BULLETIN OF THE VANDERBILT MARINE MUSEUM

VOLUME III

Scientific Results of the Cruises of the Yachts "Eagle" and "Ara", 1921-1928, William K. Vanderbilt, Commanding.

CRUSTACEA: ANOMURA, MACRURA, SCHIZOPODA, ISOPODA, AMPHIPODA, MYSIDACEA, CIRRIPEDIA, AND COPEPODA

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PREFACE.

The various expeditions of the "Eagle" and the "Ara" under the leadership of William K. Vanderbilt constitute another link in the long series of noteworthy explorations which have added to our knowledge of the oceans of the world.

Such voyages may be divided into two categories: first, the expeditions initiated and carried out under govermental auspices, and, secondly, those due to the leadership and munificence of private individuals.

Most of the great oceanic expeditions of the past half century have been undertaken by professional scientists and navigators, and as national enterprises. More recently, the lure which clings to the great areas of the deep, as yet unexplored, has attracted the attention of men who, like Mr. Vanderbilt, are able to devote their own resources and energy to this problem. The adequate equipment of such a vessel as the "Ara" with dredges, trawls, sounding apparatus and other instruments fitted for both shallow water observations and those of greater oceanic depths is no small task. Mr. Vanderbilt's success as navigator and explorer, and his appreciation of the significance of the scientific opportunities of his voyages are amply attested by the extensive marine collections brought back by him and by the energy and enthusiasm with which he has pushed their display in the Vanderbilt Marine Museum and in the scientific investigations and publications based upon them.

The attractively written and beautifully illustrated narratives of the voyages to the Galapagos and around the world on the "Ara" are greatly appreciated additions to the literature of oceanic voyages. The present volume, by Miss Lee Boone, is the third volume on the more technical results of his expeditions, and, together with a companion volume already published, is devoted to the important Crustacean collections. It is a noteworthy illustration of the contribution which can be made to the scientific exploration of the seas by one who reckons himself an amateur, and yet whose devotion to science impels him to place at its disposal his energy and resources with such outstanding results.

HENRY FAIRFIELD OSBORN.

American Museum of Natural History,
October 10th, 1930.

CRUSTACEA: ANOMURA, MACRURA, SCHIZOPODA, ISOPODA, AMPHIPODA, MYSIDACEA, CIRRIPEDIA AND COPEPODA,

CRUISES OF THE "EAGLE" AND "ARA," 1921-1928, WILLIAM K. VANDERBILT, COMMANDING.

By LEE BOONE.

INTRODUCTION.

The Crustacean collection of the Vanderbilt Marine Museum was obtained by Mr. William K. Vanderbilt on a series of cruises conducted in his yachts, *"Eagle"* and *"Ara,"* during parts of the years 1921 to 1928, inclusive. The report on the Stomatopoda and Brachyuran Crustacea collected on these expeditions comprises Volume II of the bulletin series of the Vanderbilt Marine Museum. The Anomura, Macrura, Schizopoda, Isopoda, Amphipoda, Mysidacea, Cirripedia and Copepoda form the subject of the present volume.

Four distinctly separate faunal regions are involved in these explorations: (*a*) The West Indian region, from which the greater percentage of species was obtained. Separate cruises during the years 1921, 1922, 1923, 1924 and 1925 were conducted by Mr. Vanderbilt in this region. Some very valuable material was obtained in the West Indies in 1926 and also in 1928, supplementing the Galapagan expeditions of those years.

(*b*) The Labrador-New England region is represented by material collected in the waters of Newfoundland, Nova Scotia, eastern Canada, the coast of Maine and of New York, including Long Island Sound, in 1921, 1922, 1924 and 1926.

(*c*) The tropical American Pacific fauna is represented by explorations in the Galapagos Islands, the west coast of Costa Rica and of Panama, including the Perlas Islands, and Cocos Island, also several deep-sea stations in this region, during the expeditions of 1926 and 1928.

(*d*) The Mediterranean fauna, with especial reference to the north coasts of Morocco, deep-sea dredgings off the coast of southern France, off Sardinia and off Monaco and explorations of the littoral fauna of the Adriatic Sea.

The bathymetric distribution of the species taken in each of these major regions ranges from terrestrial and littoral to true deep-sea forms, the deep-sea stations ranging in depth from 300 to 1100 fathoms. The annotated discussion of the collection is presented with reference to its systematic classification. A list of the species found in each major faunal region is given also.

The great value of the collection lies in the astonishing number of rare species it possesses and in the related extension of our knowledge of the geographic and bathymetric distribution of these forms, as presented in the systematic discussion. Much hitherto unpublished data on the colors of the various species was made in field-sketches by Mr. Vanderbilt, during all of the cruises, except those to the Galapagos Islands, on which his staff artist, Mr. W. E. Belanske, continued this work under Mr. Vanderbilt's direction. A few of these color plates of the Crustacea have been published in Mr. Vanderbilt's "To the Galapagos on the '*Ara*' "; a great many more are in the study collections of the Vanderbilt Marine Museum. This volume also contains complete maps of the cruises of 1926 and 1928. Valuable notes on the habits of some of the species were made in the field by Mr. Vanderbilt; these notes have been augmented by field-notes made by the present writer while on various expeditions during the past decade.

Although the United States was the pioneer in deep-sea exploration it is an astounding fact that we know less today of the living inhabitants of our ocean depths than we do of the fossilized dwellers of the ancient Cambrian Seas. The representatives herein reported of the eight major orders of Crustacea obtained by the "*Eagle*" and "*Ara*" present an incomplete synoptic series of the diversification existing in crustaceous organisms. The North American species of only two of these eight orders have been exhaustively reported, the Cirripedia, by Dr. Henry A. Pilsbry, and the parasitic division of the Copepoda, by Dr. Charles B. Wilson. Few life histories are imperfectly known among the hundreds of described species of American Crustacea. These fragments of knowledge indicate an indescribably rich field for students of evolution. The Macrura possess the most complete metamorphosis found in the Decapoda. The ability of certain *Penaeidae* to develop segments in the larva from before backwards exhibits a very primitive character not known in other Decapoda but showing clearly the affinities of the higher with the lower forms of Crustacea. Certain of the *Eryonidae* are living examples of the blind, claw-footed dwellers of the Triassic Seas. The vital place of Crustacea in the

ecology of the sea is acknowledged, yet little work has been done in America on this subject. There is great need for a thorough monographic report of American Crustacea.

ACKNOWLEDGMENTS.

As during the preparation of the preceding volume, Mr. Vanderbilt has generously placed unexcelled facilities at my disposal throughout the present investigation. I have also enjoyed full privileges of research in the American Museum of Natural History and am especially indebted to Dr. R. W. Miner, curator of the Department of Lower Invertebrates, and to Miss Hazel Gay and Miss Margaret Titcomb of the Library. The colleagues and institutions whose friendly coöperation contributed to the success of the first volume have continued their kindness during this report. The line drawings of the present volume were made by Mrs. Helen Ziska, who also retouched photographic illustrations which were made, also under my direction, by Mr. Julius Kirschner of the photographic laboratory of the American Museum of Natural History. The color plates referred to were prepared by Mr. W. E. Belanske, under Mr. Vanderbilt's direction.

GEOGRAPHICAL DISTRIBUTION OF THE SPECIES.

WEST INDIAN FAUNA.

Anomura.

Petrochirus bahamensis (Herbst).

Two large specimens, from the Florida Reefs, 1923.

Parapagurus pilosimanus abyssorum Henderson.

Two males, dredged in 1100 fms., off Miami, Fla., March 3, 1926, inhabiting the shell, *Natica* species indet., encased by the anemone, *Epizoanthus paguriphilus* Verrill. Rare.

Coenobita clypeatus (Herbst).

Two specimens, from the shores of Corrientes Bay, Cuba, February 22, 1924. One specimen from the Florida Reefs, 1923.

Munida stimpsoni A. Milne Edwards.

One, young, Porto Padre, Cuba, 2 fms.

Munidopsis simplex A. Milne Edwards.

Eighteen specimens, dredged in 1100 fms., off Miami, Fla., March 31, 1926. Very rare.

Ptychogaster spinifera A. Milne Edwards.

One specimen, dredged 7 miles S. W. of Alligator Reef, Fla., 150 fms., March 30, 1926. Very rare.

Lithodes maja LEACH, Edinburgh Encycl., 7, 1814-17; Trans. Linn. Soc., vol. 11, p. 352, 1815; Malacostraca Podophthalmata Britanniae, 1815, London, tab. 24, text on opposite page (color plate).

Maia araignee LATREILLE, Hist. Nat. des Crust. et des Insectes, vol. 6, p. 91, Le Crabe epineux Ascan. Icon. Rer. Natur., tab. XXXX.

Lithodes maia S. I. SMITH, Proc. U. S. Mus., vol. 6, p. 25, 1883.

Family: GALATHEIDAE.

Genus: **MUNIDA** Leach.

Munida gregaria (Fabricius).

Plate 12.

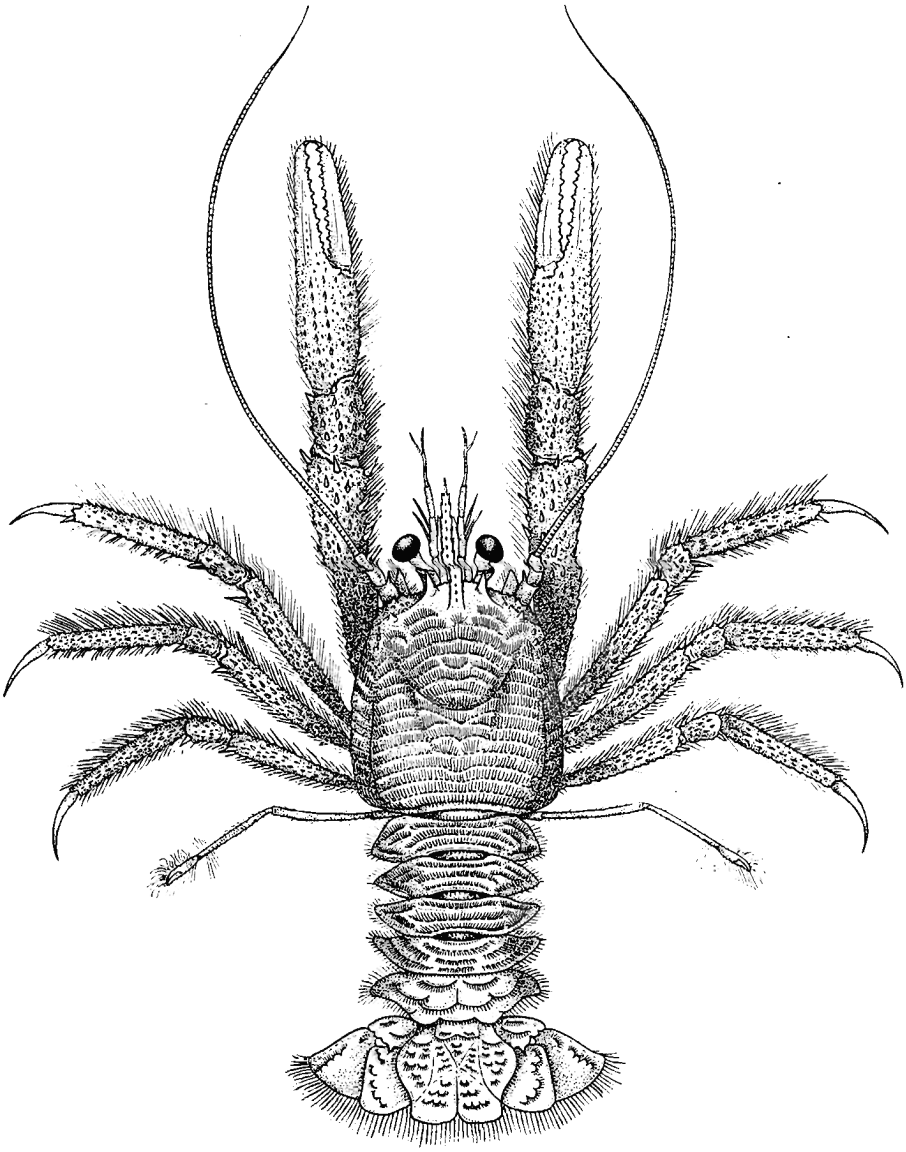
DIAGNOSTIC CHARACTERS: Nearly always found in large schools; animal vivid blood-red. Carapace rectangular, with about seventeen transverse ciliated rugae. Rostrum acuminate, flanked by one pair of subrostral spines; there is one pair of spinules on the gastric region behind the subrostral spines and one branchiostegal spine on each side. No lateral spines in the adult. Abdomen without spinules, but with two transverse ridges on each segment except the telson.

TYPE: *"Habitat in Oceano Americano Patagoniam alluente gregaria."* Fabricius described the species from material in the private collection of Sir Joseph Banks; which collection was later deposited in the British Museum.

DISTRIBUTION: Bathypelagic in both Atlantic and Pacific Oceans.

MATERIAL EXAMINED: One specimen dredged in 100 fms., Punta Arenas, Costa Rica, February, 1928, by the *"Ara,"* William K. Vanderbilt, commanding.

TECHNICAL DESCRIPTION: Front produced to a slender, acuminate rostral spine, which is dorsally keeled, this keel extending back on the carapace briefly. The rostrum measures 4 mm. long from tip to base, or a little longer than the eye, on either side of which there is a small spine. Beyond this the frontal margin is concave; there is a branchiostegal spine just above the antennal peduncle. A pair of small, submedian spines occur on the anterior part of the carapace, on either side of the rostral carina, one behind each of the subrostral spines. There are no other spines on the carapace. The carapace is rectangular, 11.5 mm. median width, dorsal surface very convex, cervical groove deep, anterior region of carapace ornamented with about seven transverse ridges, some of which are interrupted, all are minutely punctate and are margined with a long fringe of fine amber-colored



Munida gregaria (Fabricius), × 2.

cilia; there are about ten transverse ridges on the posterior region of the carapace; the *linea anomurica* is very distinct. The transverse ridges curve forward below it. The abdominal segments are devoid of spines; there are two transverse sculptured ridges, each anteriorly fringed with cilia; the anterior ridge on each segment is the longer, extending down on the epimera; the telson has the posterior margin evenly bilobate; there is a median longitudinal groove and the posterior suture lines are oblique; the dorsal surface has the numerous clusters of setae each arranged in a small arc. The large, fan-like rhipidura have a small spine at the inner posterior angle of the upper distal margin of the peduncle; the outer blade is smaller than the inner, both have the outer margins truncate, slightly rounded. Both the telson and rhipidura have the margins heavily fringed with long setae.

The eyes are mounted on a short stalk; the cornea is large, bulbous, subspherical.

The antennulae extend beyond the rostrum for slightly more than the length of the last joint and flagella.

The antennae have a three-jointed peduncle and a flagellum that extends to midway the fingers of the extended chelipeds.

The chelipeds are equal, 42 mm. long, slender; the ischium has a long, acuminate tooth on the inferior distal margin; the long merus is armed with an acuminate tooth on its median upper and inner distal margins. There is one (occasionally two) acuminate teeth on the inner lateral margin of the carpus and two spinules on the median upper and inner distal margins; the propodus is almost as long as the slender curved fingers, which meet along the cutting edges and overlap at the tip. The upper surfaces of the meral, carpal and propodal joints are ornamented with a series of arch-shaped granules which are anteriorly fringed with long setae; these granules are placed in close, regular formation, covering the entire dorsal surface.

The second, third and fourth legs are similar, decreasing in length posteriorly; each has the meral joint with its upper surface granulose; the long propodus and slender, acuminate dactyl are laterally compressed, the propodus longitudinally channelled, the dactyl very acuminate and slightly twisted.

SYNONYMY.—*Galathea gregaria* FABRICIUS, Ent. Syst. II, p. 473, 1793. *Grimothea gregaria* LEACH, Dict. d. Sci. Nat., vol. 18, p. 50, 1820.—DANA, U. S. Explor. Exped., vol. 13, Crust., part 1, p. 483, pl.

31, fig. 1, 1852.—DESMAREST, Consid. sur la classe des Crust., p. 287, 1825.

Grimotea sociale, Grimotea gregaria GUÉRIN-MENEVILLE, Crust. Voy. *"La Coquille,"* Zoöl., vol. 2, pl. 3, fig. 1, p. 33, 1830.

Grimothea nova zelandiae FILHOL, Passage de Venus, Mission de l'Ile Campbell, p. 426, 1874 (Institute de France).

Munida gregaria MIERS, Proc. Zoöl. Soc. London, p. 73, 1881.

Munida subrugosa HENDERSON, *"Challenger"* Report, vol. 27, 1888, Anomura, p. 124.

Munida gregaria A. MILNE EDWARDS, Mission Scient. du Cap Horn, Crust., p. 32, pl. 2, fig. 1, 1891.—BENEDICT, Proc. U. S. Nat. Mus., vol. 26, p. 308, figs. 45 and 46, 1902.

Munida cokeri RATHBUN, Proc. U. S. Nat. Mus., vol. 38, p. 559, pl. 53, fig. 5, 1911.

Munida stimpsoni A. M. Edwards.

Plate 13.

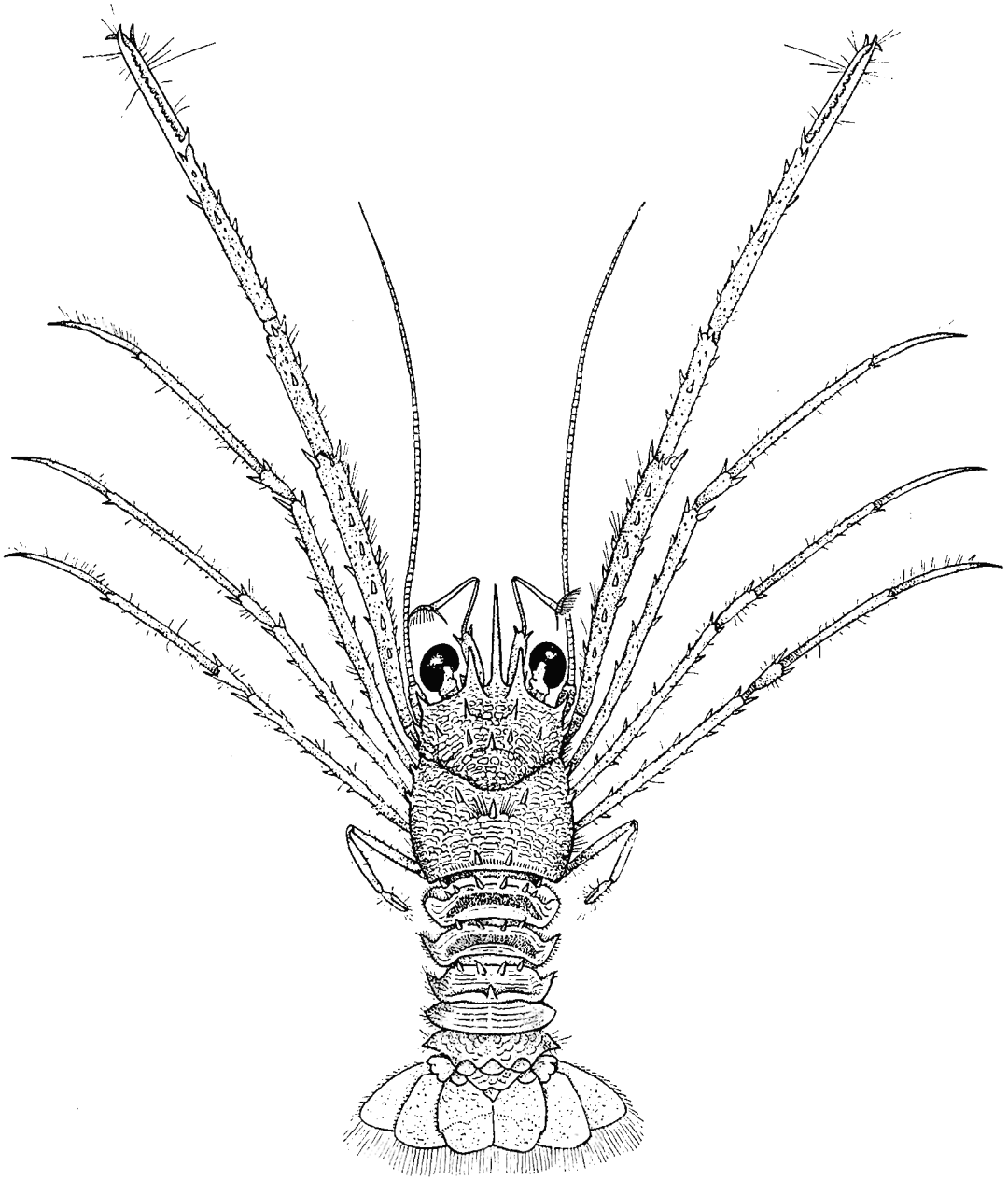
TYPE: The type series of specimens was taken at several stations in the West Indies, by the *"Blake"* and is deposited in the Museum of Comparative Zoölogy; paratypes are in the Museum National d'Histoire Naturelle, Paris, and the United States National Museum.

DISTRIBUTION: West Indian region; deep-sea, ranging from shallow water of the *"Ara"* record which is a very young specimen, to 180-1105 fms., for the larger adults of the *"Blake"* and *"Challenger"* records.

MATERIAL EXAMINED: One very young specimen, from Porto Padre, Cuba, 2 fms., taken by the *"Ara."*

TECHNICAL DESCRIPTION: This specimen, which is a very young one, conforms to Dr. Benedict's *M. flinti,* from the northern part of the Gulf of Mexico in every respect, especially in the fact that it is less spinose or granulose than is *M. affinis.* I believe that this is due to the juvenile character of my specimen and in the light of the knowledge of the extreme variation in this phase of the many species which have come to my attention in larger series, I am convinced that *M. affinis* presents an extreme form of development of the granulose carapace, of which *M. stimpsoni* may be considered the type form, and *M. flinti* the other extreme, approaching a nearly non-granulose carapace. The major spines of the three do not differ.

The rostral spine is twice as long as the eye, comparatively smooth, the supraorbital spines acute, almost but not quite as long as the orbit,



Munida stimpsoni A. Milne Edwards, ♂.

an acute, outward directed spine at the anterolateral angle and three additional lesser but well developed spines along the lateral margin, one precervical and the remaining two postcervical, all subequally spaced. There are seven dorsal spines on the dorsal precervical portion, a postorbital pair, behind which there are five spines, forming an irregular transverse row, *i.e.*, a median spine, a submedian pair in line with the postorbital pair and outside and slightly anterior to these another spine on each side of the hepatic region, nearly in line with the first lateral spine. The cervical groove is deep. There are three spines on the postcervical region, a median spine and slightly in advance of this a submedian pair. The transverse rugae and granulations are well spaced, the cilia short. There is a submedian pair of spines on the hinder margin of the carapace. The second abdominal segment has six spines, two on either side of the submedian pair; the third segment has only four, one on each side of the submedian pair; the fourth segment has only the submedian pair followed by a single median spine. The chelipeds and first three pairs of monodactylar legs are scabrous and spinose.

SYNONYMY.—*Munida stimpsoni* A. MILNE EDWARDS, Bull. Mus. Comp. Zoöl., vol. 8, No. 1, p. 47, 1880.—HENDERSON, *"Challenger"* Rept. Zoöl., vol. 28, p. 126, pl. 14, fig. 1, 1888.—A. MILNE EDWARDS and E. L. BOUVIER, Ann. Sci. Nat. Zoöl., ser. 7, t. 16, p. 257, 1894; Mem. Mus. Comp. Zoöl., vol. 19, No. 2, p. 48, pl. 4, figs. 1-13, 1897. —BENEDICT, Proc. U. S. Nat. Mus., vol. 26, p. 313, 1903.

Munida flinti BENEDICT, *ibid.*, p. 258, fig. 9.

Munida affinis A. MILNE EDWARDS and E. L. BOUVIER, Mem. Mus. Comp. Zoöl., vol. 19, p. 48, pl. 4, figs. 1-19, 1897.

Genus: **MUNIDOPSIS** Whiteaves.

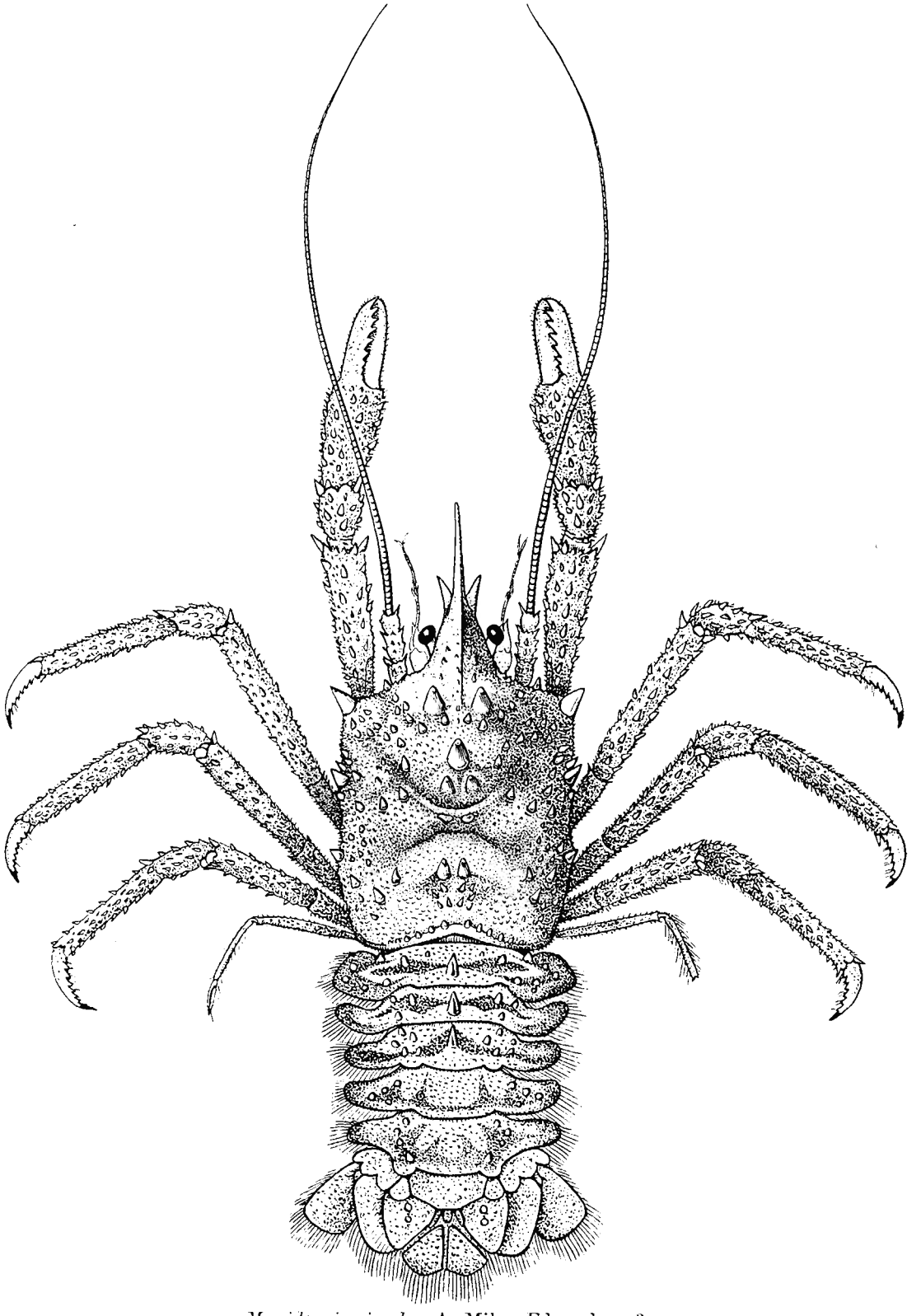
Munidopsis simplex A. Milne Edwards.

Plate 14.

TYPE: The species was founded upon a series of specimens taken at nine *"Blake"* stations, at Guadeloupe, Dominica, Martinique and St. Vincent, at depths ranging from 484 to 982 fathoms; the material was divided between the Paris Museum and the Museum of Comparative Zoölogy.

DISTRIBUTION: As above and extended northward by the *"Ara's"* catch off Miami, Florida, depth 1100 fms.

MATERIAL EXAMINED: Eighteen specimens of various sizes dredged in 1100 fathoms, off Miami, Fla., March 31, 1926, by the *"Ara."*



Munidopsis simplex A. Milne Edwards, × 3.

TECHNICAL DESCRIPTION: Carapace rectangular, three-fourths as wide as long, produced to an upcurved, attenuated, acute rostral spine, which is three-fifths as long as the carapace, with the upper surface paved with squamous rugae; the inferior lateral margins carinate, these carinae continuous on the frontal margin; anterolateral angles nearly right-angled, with an acute spine arising from the tumid hepatic lobe; lateral margins subparallel; the precervical portion of the carapace is circumscribed by the deep cervical groove and is tumid; there is a pair of submedian spinules behind the rostrum on the anterior gastric region; between these is a brief longitudinal ridge; posterior to this is a single median spinule, the three spinules outlining a triangle; a short distance behind the single spine is a pair of smaller submedian spinules on the precervical region; the postcervical region is nearly as long as the precervical; there is a deep, transverse depression in the urogastric region, above which the carapace is carinated and armed with one forward-pointing median spine; the posterior margin is heavily carinated. The entire dorsal surface of the carapace is roughened by broken, transverse granules, some of which are coarser than others.

The abdomen has the first segment rudimentary; the second and third segments each have a conspicuous transverse carina anteriorly, which is ornamented with an acute forward-pointing median spine, in addition to the above-mentioned carinae; the second and third segments each have a prominent transverse carina across the median region just anterior to the posterior margin; the second segment has the epimera widely triangular, while those of the third, fourth and fifth segments are extremely narrow and attenuated, triangular; the third segment has no spine and only one transverse carina on the median region not far behind the anterior margin; the fourth and fifth segments are smooth; the sixth segment is narrower than the others, with its postlateral margins converging, its posterior margin relatively straight; the telson is small, shield-like, with oblique suture lines; the rhipidura have a stout peduncle, the outer blade slightly the smaller, narrow proximally, broadly widened and rounded distally; the inner blade is much wider than the outer, with its distal and inner lateral margins very convex; both blades are ciliated.

The cornea is short-stalked, bulbous.

The antennulae have the proximal joint large and armed with one very long, acuminate, up- and outward pointing spine on the superior, subdistal margin; just below this there is a large, two-forked spine,

both placed above the base of the second joint, while below it is another similar, two-jointed spine.

The antennae have the basal joint armed with an acute spine at the outer distal angle; the second article has two spines, one at the upper and one lower, outer distal angle; the third article has one very long spine at the outer distal angle; the flagellum is about as long as the chelipeds and consists of 75 rings.

The external maxillipeds have the ischium wider distally and armed with an acute tooth at the outer distal angle; the merus is slightly longer than the carpus and is armed with two very acuminate, conical, outpointing teeth on the lateral margins and with the distal margin excavate, its outer angle forming a short, acute tooth; the palp is long, three-jointed, ciliated.

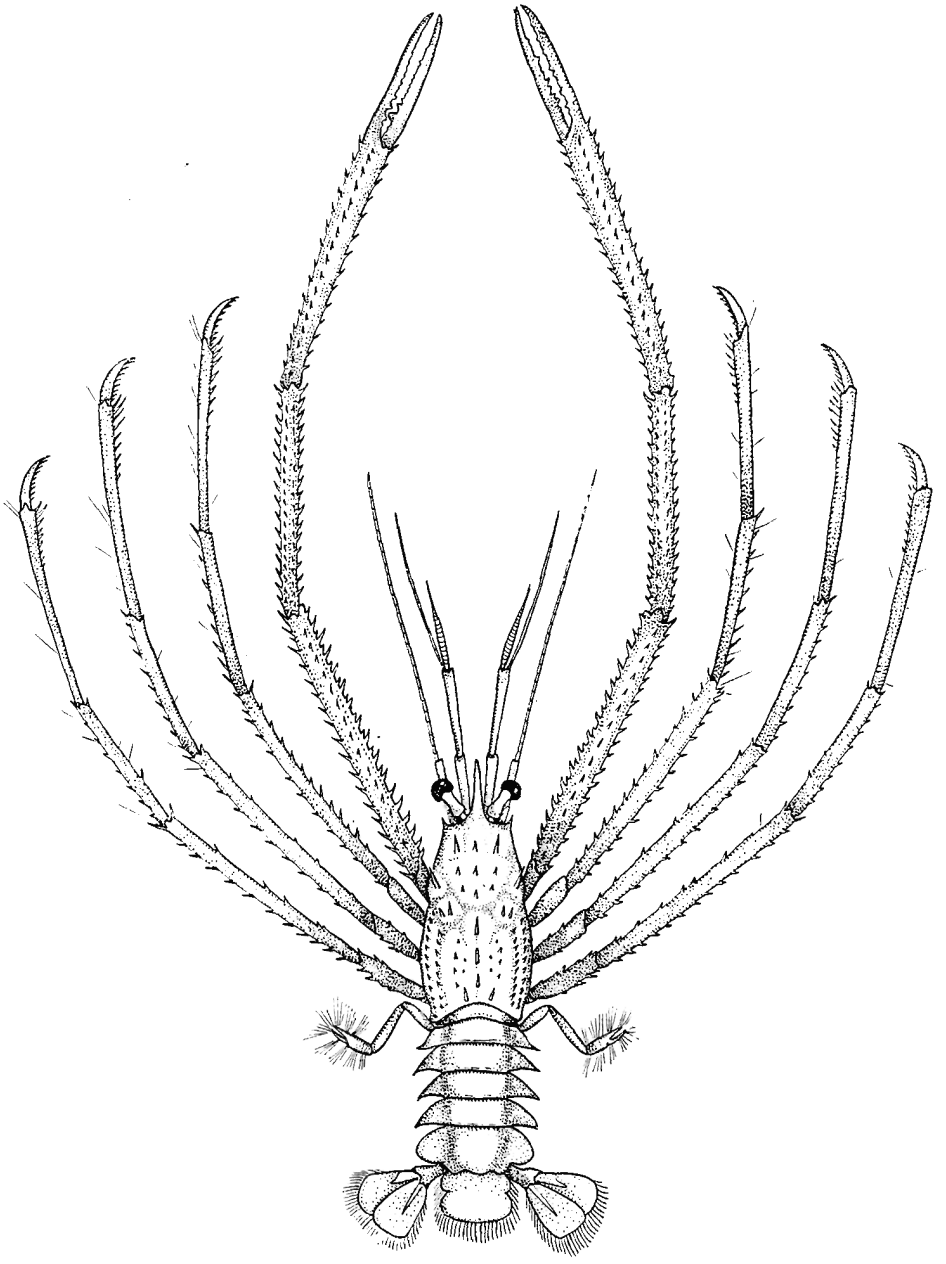
The chelipeds are equal, of moderate size, 52 mm. long, the ischium produced to an acute point on its inferior distal margin; the merus is roughened by rugose scales, with three or four spines on the inner lateral margin and with three at the respective angles of the distal margin; the carpus is similar to the merus but only one-third as long, with three acute spines at the distal margin, two above, one ventral; the propodus is about as long as the merus, with the palm slightly longer than the fingers, cylindrical; the fingers are slender, subequal, cutting edge finely, regularly crenulated, tips curved, meeting. The entire cheliped is covered with rough, squamous rugae.

The second, third and fourth legs are similar, slightly decreasing in length posteriorly; the merus cylindrical, elongate, rough with granules; the carpus short; the propodus very slender, about as long as the merus; the dactyl is about two-thirds as long as the related propodus, curved, acuminate and armed on its inferior lateral margin with a continuous row of stout, short spines, between which are tufts of short setae.

The fifth legs are short, rudimentary, reflexed upon the back, subchelate, with the propodus and dactyl furnished with a brush of long setae.

SYNONYMY.—*Galathodes simplex* A. MILNE EDWARDS, vol. 8, p. 56, 1880.

Munidopsis simplex A. MILNE EDWARDS and E. L. BOUVIER, Ann. des Sci. Nat. Zoöl. (7), vol. 16, p. 275, 1894; Mem. Mus. Comp. Zoöl., vol. 19, No. 2, p. 89, pl. 5, figs. 2-7, 1897.—BENEDICT, Proc. U. S. Nat. Mus., vol. 26, p. 326, 1902.



Ptychogaster spinifera A. Milne Edwards, ×1.5.

Genus: **PTYCHOGASTER** A. Milne Edwards.

Ptychogaster spinifera A. Milne Edwards.

Plate 15.

TYPE: A female taken by the *"Blake,"* at station 167, Guadeloupe, is designated by Dr. Milne Edwards as type and is deposited in the National Museum d'Histoire Naturelle, Paris.

DISTRIBUTION: West Indies and Caribbean Sea at depths ranging from 123 to 366 fms. Taken by the *"Blake"* at Fredickstadt, 180 fms., Guadeloupe, 183 fms., Santa Lucia, 154 fms., Grenadines, 127 fms., Caricou, 163 fms., Barbados, 124 fms., and by the *"Pawnee,"* north of Glover Reef, Caribbean Sea, 366 fms. The *"Ara"* specimen taken seven miles southwest of Alligator Reef, Florida, establishes the northernmost record for the species.

MATERIAL EXAMINED: One specimen dredged seven miles southwest of Alligator Reef, Florida, in 150 fms., March 30, 1926.

COLOR: In life this species is a rich, semitranslucent old ivory.

TECHNICAL DESCRIPTION: Rostrum slightly longer than the eye, slender, acuminate, upward- and forward-directed, with the inferior lateral margins lightly carinate, these carinae continuous on the superior orbital margin. Carapace 13 mm. long from base of rostral spine to posterior margin, rostrum 3 mm. long; carapace 9 mm. maximum width across the median region. The precervical region is elevated, convex; the cervical groove is deep; there are a pair of acuminate up-pointing teeth, placed subdistally, one behind each orbit; behind each of these spines are two smaller, widely spaced spinules; behind and diagonally in line with this large spine are two more shorter spines; there are three medium-sized spinules subequally spaced in the median line of the precervical region; there is also a large, subdistal spine on the hepatic region. The median postcervical region is elevated and bears a median row of three subequally spaced spines, continuing the row on the precervical region; on either side of the median row there are about eight spinules, forming two irregular, longitudinal series, the upper of which terminates in a high, acute spine on the posterior margin of the carapace. The median lateral part of the postcervical region has a longitudinal row of four or five long spines, on either side of which are a number of irregularly spaced spinules; the *linea anomurica* is sharply defined and below and subparallel to it is a longi-

tudinal row of eight or ten spines and below this a number of smaller, irregularly spaced spinules.

The first abdominal segment is short, with a median transverse elevation and the epimeral angles acute, up- and out-curved triangles, with the apex scarcely extending beyond the lateral margin of the carapace; the second to fifth abdominal segments, inclusive, are much longer and wider than the first segment and have the epimera produced to long, acute triangles; the sixth segment is long but with the epimera forming wider triangles. The telson is slightly wider than long, with the small, lateral lobes rounded and separated from the large median lobe by a notch; the distal margin is broadly rounded and fringed with fine cilia. The rhipidura have a stout peduncle and two broad suboval blades, fringed with cilia; the outer blade is slightly the wider. In the usual folded-under position of the abdomen, the epimera fit upon each other, forming the sidewalls to a roomy cavity beneath the body in which the eggs and embryos are kept.

The sternal plastron has a strong median groove, the transverse sutures are distinct and there is at the base of the cheliped a strong, acute spine.

The eyes are on short, flexible, bulbous stalks, constricted at the base of the cornea, which is large, spherical, composed of many facets.

The chelipeds are 90 mm. long, the ischium being short, 3 mm. long, and terminating distally in an acute tooth; the merus is 31 mm. long; the carpus 20 mm. long; the propodus 22 mm. long; the dactyl 14 mm. long; there is a series of sharp, out- and forward-pointing spines on each lateral margin of the ischium, merus, carpus and propodus; the latter has two additional submedian rows of spines on the upper margin. The fingers are slender, meeting with numerous, sparsely placed long hairs; the cutting edges are set with irregular sharp teeth; the finger tips meet.

The first, second and third pairs of ambulatory legs are very long and slender and are armed with spines along both lateral margins.

The fifth legs are small, of the typical small size, reflexed, weakly chelate.

SYNONYMY.—*Ptychogaster spinifer* A. MILNE EDWARDS, Bull. Mus. Comp. Zoöl., vol. 8, No. 1, p. 64, 1880; Mem. Mus. Comp. Zoöl., vol. 19, No. 2, p. 35, p. 118, pl. 9, figs. 16-22, pl. 10, figs. 4-16, 1897. —BENEDICT, Proc. U. S. Nat. Mus., vol. 26, p. 334, 1902.—BOONE, Bull. Bingham Oceanog. Coll., vol. 1, art. 2, p. 61, 1927.