and a longitudinal depression on the outer face.

Length from tip of rostrum, 9 millimeters; greatest width, 8.5 millimeters.

Collected in the Gulf of California, lat.  $29^{\circ} 30' N.$ , long.  $112^{\circ} 40' W.$ , 45 fath., by Lieut. Commander H. E. Nichols, U. S. Navy, 1880-1882 (15822); specimen imperfect, dried.

This species can hardly be identical with *O. picteti* Saussure (Rev. et Mag. de Zoöl. (2), v, p. 357, pl. 13, fig. 2, 1853) as the carapace is broader posteriorly, the tubercles are differently disposed, the front is broader, and the orbital angles more produced than in Saussure's figure.

*Othonia rotunda*, sp. nov.

Plate XXXVI, fig. 1.

Carapace as broad as long, widest at the fourth antero-lateral teeth, much swollen in both directions, transversely rising abruptly from the bases of the antero-lateral teeth, longitudinally rising in almost an equal curve from behind the front and from the posterior margin. Regions faintly indicated. Carapace covered with granules which are more thickly set on the posterior half. Long fine hairs proceed from



the top of the granules. Along the outer margins of the gastric lobes, bunches of granules beset with coarse hairs form a broad line which is continued to the rostrum. Rostral teeth sharp, produced beyond the orbital angles. Preorbital angle obtuse, less produced than the post-orbital, which is subacute.

Antero-lateral teeth usually five in number (in one specimen four), acute, separated to their bases, the first the largest, the others as a rule decreasing regularly in size to the posterior, the tips of the five teeth making a single curve. In the largest specimen, however, the third tooth on one side is much smaller than the fourth; the third tooth on the other side is broken, but, judging from the base, it was intermediate in size between the second and fourth. Anterior margins of teeth thickened. Antero-lateral margin marked by inconspicuous granules irregularly placed, giving the teeth the appearance of being themselves minutely dentate.

Basal article of the antenna with a sharp longitudinal groove through the middle. Tooth at distal extremity slightly more produced than the superior inner angle of the orbit, and visible in a dorsal view. Second article broad, with the outer lobe directed forward, and slightly thickened on the outer and anterior margins. Third article as broad as long.

Surface of the abdomen and the sternum minutely pubescent. Appendages of male abdomen diverging slightly at the distal ends, hooked at the tips.

Chelipeds in both sexes, slender, longer than the ambulatory legs, covered with fine punctures, upper margin with thinly scattered hairs. Merus angled, a few small tubercles on the upper margin. Manus very slightly tapering toward the distal end. Fingers in the male gaping for the proximal third, with a tooth on the dactyl; in the female, evenly dentate and in contact for nearly their whole length, a slight gape at the proximal end. Ambulatory legs very hairy above, first pair reaching to about the middle of the manus.

Length and width of large female, 17.5 millimeters; width of front, 9.8 millimeters. Length and width of largest male, 14 millimeters; width of front, 8.5 millimeters.

Ten specimens were collected at Key West, Fla., by Henry Hemphill, 1885 (15807), and one female at the same locality, by the U. S. Fish Commission in 1884 (16298).

#### Subfamily MITHRACINÆ.

##### *Mithrax* (*Nemausa*) *spinipes* (Bell).

*Pisa spinipes* Bell, Trans. Zoöl. Soc., London, II, p. 50, pl. IX, fig. 6, 1836.

*Nemausa spinipes* A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 82, 1875.

Miers, Jour. Linn. Soc., London, XIV, p. 666, 1879.

*Mithrax* (*Nemausa*) *spinipes* Miers, Challenger Rept. Zoöl., XVII, p. 85, 1886.

A single male from the Gulf of California, has been referred to this species. It is a smaller specimen than the one figured by Bell (*loc. cit.*)

and differs in some respects. The original description says that there are seven or eight lateral spines (A. Milne Edwards says six or seven), and in the figure there are six besides the postorbital. In our specimen there are five besides the postorbital, the fourth being the longest and defining the lateral angle of the carapace, the fifth shorter than the others and elevated a little on the branchial region.

The granules of the anterior two-thirds of the carapace are very inconspicuous. There are two large granules on the median line of the cardiac region, five or six granules on the posterior half of the branchial region, and a conspicuous row of four spiny granules on the intestinal region, making a curve concave to the posterior margin. The two teeth on the upper margin of the orbit are minutely serrate. The orbital sinuses are deeper than in other species of *Mithrax*.

Spine at antero-external angle of basal antennal joint about half as long as the rostrum; remaining tooth spiniform.

Chelipeds in our specimens shorter than the first pair of ambulatory legs. Merus spiny, bearing on the anterior part of its upper margin one or two spines longer and more slender than the rest. Carpus tuberculous, some of the tubercles spiny. Hands slender, smooth. Fingers spoon-shaped, finely dentate, when closed showing but a faint hiatus.

Ambulatory legs pubescent, third and fourth joints with long spines above, third joint with small spines below.

Length from base of rostral horns, 11 millimeters; width, without spines, 8.2 millimeters.

Lat.  $24^{\circ} 55' 15''$  N., long.  $110^{\circ} 39'$  W., 33 fathoms, fine gray sand, broken shells, temperature  $64.5^{\circ}$ , station 3001, U. S. Fish Commission, 1889 (16064).

Bell records this species from the Galapagos Islands, 16 fathoms, and St. Elena, 6 fathoms.

*Mithrax* (*Nemausa*) *acuticornis* (Stimpson).

Plate XXXVII, fig. 1.

*Mithrax acuticornis* Stimpson, Bull. Mus. Comp. Zool., II, p. 116, 1870. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 98, 1875. Miers, Challenger Rept., Zool., XVII, pp. 86, 88, 1886.

*Mithrax* (?) sp., Kendall, Bull. U. S. Fish Commission, IX, p. 303, 1889 (1891).

Stimpson says, "The margin of the orbit is armed with six spiniform teeth, not including those of the antennal joint." In some of the specimens examined the tooth on the inferior margin of the orbit next to the basal antennal joint is obliterated, leaving only five orbital teeth; three on the superior margin, one at the external angle, and one on the inferior margin.

The following are the dimensions of three specimens, the length measured from the base of the rostrum, and the width, not including the spines. No. 1. Length 13; width 10 millimeters; ratio 1 : .77. No. 2.

Length 11; width 9 millimeters; ratio 1 : .82. No. 3. Length 10.5; width 9 millimeters; ratio 1 : .86.

The color in alcohol is a cinnamon brown; fingers of a pinkish tinge.

I think this species is not the young form of *M. cornutus* Saussure. In large specimens of *cornutus*, according to A. Milne Edwards, the length is only a trifle greater than the width; while in our series of *acuticornis*, the larger the specimen the narrower the carapace. In *acuticornis* the præocular spine is proportionally shorter and the antennal spine longer than in Milne Edwards's figure of *cornutus*. In the twenty-two specimens examined there is no trace of spines on the manus.

The young *Mithrax* enumerated by Mr. W. C. Kendall (*loc. cit.*) in his list of Brachyura collected by the schooner *Grampus* on the fishing grounds off the west coast of Florida, undoubtedly belongs to this species.

## RECORD OF SPECIMENS EXAMINED.

Gulf of Mexico; U. S. Fish Commission, 1885 and 1889:

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	Temperature.	Nature of bottom.
		° ' "	° ' "			
15811	2406	28 46 00	84 49 00	26		crs. S. Co.
15819	2409	27 04 00	83 21 15	26		crs. gy. S. brk. Sh.
15817	2411	26 33 30	83 15 30	27	68	fne. wh. S. bk. Sp.
15206	5108	26 19 00	83 11 00	27		S. alge.
15812	2413	26 00 00	82 57 30	24		fne S. bk. Sp. brk. Sh.
15813	2414	25 04 30	82 59 15	26		fne. wh. S. brk. Sh.

Caribbean Sea; U. S. Fish Commission, 1885:

Cat. No.	Station.	Lat. N.	Long. W.	Fathoms.	Nature of bottom.
		° ' "	° ' "		
9502	2330	23 10 48	82 19 15	121	fne. gy. Co.
15818	2365	22 18 00	87 04 00	24	wh. R. Co.
16307	2362	22 08 30	86 53 30	25	Co. S.
15814	2363	22 07 30	87 06 00	21	wh. R. Co.
7760	2136	17 43 30	75 38 25	52	Co. brk. Sh.

*Mithrax spinosissimus* (Lamarek).

*Maia spinosissima* Lamarek, Hist. Nat. des Anim. sans Vert., v, p. 241, 1818; 2d ed., p. 435, 1838.

*Mithrax spinosissimus* Milne Edwards, Mag. Zoöl., II, pls. 2 and 3, 1832; Hist. Nat. des Crust., I, p. 321, 1834. White, Cat. Brit. Mus. Crust., p. 6, 1847. Gibbes, Proc. Amer. Assoc. Adv. Sci., III, p. 172, 1850. Guérin, La Sagra's Hist. of Cuba, p. x, 1856. Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lye. Nat. Hist. N. Y., VII, p. 188, 1860. (Desbonne and Schramm, Crust. de la Guadeloupe, p. 4, pl. VIII, fig. 24, 1867.) Martens, Arch. für Natur., XXXVIII, p. 81, 1872. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 100, 1875. Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 390, 1879 (partim).\* Miers, Challenger Rept. Zoöl., XVII, p. 86, 1886. Aurivillius, K. Sv. Vet.-Akad. Handl., Bd. 23, I, p. 57, 1889.

\*The specimens here recorded by Mr. Kingsley as *spinosissimus* prove to be *aculeatus*.

## RECORD OF SPECIMENS EXAMINED.

## Florida:

G. Wurdemann (2093, 15816). Carysfort Reef; Dr. E. Palmer (9257). Harbor Key (Union College Coll.). Key West; D. S. Jordan (5758); U. S. Fish Commission (7339); H. Hemphill (9258). Garden Key, Tortugas (15081).

Off Havana, Cuba, lat.  $23^{\circ} 10' 48''$  N., long.  $82^{\circ} 19' 15''$  W., 121 fathoms, fine gray coral, station 2330, U. S. Fish Commission, 1885 (9502).

Havana, Cuba; D. S. Jordan (7854).

Guadaloupe; L. Guesde (4095).

*Mithrax pilosus*, sp. nov.

## Plate XXXIX.

Carapace ovate-orbicular; width, without spines, less than the length. Postero-lateral margin rather long for the genus. Entire upper surface of the crab except the fingers, the proximal half of the manus, and the horny tips of the dactyls of the ambulatory legs closely covered with velvety hairs, which are present also on all the spines. Carapace furnished with spinose tubercles as follows: Three, small, arranged longitudinally each side of the median line just behind the rostrum; four transversely on the gastric region in two distant pairs; one further back on the median line of the gastric; three forming a triangle on the cardiac; nine or ten scattered on each branchial region; four in an arcuate row above the posterior margin.

Rostrum composed of two spines strongly incurved at the tips; interspace U-shaped. Preocular spine distinct, upturned.

Lateral spines five, stout, triangular, tip hooked forward. The fifth of the series is on the postero-lateral margin. Farther back is a very small spine. There is also a small spine between the first and second lateral and the second and third lateral. There are three small tubercles on the posterior margin.

Basal antennal joint broad. Spine at the antero-external angle about as long as the rostrum, but not so much advanced, directed outward; tip turned inward. Farther back on the outer margin there is a sharp triangular tooth, and another at the insertion of the second joint. Flagellum rather long. There is a triangular tooth on the lower orbital border next the postocular tooth. Lower surface of the crab covered with a short pubescence.

Chelipeds a little shorter than the next pair of legs, not enlarged. Merus and carpus spiny above, the merus widening at the proximal end, the spines forming a crest on the distal half. Hand compressed, tapering slightly towards the fingers, spinose on the upper surface near the base, a character present in both sexes. Fingers slightly gaping at base. Ambulatory legs very stout. Meral and carpal joints with two rows of spines above; carpal joints with one or two additional spines. Propodal joints short, broadly cylindrical; those of the first three pairs of legs with one or more spinose tubercles. Dactyls broad at the articulation, tapering abruptly to the curved horny tip.



When the hairs are removed, the surface is speckled with small purple spots.

Length of carapace, with rostrum, 28; width, with spines, 30; without spines, 24; length of cheliped, about 26 millimeters.

Three males and one young female were collected at Abaco, Bahamas, by the U. S. Fish Commission steamer *Albatross*, 1886 (16299).

This species is very distinct from any hitherto described. Like *spinosissimus*, *aculeatus*, and *cornutus*, it has spines on the manus, but it is readily distinguished from those species by the stout lateral spines, the dense pubescence, and the short legs.

*Mithrax hemphilli*, sp. nov.

Plate XXXVII, fig. 2.

Carapace oblong-triangular, covered with strong tubercles and granules. Regions distinct. The largest tubercles are arranged as follows: One on either side of the median line on the frontal region; a transverse row of four on the gastric; two on the median line of the mesogastric, the posterior one being the larger; one on the genital region; a line of three across the cardiac forming a transverse curve concave to the front; behind these, one on the median line; about seven strong tubercles on the branchial region, those most posterior being spinous; four spinous tubercles on the intestinal region forming a transverse curve concave to the posterior margin. The two tubercles at the extremities of this curve are continuous with a line of granules which border the posterior margin. The two central protuberances of the marginal line are small tubercles. Besides the strong tubercles of the carapace, there are numerous smaller tubercles and granules, scattered or clustered about the larger tubercles. There is a row of granules just within and parallel to the posterior margin of the mesogastric region.

Rostrum rather long for the genus, but not so long as in *acuticornis*, divided by a U-shaped sinus, each horn bearing two or three minute denticles on its outer margin near the tip. Præocular tooth long, acuminate. The two sinuses of the upper orbital margin small, V-shaped.

Antero-lateral teeth four, stout, conical, pointed, and so embossed with granules about their sides that their margins have more or less the appearance of being denticulate. There is a spiny tubercle in the sinus between the second and third teeth, also a spine near the margin of the branchial region just back of the last antero-lateral tooth, which forms the angle of the carapace.

The basal joint of the antenna is armed with four spines and teeth. There is a long slender spine at the anterior outer angle, and farther back a broad triangular tooth which forms part of the orbital margin. At the base of the movable joint is a prominent spiniform tooth, visible in a dorsal view. Just below the sinus between the two marginal teeth is another small tooth, which, with the one at the base of the



movable joint, forms part of a row of six teeth ending at the subhepatic region. There are several irregular rows of tubercles beneath the lateral teeth of the carapace.

Chelipeds slightly longer than the first pair of ambulatory legs. Merus with spinous margins, a ridge of strong spines above, and tubercles on the inner and outer faces. Carpus covered with tubercles, some of which are spiny. Hands smooth, upper and lower margins nearly parallel. Fingers finely dentate, showing when closed only a slight hiatus at the base.

Ambulatory legs pubescent, with the meral and carpal joints flattened above, both margins of the upper faces with strong spines. Lower margins with a few small spines. Propodal joints with a few weak spines above.

Length, from base of horns, 15.5 millimeters; width, exclusive of spines, 13.5 millimeters; proportion, 1: .871.

Indian Key, Fla.; H. Hemphill, 1885 (15823); one immature female.

A somewhat worn specimen of a male not differing essentially from the above description was collected at Rio Formoso, Pernambuco, Brazil, by R. Rathbun, 1875-1877.

***Mithrax aculeatus* (Herbst).**

*Cancer aculeatus* Herbst, Natur. der Krabben und Krebse, 1, p. 248, pl. XIX, fig. 104, 1782.

*Mithrax aculeatus* Milne Edwards, Mag. de Zool., II, 1832; Hist. Nat. des Crust., 1, p. 321, 1834; (Atlas du Règne Animal de Cuvier, pl. 27, fig. 1). White, Cat. Brit. Mus. Crust., p. 6, 1847. Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lye. Nat. Hist. N. Y., VII, p. 188, 1860. (Desbonne and Schramm, Crust. de la Guadeloupe, p. 5, 1867.) Martens, Arch. für Natur., XXXVIII, p. 81, 1872. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 102, 1875. Miers, Challenger Rept., Zool., XVII, p. 86, 1886. Aurivillius, K. Sv. Vet.-Akad. Handl. Bd. 23. 1, p. 56, 1889.

There are no specimens of large size in the collection. In individuals one and a half inches long the rostrum is no longer than in specimens of *verrucosus* of the same size.

RECORD OF SPECIMENS EXAMINED.

Florida:

Indian Key (14081), Nights Key (14073), Big Pine Key (14030); H. Hemphill. Key West; H. Hemphill (13820). (Union College Coll.). Key West Harbor; Dr. E. Palmer (15810).

Bahamas:

Andros Island, young, fragmentary (Stearns Coll.); Abaco, U. S. Fish Commission, 1886 (16301).

Jamaica; T. H. Morgan, 1891.

St. Thomas, U. S. Fish Commission, 1884 (16191).

San Domingo; W. M. Gabb, 1878 (4171).

Fernando de Noronha, Brazil; R. Rathbun, 1875-'77.

This species has also been recorded from Vera Cruz.

**Mithrax verrucosus** Milne Edwards.

Milne Edwards, Mag. de Zool., II, pl. IV, 1832; Hist. Nat. des Crust., I, p. 321, 1834. White, Cat. Brit. Mus. Crust., p. 6, 1847. Gibbes, Proc. Amer. Assoc. Adv. Sci., III, p. 172, 1850. Guérin, in La Sagra's Hist. of Cuba, p. 10, 1856. Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lyc. Nat. Hist. N. Y., VII, p. 187, 1860. (Desbonne and Schramm, Crust. de la Guadeloupe, p. 6, 1867.) Martens, Arch. für Natur., XXXVIII, p. 82, 1872. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 102, 1875. Miers, Challenger Rept., Zool., XVII, p. 86, 1886. Aurivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, 1, p. 57, 1889. Pocock, Jour. Linn. Soc. London, XX, p. 507, 1890.

## RECORD OF SPECIMENS EXAMINED.

Big Pine Key, Florida, H. Hemphill (15075).  
Swan Island, Caribbean Sea; C. H. Townsend, 1887 (15074).

Previously recorded from the islands of Fernando de Noronha and "St. Barthelemy."

**Mithrax hispidus** (Herbst).

- Cancerhispidus* Herbst, Natur. der Krabben und Krebse, I, p. 247, pl. XVIII, fig. 100, 1782.  
*Maia spini-cincta* Lamarck, Hist. Nat. des Anim. sans Vert., v, p. 241, 1818; 2d ed., p. 434, 1838. Say, Jour. Acad. Nat. Sci. Phila., I, p. 458, 1818.  
*Mithrax spini-cinctus* (Desmarest, Consid. sur les Crust., p. 150, pl. XXIII, figs. 1, 2). Guérin, Iconographie du Règne Animal, Crust., pl. VII, fig. 5, 1828. White, Cat. Brit. Mus. Crust., p. 7, 1847.  
*Mithrax hispidus* Milne Edwards, Mag. de Zool., II, 1832; Hist. Nat. des Crust., I, p. 322, 1834. De Kay, Crust. of New York, p. 4, 1844. White, *op. cit.*, p. 6. Gibbes, Proc. Amer. Assoc. Adv. Sci., III, p. 172, 1850. Saussure, Mém. Soc. Phys. de Genève, XIV, p. 423, 1857. Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lyc. Nat. Hist. N. Y., VII, p. 188, 1860; Bull. Mus. Comp. Zool., II, p. 116, 1870. (Desbonne and Schramm, Crust. de la Guadeloupe, p. 7, 1867.) Smith, Trans. Conn. Acad., II, pp. 2, 32, 1869; Amer. Jour. Sci., XLVIII, p. 389, 1869. Martens, Arch. für Natur., XXXVIII, p. 82, 1872. (Schramm, Rev. et Mag. de Zool., (3), II, p. 342, 1874.) A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 39, pl. XXI, fig. 1, 1875. Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 390, 1879. Miers, Jour. Linn. Soc. London, XIV, p. 667, pl. XIII, figs. 7, 8, 1879; Challenger Rept., Zool., XVII, p. 86, 1886.  
*Mithrax pleuracanthus* Stimpson, *loc. cit.* A. Milne Edwards, *op. cit.*, p. 95, pl. XX, fig. 3. Kingsley, *loc. cit.* Aurivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, 1, p. 58, 1889.  
*Mithrax hispidus* var. *pleuracanthus* Miers, *op. cit.*, p. 88.

A comparison of a number of small specimens from many different localities leads me to believe that the *pleuracanthus* of Stimpson is not even a variety, but merely the young form of *hispidus*. As a rule, the smaller the specimen the more tuberculous the carapace, the sharper the teeth or spines of the orbit and basal joint of the antenna, and the less evident are the punctures of the carapace. The specimens of medium size show characters intermediate between these and the large or typical *hispidus*, so that there seems to be no line where a separation can be made into two distinct varieties. In many young specimens all the antero-lateral teeth except the last have a tendency to

become blunt, and each tooth consists of a central spine or tooth with a cluster of tubercles surrounding it. One female, however, measuring 20 millimeters wide between the tips of the spines, has teeth even more slender than in large specimens. The carpus in small specimens is more or less tuberculous.

Length of largest specimen from tip of rostrum, 86.5 millimeters; width, including spines, 114 millimeters.

RECORD OF SPECIMENS EXAMINED.

Off Cape Fear, North Carolina, 14 to 17 fathoms, stations 2616 to 2619; U. S. Fish Commission, 1885.

Blackfish Banks, off Charleston, South Carolina; R. E. Earll, U. S. Fish Commission, 1880 (5760).

Florida:

Lower Matacumbe Key; H. Hemphill (15077). Indian Key; H. Hemphill (15076). Florida Bay (Union College Coll.). Key Vaccas; H. Hemphill (15806). Between Salt Pond Key and Stock Island; Dr. E. Palmer (9282). Four miles northeast of Key West; Dr. E. Palmer (9253). Key West (Union College Coll.). Eastern Dry Rocks; Dr. E. Palmer (13853). Marco; H. Hemphill (6983). Oyster Bay; H. Hemphill (15079). Sarasota Islands; Walker and Stearns (16050). Sarasota Bay (Union College Coll.). Off northwest end St. Martins Reef; Lieut. J. F. Moser, U. S. Navy, U. S. S. C. S. *Bache*, 1887 (13044). Lat. 28° 56' N., long. 82° 55' W., 19 feet; Lieut. J. F. Moser (13063). Cedar Keys; Lieut. J. F. Moser (12474). Pensacola; S. Stearns, 1882 (4501), from stomach of fish (9372).

Coast of Southern United States; U. S. Fish Commission, 1880 (5780).

Gulf of Mexico; U. S. Fish Commission, 1885:

Lat. 26° N., long. 82° 57' 30" W., 24 fathoms, station 2413 (15080).

Lat. 28° 47' 30" N., long. 84° 37' W., 24 fathoms, station 2407 (15805).

Bermudas; G. Brown Goode, 1876-1877.

Bahamas:

Andros Island (Stearns Coll.); Abaco, U. S. Fish Commission, 1886 (16302).

Jamaica; T. H. Morgan, 1891.

West Indies; U. S. Fish Commission, 1884:

St. Thomas (7651); Curaçao (16192); Old Providence (16193).

Brazil; R. Rathbun, Hartt Explorations, 1875-1877. (All the branchial spines long and sharp):

Bom Fim, Bahia, on stone reef.

Plataforma, Bahia.

*Mithrax sinensis*, sp. nov.

Plate XXXVIII, fig. 2.

Carapace ovate, a little longer than broad, covered with tubercles. A deep sulcus divides the hepatic and branchial from the gastric and cardiac regions.

Front shaped much as in *hispidus*; rostrum consisting of two tuberculiform and granulate teeth separated by a rounded sinus. Præocular angle obtuse; margin denticulate. Orbit with six teeth besides those of the antennal joint: three on the superior margin, one at the external angle, and two on the inferior margin.

Antero-lateral spines four, tuberculiform, irregular in shape; the first most distinct and surrounded by the tubercles of the hepatic region; the second and third each having on its anterior margin a spiny tubercle almost as large as the tooth itself. Last tooth single.

Basal joint of the antenna with a spiniform tooth at the antero-external angle visible from above, and another farther back almost as large; also a smaller tooth at the insertion of the movable joint.

Chelipeds moderate. Merus tuberculous, armed with six spines on the outer margin, a row of smaller spines on either side of the outer margin, and three spines on the inner margin. Carpus strongly tuberculous. Hand slightly compressed, smooth, unarmed, showing scattered punctures under the lens. Fingers stout, prehensile edges crenulate, with a slight hiatus at the base. Ambulatory legs with fine scattered hairs; meral joints having two longitudinal rows of spines above; carpal and propodal joints with short spines above; dactyls spiny below.

Color in alcohol reddish; hands of a deeper hue.

Entire length, 9.2 millimeters; width, including tubercles, 8.9 millimeters.

Gulf of California, lat.  $25^{\circ} 02' 15''$  N., long.  $110^{\circ} 43' 30''$  W., 17 fathoms, sand, shells, station 3002, U. S. Fish Commission, 1889 (16065).

In general appearance this species most nearly resembles *hispidus*; the prominences of the dorsal surface, the shape of the front and preorbital tooth, are very much as in specimens of *hispidus* of the same size. In *sinensis*, however, the last antero-lateral tooth is not long and conspicuous as in *hispidus*, and the lateral angle of the carapace is not well defined.

*Mithrax bahamensis*, sp. nov.

Plate XXXVIII, fig. 1.

Carapace longer than broad, oblong-ovate, covered with a close, tough pubescence. There is a tuft of hair near the inner angle of the branchial region; another behind each gastric lobe; and a line of hair extending from the rostrum back upon the gastric. Gastric region elevated. Tubercles of the surface not prominent. There are two on the frontal region, one on each gastric lobe, five or six on each branchial region besides the marginal tubercles, and four in a curve concave to the posterior margin.

Front deflexed, composed of two sharp incurved horns; interspace broadly U-shaped.

Antero-lateral margin with four protuberances: one on the hepatic region, a spiny tubercle; three on the branchial region of which the first two are tubercles, the last a small spine.

Preocular spine acute, conspicuous; postocular subacute; two intervening teeth, small. There is a small suborbital tooth besides those of the basal joint.

Merus joint of exterior maxillipeds deeply cut at the antero-internal angle.

Basal joint of antenna with a small tooth at the base of the movable joint. Spine at external angle, long, more advanced than the præocular spine, incurved. There is a smaller spine farther back on the margin. Remaining joints long with long hairs on the margins.

There are two subhepatic tubercles, and an irregular longitudinal line of four granules on the vertical face of the subbranchial region.

Chelipeds a little longer than the first pair of ambulatory legs, pubescent like the carapace. Upper margin of merus tuberculous. Carpus with one or two faint tubercles on the posterior end of the upper surface. Manus in the male with upper and lower margins almost parallel, slightly contracted near the fingers. There is a small tooth at the base of the dactyl. Fingers gaping at base. Ambulatory legs with the joints flattened above; margins beset with long hairs.

Color in alcohol, reddish brown; chelipeds lighter. Fingers pinkish red for their proximal half; tips white.

Length of largest specimen 18.8; greatest width, 16.5; width at post-ocular teeth, 11.2 millimeters.

Found with *Mithrax cinctimanus* in sponges at Andros Island, Bahamas, by Mr. Frederick Stearns, 1888.

This species in its shape and antero-lateral teeth most nearly resembles *cinctimanus*, but it is more oblong, more convex, and is also readily distinguished by the absence of sulci on the branchial regions, and by the flattened joints of the ambulatory legs.

***Mithrax cinctimanus* (Stimpson).**

- Mithraculus cinctimanus* Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lyc. Nat. Hist. N. Y., VII, p. 186, 1860. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 112, pl. XXIII, fig. 3, 1875. Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 389, 1879. Aurivillius, K. Sv. Vet.-Akad. Handl., Bd. 23, 1, p. 59, 1889. *Mithrax affinis* (Desbonne and Scramm, Crust. de la Guadeloupe, p. 10, 1867). *Mithrax cinctimanus* Miers, Challenger Rept., Zool., XVII, p. 87, 1886.

RECORD OF SPECIMENS EXAMINED:

Florida:

Cape Florida (15084), Carysport Reef (13897), Rodriguez Creek (14429), Salt Pond Key (14439), Eastern Dry Rocks (14437); Dr. E. Palmer. Harbor Key and Plantation Key (Union College Coll.). Key West; H. Hemphill (13830), (Union College Coll.), U. S. Fish Comm. (16194).

Andros Island, Bahamas (Stearns Coll.).

Jamaica; T. H. Morgan. 1891.

St. Thomas and Curaçao; U. S. Fish Comm., 1884 (16195, 16196).

Found also in the Gulf Mexico.

***Mithrax braziliensis*, sp. nov.**

Plate XXXVI, fig. 2.

Carapace a little broader than long, ovate, slightly convex, without sulci. Regions faintly defined. There is a short line of indistinct flattened tubercles extending back from each rostral lobe, and two or three



tubercles and a few granules near the lateral border of each branchial region. The surface above the posterior margin is covered with scattered granules.

Rostral lobes very short, truncate, minutely crenulate; interspace broadly V-shaped. Upper orbital border with two small teeth.

Antero-lateral spines four; the hepatic spine is subacute, with tubercles on its anterior border; branchial spines sharp, procurved, with a small spine anterior to the first and second. On the postero-lateral border just back of the lateral angle is a minute depressed spine.

Basal antennal joint with three teeth visible from above; the tooth at the insertion of the next joint subacute; the one at the external angle, truncate; posterior tooth acute. Two additional teeth on the suborbital border; that next the postocular tooth acute; the other rounded, serrulate. Subhepatic and subbranchial regions tuberculate.

Chelipeds longer and larger than the next pair of legs. Merus with a row of five sharp spines above, two tubercles on the lower inner border, a triangle of three spines on the inner face, two spines on the upper anterior margin, and two on the outer surface near the anterior border. Carpus with two or three tubercles near the merus and two on the inner margin. Hand smooth, unarmed, with scattered punctures. Fingers slightly gaping at base with a tooth on the dactyl in both sexes. Ambulatory legs with meral and carpal joints spinose above; propodal joints and dactyls unarmed.

Carapace and ambulatory legs finely pubescent. In the largest specimen from Pernambuco the carapace is denuded, probably accidentally, and the surface under the lens presents a cellular structure with scattered punctures. Alcoholic specimens show traces of crimson.

Length of carapace, 15 millimeters; width without spines, 15.5 millimeters.

Mar Grande, Bay of Bahia, one specimen; Rio Formoso, Pernambuco, five specimens; collected by R. Rathbun, 1875-1877.

This species, in the characters of the front, lateral spines, and legs, is very much like *forceps*, from which it is at once separated by the comparative smoothness of the carapace. The sharp tooth on the basal antennal joint, forming part of the suborbital border, is conspicuous in this species. The præorbital angle is not advanced as in *forceps*, and the legs are less hairy.

**Mithrax forceps** (A. Milne Edwards).

*Mithraculus forceps* A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, l, p. 109, pl. XXIII, fig. 1, 1875.

*Mithraculus hirsutipes* Kingsley, Proc. Boston Soc. Nat. Hist., XX, p. 147, 1879; Proc. Acad. Nat. Sci. Phila., XXXI, p. 389, pl. XIV, fig. 1, 1879. Heilprin, *op. cit.*, p. 318, 1888.

*Mithrax forceps* Miers, Challenger Rept., Zool., XVII, pp. 87, 88, 1886.

*Mithrax hirsutipes* Miers, *op. cit.*, p. 87.

A large series of specimens from nineteen different localities shows this species to be extremely variable. The small specimens show marked

variations from those described by A. Milne Edwards, and some of them are identical with Kingsley's *Mithraculus hirsutipes*. The specimens intermediate in size present every gradation in character between the large and small and prove the two extremes to be variations of one species.

Carapace subtriangular, comparatively smooth, the large specimens with scattered punctures, the small ones deeply sculptured. In large specimens three grooves run diagonally backward from near the first, second, and fourth sinuses of the antero-lateral margin to the cardiac region. There are six or seven depressed tubercles along the margin and on the posterior part of the branchial region, two or three along the outer margin of the hepatic region, and two pairs on the frontal region directly behind the lobes of the rostrum. In small specimens the grooves are deeper and the tubercles more prominent; the outline of the mesogastric region is well defined; and there are depressed tubercles on the anterior part of the gastric region.

Lobes of rostrum short, broad; median notch broadly V-shaped. Orbital angles acute, internal angle prominent.

Antero-lateral teeth four, acute, slender, separated by broad rounded sinuses, the first the shortest and in large specimens subacute, the remainder sharp and directed forward, the second one usually the longest and largest. In some specimens there is a small fifth tooth on the postero-lateral margin just back of the fourth tooth.

In large specimens, chelipeds proportionately larger, strong and smooth. Merus with five spines or spiniform tubercles on the upper margin, two on the inner face just below the margin. On the inner margin are two prominent teeth, the anterior one often more or less flattened, broad and obtuse, the posterior one sometimes with a lobe on its posterior margin. Carpus rounded, smooth, sometimes unarmed, often with a short spine or tubercle on the inner margin, anterior to the inner angle, which is often produced in a less conspicuous prominence, giving the carpus the appearance of being double-toothed.

Hands from the articulation to the tips of the fingers much longer than the carapace, broad, compressed; upper and lower margins nearly parallel. Dactyl long, arched, with a tooth one-third the distance from the proximal end. Fingers widely gaping when closed. The fingers are exceedingly variable. Sometimes there are from one to three small irregular teeth or tubercles on the pollex half way to the end. Sometimes there are a few minute teeth on the dactyl instead of one large one. In some of the females and smaller males the dactyl is little arched and the gape is slight.

Ambulatory legs spiny and hairy above, propodal joints slightly hairy below, dactyls equally hairy above and below.

It is the rule that the smaller the specimen the more prominent the protuberances, the sharper the teeth and spines. Small specimens have the meral spines acuminate and occasionally two tubercles on the carpus near its posterior margin.

This species approaches most nearly to *sculptus*, but the antero-lateral teeth are sharp instead of tuberculous, the carapace is invariably wider, the ambulatory legs are less hairy, the color is cinnamon, while in *sculptus* it is sage green or bluish green. While the configuration of the carapace is very variable, in no case is the posterior half deeply sculptured and the anterior half smooth, as is often the case in *sculptus*. Of the three ridges running from the antero-lateral margin to the cardiac region, the two anterior ones are continuous and not broken up by transverse grooves as in *sculptus*.

Length of largest specimen, measuring between the rostral lobes, 30.5; width, without spines, 35 millimeters. Length of three large males, 25; width, 29 millimeters.

## RECORD OF SPECIMENS EXAMINED.

Off Cape Fear, North Carolina, 15 to 17 fathoms, stations 2616, 2618, 2623; U. S. Fish Commission, 1885.

South Carolina; R. E. Earll, U. S. Fish Commission, 1880:

Near Charleston Harbor, 1 to 12 fathoms (3159). Fifteen miles southeast of Charleston (5062, 5823).

Florida:

Cape Florida (13928), Rodriguez Creek (16048), Eastern Dry Rocks (16049); Dr. E. Palmer. Indian Key (16046), Key West (16047); H. Hemphill. Sarasota Bay (Union College Coll.).

Coast of Southern States; U. S. Fish Commission, 1880 (16061).

Bermudas; G. Brown Goode, 1876-'77.

Nassau, Bahamas; U. S. Fish Commission, 1886; one, young (11412).

West Indies; U. S. Fish Commission, 1884:

St. Thomas (16197); Curaçao (16198); Old Providence (9130).

Brazil; R. Rathbun, Hartt Explorations, 1875-'77:

Rio Formoso, Pernambuco; Plataforma, Bahia.

This species is found also in Guiana.

**Mithrax sculptus** (Lamarek).

*Maia sculpta* Lamarek, Hist. Anim. sans Vert., v, p. 242, 1818; 2d ed., p. 436, 1838.

*Mithrax sculptus* Milne Edwards, Mag. de Zool., II, pl. v, 1832; Hist. Nat. des Crust., 1, p. 322, 1834. Gibbes, Proc. Amer. Assoc. Adv. Sci., III, p. 172, 1850. Guérin, La Sagra's Hist. of Cuba, p. 11, 1856. Martens, Archiv für Natur., XXXVIII, p. 83, 1872. Miers, Challenger Rept., Zool., XVII, p. 87, 1886.

*Mithraculus coronatus* White, Cat. Brit. Mus. Crust., p. 7, 1847 (partim).

*Mithrax minutus* Saussure, Mém. Soc. Phys. de Genève, XIV, p. 425, pl. 1, fig. 1, 1857. (Desbonne and Schramm, Crust. de la Guadeloupe, p. 10, 1867.)

*Mithraculus sculptus* Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lye. Nat. Hist. N. Y., VII, p. 186, 1860; Bull. Mus. Comp. Zool., II, p. 117, 1870. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 105, pl. xx, fig. 2, 1875. Miers, Jour. Linn. Soc. London, XIV, p. 667, 1879. Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 389, 1879. Aurivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, 1, p. 58, 1889. Kendall, Bull. U. S. Fish Commission, IX, p. 303, 1889 (1891).

## RECORD OF SPECIMENS EXAMINED.

Florida:

Cape Florida (13892), Caesar's Creek (12411), Rodriguez Creek (13900), Dry Tortugas (13891); Dr. E. Palmer, 1884. Key Largo (14050), Indian Key

(14058), Key Vaccas (15087), Nights Key (15085), Big Pine Key (15086); H. Hemphill. Key West; H. Hemphill (13816), (Union College Coll.), U. S. Fish Commission, 1884 (16303). Bird Key; U. S. Fish Commission, 1889 (15208).

Bahamas: Andros Island (Stearns Coll.); New Providence (16310), Abaco (16304); U. S. Fish Commission, 1886.

Jamaica; U. S. Fish Commission, 1884 (15821); T. H. Morgan, 1891.

Swan Island; C. H. Townsend, 1887 (13984).

Barbados; U. S. Eclipse Expedition, 1890 (14885).

St. Thomas (7650), Old Providence (16199); U. S. Fish Commission, 1884.

Previously recorded from Fernando Noronha, 7 to 20 fathoms.

#### *Mithrax coronatus* (Herbst).

*Cancer coronatus* Herbst, Natur. der Krabben und Krebse, I, p. 184, pl. XI, fig. 63, 1782.

*Cancer coryphe* Herbst, *op. cit.*, III, p. 8, 1801.

*Mithraculus coronatus* White, Cat. Brit. Mus. Crust., p. 7, 1847 (partim). Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lye. Nat. Hist. N. Y., VII, p. 186, 1860; Bull. Mus. Comp. Zool., II, p. 118, 1870. Smith, Trans. Conn. Acad., II, pp. 1, 32, 1869; Amer. Jour. Sci., XLVIII, p. 389, 1869. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 106, pl. XX, fig. 1, 1875. Kingsley, Proc. Acad. Nat. Sci. Phila., XXXI, p. 388, 1879. Anrivillius, K. Sv. Vet.-Akad. Hand., Bd. 23, I, p. 58, pl. III, fig. 8, 1889.

*Mithrax sculptus* (Desbonne and Schramm, Crust. de la Guadeloupe, p. 9, 1867).

*Mithrax coronatus* Miers, Challenger Rept., Zool., XVII, pp. 87, 89, 1886. Pocock, Jour. Linn. Soc. London, XX, p. 510, 1890

#### RECORD OF SPECIMENS EXAMINED.

##### Florida:

Indian Key, H. Hemphill (15083); Key West, H. Hemphill (15082), (Union College Coll.).

Abaco, Bahamas; U. S. Fish Commission, 1886 (11374).

Jamaica; T. H. Morgan, 1891.

St. Thomas; U. S. Fish Commission, 1884 (16200); Hartt Explorations, 1870.

Brazil; R. Rathbun, Hartt Explorations, 1875-'77: Pernambuco; Rio Formoso, Pernambuco; Mar Grande, Bahia; Fernando de Noronha.

Found also in Central America and in the West Indies to 30 fathoms.

#### *Mithrax denticulatus* Bell.

*Mithrax denticulatus* Bell, Trans. Zool. Soc. London, II, p. 54, pl. XI, fig. 2, 1836. Miers, Challenger Rept., Zool., XVII, p. 87, 1886.

*Mithraculus denticulatus* White, Cat. Brit. Mus. Crust., p. 7, 1847. Stimpson, Amer. Jour. Sci., XXIX, p. 132, 1860; Ann. Lye. Nat. Hist. N. Y., VII, p. 187, 1860. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 109, pl. XXIII, fig. 4, 1875.

Entire length of carapace in largest male, 13; width, including spines, 19 millimeters; in another male, length, 12; width, 16.8 millimeters.

Panama; Capt. John Dow (3209).

This species ranges from California to Ecuador.

**Mithrax nodosus** Bell.

*Mithrax nodosus* Bell, Trans. Zool. Soc. London, II, p. 53, pl. XI, fig. 1, 1836. Miers, Challenger Rept., Zool., xvii, p. 87, 1886.

*Mithraculus nodosus* White, Cat. Brit. Mus. Crust., p. 7, 1847. Stimpson, Amer. Jour. Sci., xxix, p. 132, 1860. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 108, pl. xxiii, fig. 5, 1875.

A single soft-shell specimen of a male without chelipeds was collected at the Chatham Island, Galapagos Archipelago, by Dr. W. H. Jones, U. S. Navy (13873).

Previously recorded from Chili.

**Mithrax cristulipes** (Stimpson).

*Teleophrys cristulipes* Stimpson, Ann. Lyc. Nat. Hist. N. Y., vii, p. 190, pl. II, fig. 2, 1860; Amer. Jour. Sci., xxix, p. 133, 1860. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, 1, p. 113, pl. xix, fig. 2, 1875.

*Mithrax (Teleophrys) cristulipes* Miers, Jour. Lim. Soc. London, xiv, p. 667, 1879. Pocock, *op. cit.*, xx, p. 508, 1890.

? *Mithrax cristulipes* Miers, Challenger Rept., Zool., xvii, p. 87, 1886.

Two specimens, male and female, were collected at Rio Formoso, Pernambuco, Brazil, by R. Rathbun during the Hartt explorations of 1875-77. The types from Cape St. Lucas, said to be in the Smithsonian Institution, are not extant. California and the Bay of Panama are also given as localities for this species. Mr. R. I. Pocock, *loc. cit.*, gives a detailed description of a specimen found at Fernando de Noronha, which he doubtfully refers to this species.

The male from Pernambuco agrees with his specimen in nearly every detail. The tubercles of the antero-lateral margin are very small. The merus of the cheliped is furnished below with three small teeth. There is one minute tooth on the middle of the pollex. The teeth of all the legs are much smaller and less conspicuous than in the figures of *cristulipes*. The female has smaller chelipeds, fingers less gaping, two small teeth on the pollex in the gape, and no teeth on the lower margin of the merus.

As this Museum possesses no specimens from the west coast of America, and as the individuals at hand are more or less imperfect, the writer is unwilling to designate them as a distinct species.

**Mithrax** sp., Miers.

*Op. cit.*, p. 89, pl. x, fig. 3.

An immature female collected off Cape Catoche, Yucatan, lat. 22° 18' N., long. 87° 04' W., 24 fathoms, station 2365, by the U. S. Fish Commission, 1885 (16052), apparently belongs to the same species as the young specimens described by Miers from Fernando Noronha, 7 to 20 fathoms. As our specimen is no larger than those collected by the *Challenger*, and has only one cheliped and one of the first pair of ambulatory legs, I prefer not to give it a name, hoping that at some future time more perfect specimens may be obtained.



It agrees with the specimens described in all essential particulars. The tubercles of the frontal region are, however, not apparent. The tooth at the antero-external angle of the basal joint is sharp and curved. The ambulatory leg is bordered above and below by a thin lamellate crest cut into teeth, which are arranged almost as in the figure cited. This crest is most noticeable on the meral joint. The teeth of the merus of the cheliped are also thin, and partake of the same character.

***Thoe puella* Stimpson.**

*Thoe puella* Stimpson, Ann. Lye. Nat. Hist. N. Y., VII, p. 178, 1860. A. Milne Edwards, Miss. Sci. au Mexique, pt. 5, I, p. 122, pl. XIX, fig. 3, 1873.

*Pisa latipes* (Desbonne and Schramm, Crust. de la Guadeloupe, p. 19, 1867.)

The length of the largest specimen, a female, is 11.7 millimeters; width, 10 millimeters. The merus of the last pair of ambulatory legs is dilated outwardly, but to a less extent than in the first three pairs.

RECORD OF SPECIMENS EXAMINED.

Key West, Florida; H. Hemphill, 1885 (14442), (Union College Coll.).

Jamaica; T. H. Morgan, 1891.

St. Thomas; U. S. Fish Commission, 1884 (16201).

Other localities for this species are Tortugas and Guadeloupe.

LIST OF SPECIES OF PERICERIDÆ NOT REPRESENTED IN THE COLLECTION OF THE U. S. NATIONAL MUSEUM.

WEST INDIAN REGION.

<i>Lissa bicarinata</i> Aurivillius .....	St. Barthelemy
<i>Leptopisa setirostris</i> Stimpson .....	Tortugas
<i>Sisypheus compressus</i> Desbonne and Schramm .....	Guadeloupe
<i>Pericera spinosissima</i> Saussure .....	West Indies
<i>Macrocaloma diacantha</i> (A. M. Edwards) .....	Majores, 12 fathoms
<i>levigata</i> (Stimpson) .....	St. Thomas; Guadeloupe
<i>Othonia quadridentata</i> Miers (= ? <i>quinquedentata</i> Aurivillius; St. Thomas) .....	West Indies
<i>levigata</i> A. M. Edwards .....	West Indies
<i>Mithrax cornutus</i> Saussure .....	West Indies; Florida Straits to 589 fathoms; also Bahia
<i>depressus</i> A. M. Edwards .....	Guadeloupe; Woman Key
<i>larimanns</i> Desbonne and Schramm .....	Guadeloupe
<i>leucomelas</i> Desbonne and Schramm .....	Guadeloupe
<i>nudus</i> A. M. Edwards .....	Guadeloupe
( <i>Nemansa</i> ) <i>rostrata</i> A. M. Edwards .....	Gulf of Mexico; Caribbean Sea to 163 fathoms.
<i>holderi</i> Stimpson .....	Tortugas
<i>ruber</i> (Stimpson) .....	Cuba

EAST COAST OF SOUTH AMERICA.

<i>Libinia brasiliensis</i> (Heller) .....	Brazil
<i>coccinea</i> Dana .....	East coast of Patagonia, 30 fathoms
<i>gibbosa</i> A. M. Edwards .....	Brazil
<i>spinosa</i> M. Edwards .....	Brazil; Patagonia; also Chili
<i>ferreira</i> Capello .....	? Brazil
<i>Macrocaloma concava</i> Miers .....	Bahia; Fernando Noronha, 7 to 20 fathoms

## WEST COAST OF NORTH AMERICA.

<i>Anaptychus cornutus</i> Stimpson	.....	Gulf of California
<i>Microphrys depressa</i> (Lockington)	.....	Lower California
<i>error</i> Kingsley	.....	Lower California
<i>platysoma</i> (Stimpson)	.....	Lower California
<i>tumidus</i> (Lockington)	.....	San Diego, Cal.; Lower California
(= <i>Perinca tumidus</i> (Dana))	.....	Sandwich Islands
<i>Macrocaloma heptacantha</i> (Bell)	.....	Puerto Portrero, Central America
<i>rillosa</i> (Bell)	.....	California; Cape St. Lucas; also Ecuador
<i>Othonia picteti</i> Saussure	.....	Mazatlan
<i>Thoe sulcata</i> Stimpson	.....	Cape St. Lucas; Mazatlan; Gulf of California
<i>Mithrax areolatus</i> Lockington	.....	Gulf of California
<i>armatus</i> Saussure	.....	Mazatlan
<i>pygmaeus</i> Bell	.....	Panama, 10 fathoms
<i>triangulatus</i> Lockington	.....	Gulf of California
<i>trigonopus</i> Cano	.....	Panama
<i>tuberculatus</i> Stimpson	.....	Cape St. Lucas; California; Mazatlan; also St. Barthelemy (Aurivillius).

## WEST COAST OF SOUTH AMERICA.

<i>Libinia gracilipes</i> Miers	.....	Coast of Chiloe, 45 fathoms
<i>smithii</i> Miers	.....	Coast of Chiloe, 245 fathoms
<i>rostrata</i> Bell	.....	Peru
<i>subspinosa</i> Streets	.....	Chili
<i>Pericera orata</i> Bell	.....	Galapagos Islands
<i>Microphrys aculeatus</i> (Bell)	.....	Galapagos Islands
<i>weddellii</i> M. Edwards	.....	Peru; also West Indies
<i>Othonia quinqueidentata</i> Bell	.....	Galapagos Islands; Panama
<i>serdentata</i> Bell	.....	Galapagos Islands; also Cape St. Lucas
<i>Thoe crosa</i> Bell	.....	Galapagos Islands; Panama
<i>Mithrax rostratus</i> Bell	.....	? West coast of South America
<i>ursus</i> Bell	.....	Galapagos Islands; Chili
<i>tumidus</i> Cano	.....	Payta, Peru

## EAST INDIAN REGION.

<i>Pyria pubescens</i> Dana	.....	Fiji or Tongatabu
<i>Cyphocarcinus minutus</i> A. Milne Edwards	.....	Madagascar
<i>Podohuenia erythraea</i> Cano	.....	Red Sea
<i>Tiarinia elegans</i> Haswell	.....	Australia
<i>mammillata</i> Haswell	.....	Australia
<i>spinosirostris</i> Haswell	.....	Cape Grenville; Torres Straits
<i>angusta</i> Dana	.....	Sooloo Harbor
<i>gracilis</i> Dana	.....	Sooloo Sea
<i>verrucosa</i> Heller	.....	Nicobar Island
<i>depressa</i> Stimpson	.....	Ousima
<i>spinigera</i> Stimpson	.....	Ousima; Tauegasima
<i>tiarata</i> (Adams and White)	.....	Philippine Islands
<i>setigera</i> (Adams and White)	.....	Philippine Islands
<i>Tylocarcinus styx</i> (Herbst)	.....	Fiji; Mauritius; Jedda; etc.
<i>gracilis</i> Miers	.....	Eastern Seas
<i>Macrocaloma trigona</i> (Dana)	.....	Fiji
<i>Entomonyx spinosus</i> Miers	.....	Western Indian Ocean, 19 to 24 fathoms
<i>Cyclocaloma tuberculatum</i> Miers	.....	Amboina
<i>Parathoe rotundata</i> Miers	.....	Fiji; Port Curtis; Suez Gulf

## LOCALITY UNKNOWN.

*Paramya dehaani* White.

EXTRACT FROM THE UNPUBLISHED REPORT OF DR. WILLIAM STIMPSON,  
ON THE CRUSTACEA OF THE NORTH PACIFIC EXPLORING EXPEDI-  
TION, 1853 TO 1856.

*Tiarinia cornigera* (Latreille).

Our specimens differ from those described and figured by Dana in having, at the summit of the intestinal region, one very large and two inconspicuous tubercles, instead of three of equal size. They are also much larger, some being nearly 2 inches in length.

They are found on the reefs at low-water mark, and were collected at the Amakirrima Islands by the officers of the steamer *John Hancock*, and by myself at Loo Choo and Ousima.

*Tiarinia depressa* Stimpson.

(Plate XL, fig. 1.)

Carapax in shape much like that of *T. cornigera*; proportion of breadth to length, 1:1.5; form depressed; upper surface with tubercles less numerous and more flattened than in the *cornigera*. There is a small marginal spine on each side at the branchial region, above which an arc of four depressed warts extends around the side; the first (posterior) one largest and placed a little behind the level of the trituberculated cardiac protuberance; the fourth and smallest is near the anterior extremity of the branchial region, with a still smaller one before it. A submarginal channel of some depth passes around behind, above the intestinal region. Posteriorly, at the upper or intestinal margin, there is a subtriangular median tubercle, with a smaller trilobate one on either side of it; on the lower margin there are four small tubercles.

On the stomachal region there are three warts in the median line, the anterior one smallest and placed some little distance before the others, with a wart on either side of it; behind the posterior one there are two warts placed close together. The ambulatory feet are depressed, smooth above, their edges not spinulose, but sparsely fringed with stout clavate setæ. Only one specimen of this species was taken, a sterile female, the dimensions of which are: length, 0.77; breadth, 0.52; length of a foot of second pair, 0.67 inch.

In the characters of the rostrum, orbits, etc., our species much resembles *T. cornigera*. The tooth at the external angle of the basal joint of the external antenna is, however, less prominent than in that species, and the rostrum curves upward at its slender tip, where the horns are slightly divergent. It is more depressed than *T. tiarata*; the forks of the rostrum are less divergent; the preorbital spine less prominent, and is wanting in the woolly hairs characteristic of that species.

The specimen was taken at the Island of Ousima, which forms one of the chain connecting southern Japan with Loo Choo.

*Tiarinia spinigera* Stimpson.

(Plate XL, fig. 2.)

Carapax somewhat elongated, the greatest breadth, excluding spines, being considerably less than the postorbital length. Upper surface not very convex except at the well-developed gastric region; cardiac region, with three tubercles at the summit, placed as usual in the genus; on either side of this on the branchial regions there are three sharp, erect spines, the outer one being lateral a little larger than the others, and somewhat inclined outward. There is a single longish clavate seta at the summit of each spine. Upper posterior margin with seven small spines, the middle one largest at the summit of the intestinal region; lower posterior margin also with seven spines, but of much smaller size. The sides of the carapax, including the hepatic regions, and the posterior half of the upper surface are covered with small, sharp tubercles occupying the interspaces between the spines and larger warts; while the gastric region and parts adjacent on either side, although irregularly protuberant, are nearly smooth. Rostrum sharp and very slender, in length equaling two-thirds of the interorbital width; horns contiguous throughout their length. Preorbital tooth prominently salient, very slender and sharp, curved upward; a single closed fissure separates it from the somewhat prominent postorbital tooth. The basal article of the external antennæ is broader than long; its antero-exterior tooth lies close beneath the preorbital tooth and helps to form the deep tubular orbit, which incloses the eye as in a sheath. The edges of the rostrum and of the external antennæ are, as usual, ciliated; and there are some few crispate setæ on the prominent parts of the carapax anteriorly and at the sides.

In the feet of the anterior pair the carpus and meros are sparingly spinulose above. The ambulatory feet are almost smooth; those of the first pair in the female are scarcely as long as the carapax. The abdomen in the female is tomentose. Two specimens only of this species were found, both females. The dimensions of the largest are: length of the carapax, 0.79; breadth, including spines, 0.57 inch.

This species occurred at the islands Ousima and Tanegasima, of the southern Japanese chain.

*Perinea tumida* \* Dana.

Crust. U. S. Expl. Exped., 1, p. 114, pl. IV, fig. 1, 1852.

Our specimens agree well with those of Dana, except that in the male the pincers are much smaller and less gaping, while the size of the carapax is the same; this may, however, result from a difference of age and development.

Taken from branches of *Madrepora* found below low-water mark near Hila, Island of Hawaii.

\* Now included in the genus *Microphrys*.