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Reports on the scientific results of the Atlantis
expeditions to the West Indies, under the joint
auspices of the University of Havana and
Harvard University.

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BY FENNER A. CHACE, JR.

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BY FENNER A. CHACE, JR.

Museum of Comparative Zoölogy.

INTRODUCTION

The collection of Brachyura taken by "Atlantis" in the Bahamas and off the coasts of Cuba in 1938 and 1939 contains 772 specimens, representing 80 distinct species. Of this number, 89 specimens belonging to 25 species are shallow water or terrestrial forms which were either gathered by members of the expedition, presented to the expedition en route by fishermen or dredged inside Cabo Cruz, Oriente Province, off the south coast of Cuba, in depths of $11\frac{1}{2}$ to 28 fathoms; although most of these species are familiar West Indian forms, they are included here so that the record of the expedition may be complete. The remaining 683 specimens of 55 species were all taken with either Blake or Otter trawls from depths in excess of 100 fathoms, and all but a single specimen of a widely ranging species, which was taken in the Bahamas, came from off the coasts of Cuba. Nine of the species, all but one from deep water, were previously undescribed forms; one other, although previously known, had been confused with another species and has been redescribed under a new name; and one of these is the type of a remarkable new genus. Two of the new species have been described in a previous paper,⁽²⁾ but all are here figured for the first time.

(1) Contribution No. 269 of the Woods Hole Oceanographic Institution.

(2) Mem. Soc. Cubana Hist. Nat., vol. 13, no. 1, 1939, pp. 51-52.

In 1940, "Atlantis" made four dredging stations east of St. Augustine, Florida, which yielded 13 specimens of five species, three of which were not taken in 1938 and 1939. As some of these records are noteworthy, they are included here even though they are not strictly a part of the Cuban or Bahaman fauna. Finally, a new species of *Trizocarcinus*, taken by the "Blake" but never described, is included here in order that our knowledge of the West Indian *Brachyura* may be brought up to date.

With the addition of the new species taken by this expedition the truly deep-water crabs of the West Indies, that is those species which normally occur below 100 fathoms, now number about 100. Comparison with the "Blake" Expeditions in 1877-1880 and the United States Fish Commission collections made by the "Albatross" in 1884, 1885, 1886 and 1919 and by the "Fish Hawk" in 1899, 1901, 1902, 1903 and 1912, all of which ranged far more widely in the West Indies than did "Atlantis", discloses that, out of these 100 species, the "Blake" collected 57 (including the species here described for the first time), the Fish Commission dredgings yielded 67 species and, as noted above, the "Atlantis" took 55 species in 1938 and 1939 from off the coasts of Cuba alone.

That the brachyuran faunas of the north and south coasts of Cuba in similar depths are not strikingly different is illustrated by the fact that, of the 13 species taken in Bahia de Cochinos on the south coast of Matanzas Province, all but one, *Cyclodorippe agassizii*, were also found on the north coast of Cuba and 11 of them occurred off the north coasts of Santa Clara and Camaguey Provinces from Caibarien to Cayo Romano. As far as the crabs are concerned, the collections from Bahia de Cochinos proved less interesting than those from the north coasts, for only 13 species were taken from the former locality at 30 stations and only one of these belonged to a new form, the previously known but misidentified *Tetraxanthus rathbunae* which was also found to be widely distributed along the north coast. The largest and most interesting catches were made in the area at the junction of the Nicholas, Santaren and Old Bahama Channels and stretching down into the western portion of the latter channel. Although a large number of stations were concentrated in this region, particularly in 1939, the results obviously justified this expenditure of time. It might be mentioned that 100 specimens of 20 species

were taken at 18 stations off Caibarien, 220 specimens of 25 species from 28 stations off Punta Alegre and 181 specimens of 24 species from 14 stations off Cayo Coco; four of the species from off Caibarien and three each from off Punta Alegre and Cayo Coco were previously undescribed.

The bulk of this collection has been deposited in the Museum of Comparative Zoölogy, but a set of each species, wherever possible, has been sent to the Museo Poey at Havana, Cuba, and several of the more striking species to the Museum at the Bermuda Aquarium, Flatts, Bermuda.

In the systematic portion of this report reference has been made only to one of Miss Rathbun's four monographs on American crabs, unless additional citations were needed to clear up the synonymy of certain species or to bring the references to important papers up to date. Since these monographs are practically indispensable to anyone interested in the taxonomy of American Brachyura, it is felt that all such workers will have access to these volumes and, through them, can obtain references to the earlier literature.

The drawings for figures 1, 3, 5, 7, 9, 11 and 17 are the work of Mr. Eugene N. Fischer and were made possible through a grant from the Milton Fund of Harvard University. The remaining figures are by the author.

SYSTEMATIC ACCOUNT

FAMILY RANINIDAE

RANINOIDES LAMARCKI Milne Edwards and Bouvier

Raninoides laevis var. *lamarcki* A. Milne Edwards and Bouvier, E. L., Mem. Mus.

Comp. Zoöl. Harv., vol. 47, p. 299, pl. 1, figs. 8, 9; pl. 2, figs. 3,⁽³⁾ 4, 1923.

Raninoides lamarcki Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 13, text-fig. 8,

pl. 1, figs. 3, 4, pl. 2, fig. 3,⁽³⁾ 1937.

Occurrence.

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 2,999B;
145-190 fathoms; 1 small male, 2 small females (1
female with a rhizocephalan parasite).

(3) It is apparent from Milne Edwards' and Bouvier's descriptions of *R. laevis lamarcki* and *R. fossor* that figures 3 and 5 on plate 2 of that work should be interchanged. Miss Rathbun has reproduced figure 3 as the chela of *R. fossor*, whereas it is in reality that of *R. lamarcki*.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,394; 200 fathoms; 1 male.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 3,419; 180 fathoms; 2 males.

There is an additional male specimen of this species in the Museum of Comparative Zoölogy collected at Havana, Cuba, in 1937 by Dr. L. Howell Rivero.

Remarks.—All of these specimens differ from Miss Rathbun's description in having a distinct spine on the tooth on either side of the front, but this spine is not as prominent as that in *R. louisianensis* Rathbun. The three small specimens from station 2,999B agree very well with Milne Edwards' and Bouvier's description and figures; the four larger males, however, all have the dactyls of the second and third ambulatory legs appreciably narrower than in their figures. In the presence of a spine on the tooth on either side of the front and the relatively narrow dactyls of the ambulatory legs, these specimens approach *R. louisianensis* but they are otherwise distinguished from that species by having only three spines on the lower margin of the manus of the chela and no spine at the base of the mobile finger.

LYREIDUS BAIRDII Smith

Lyreidus bairdii Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 23, pl. 5, figs. 5, 6, 1937.

Occurrence.

North coast of Cuba:

Off Puerto Tanamo, Oriente Province; station 3,374; 300 fathoms; 1 female with two rhizocephalan parasites.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,405; 235 fathoms; 1 male.

Off Santa Cruz del Norte, Havana Province; station 3,490; 250 fathoms; 1 male.

FAMILY DROMIIDAE

DROMIDIA ANTILLENENSIS Stimpson

Dromidia antillensis Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 33, text-fig. 12, pl. 7, figs. 1-3, 1937.

Occurrence.

South coast of Cuba:

Inside Cabo Cruz, Oriente Province; stations 3,347-3,350;
13 fathoms; 1 small male.

FAMILY HOMOLODROMIIDAE

HOMOLODROMIA PARADOXA A. Milne Edwards

Homolodromia paradoxa Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 58, pl. 13,
figs. 1, 2, pl. 14, figs. 1-4, 1937.

Occurrence.

North coast of Cuba:

Off Bahia de Cardenas, Matanzas Province; station 2,995;
370-605 fathoms; 1 male; station 3,474; 490 fathoms;
1 male.

Off Bahia de Nuevitas, Camaguey Province; station 3,380;
460 fathoms; 1 male.

Remarks.—The largest specimen, that from station 3,474, is considerably larger than the holotype of this species; the carapace measures 23.3 mm. in greatest length and is 18.0 mm. broad across the widest portion of the branchial regions. The two other specimens have the carapace 15.1 and 17.1 mm. long.

DICRANODROMIA OVATA A. Milne Edwards

Dicranodromia ovata Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 60, text-fig. 15,
pl. 13, figs. 3, 4, 1937.

Occurrence.

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,303; 260
fathoms; 1 male.

Off Bahia de Matanzas, Matanzas Province; station 3,464;
200 fathoms; 1 male; station 3,485; 385 fathoms; 1
female.

Off Bahia de Cardenas, Matanzas Province; station 3,474;
490 fathoms; 1 female.

Off Caibarien, Santa Clara Province; station 3,435; 255
fathoms; 1 ovigerous female; station 3,437; 260 fathoms;
2 females (one ovigerous).

Remarks.—The four described species of *Dicranodromia*, *D. mahyeuxii* A. Milne Edwards from the eastern Atlantic, *D. baffini* (Alcock) from the Indian Ocean, *D. döderleini* Ortmann from Japan and the present species apparently differ from one another, aside from slight differences in the branchial formulae, only in the degree of spinulation and hairiness of the carapace. The present series of *D. ovata* shows that these characters are extremely variable. The largest specimen, the female from station 3,485 in which the carapace measures 25.5 mm. in length, is very sparsely hairy and entirely devoid of spines or spinules on the dorsal surface and lateral margins of the carapace. The ovigerous female from station 3,435 has the carapace 14.0 mm. long and is clothed in long, coarse hairs, particularly on the legs as in *D. baffini*, and also has no spines on the carapace. The three other females have the carapace from 12 to 18 mm. long, are clothed in a medium coat of hairs and have a few spines near the anterolateral margins of the carapace. The larger male, from station 3,303, has a carapace length of 11.0 mm.; it is provided with short, soft hairs and beneath them the carapace is almost completely covered dorsally with short spines very much as in *D. mahyeuxii*, a paratype of which is in the Museum of Comparative Zoölogy. The smaller male, however, has the carapace 7.0 mm. long and shows a stronger growth of hairs, but much less spinulation, there being no spines on the mid-dorsal surface of the carapace. More material of the three extra-American species must be obtained before the true diagnostic characters of these forms can be defined.

An additional small female specimen of this species was taken by "Atlantis" east of St. Augustine, Florida; 30° 58' N., 79° 34' W.; station 3,781; 265-290 fathoms; February 24, 1940. This specimen, which has a carapace length of about 9.5 mm., is provided with more spines on the carapace than is the male from station 3,303; in addition to countless short spines on the carapace, the edges of the rostral teeth are also armed with numerous spines. This specimen is also clothed with long, silky hairs on the carapace and legs.

FAMILY THELXIOPEIDAE

THELXIOPE BARBATA (Fabricius)

Thelxiope barbata Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 63, text-fig. 16, pl. 15, figs. 1, 2, 1937.

Occurrence.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,438; 265 fathoms; 1 male.

THELXIOPE VIGIL (A. Milne Edwards)

Thelxiope vigil Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 66, pl. 16, figs. 1-3, 1937.

Occurrence.

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,302; 230 fathoms; 3 males; station 3,303; 260 fathoms; 5 males.

Off Caibarien, Santa Clara Province; station 3,434; 260 fathoms; 1 male. 1 ovigerous female; station 3,437; 260 fathoms; 1 female.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,980B; 220-225 fathoms; 1 male.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 3,324; 320 fathoms; 1 ovigerous female.

Remarks.—All of these specimens differ from previous descriptions in having the rostrum minutely bifid and in having a small, but distinct, spine on the epistome. The rostrum appears to be a single spine to the naked eye, but under the lens a distinct linear incision can be seen running back from the tip. The spine on the epistome arises from the posterior end of the longitudinal carina which passes between the basal joints of the antennules and, although much smaller than the corresponding spine in *T. barbata*, it is quite apparent even to the naked eye.

HOMOLOGENUS ROSTRATUS (A. Milne Edwards)

Homologenus rostratus Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 70, text-fig. 17, pl. 17, figs. 1-3, 1937.

Occurrence.

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,305; 330 fathoms; 1 female.

Off Bahia de Cardenas, Matanzas Province; station 2,995; 370-605 fathoms; 1 male, 3 females (2 ovigerous); station 2,996; 470-665 fathoms; 1 female.

Nicholas Channel off Bahia de Santa Clara, Santa Clara Province; station 3,458; 535 fathoms; 1 ovigerous female; station 3,459; 500 fathoms; 1 ovigerous female.

South coast of Cuba:

Windward Passage, south of Oriente Province; station 3,357; 875 fathoms; 1 ovigerous female.

FAMILY LATREILLIIDAE

LATREILLIA ELEGANS ROUX

Latreillia elegans Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 73, text-fig. 18, pls. 20, 21, 1937.

Occurrence.

North coast of Cuba:

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,396; 180 fathoms; 1 male.

FAMILY DORIPPIDAE

ETHUSA MICROPHTHALMA Smith

Ethusa microphthalma Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 82, pl. 22, fig. 3, pl. 23, fig. 3, 1937.

Occurrence.

North coast of Cuba:

Off Bahia Cardenas, Matanzas Province; station 3,476; 360 fathoms; 1 female.

Off Caibarien, Santa Clara Province; station 3,421; 235 fathoms; 1 male; station 3,432; 250 fathoms; 1 male.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982D; 150-180 fathoms; 1 male; station 3,411; 260 fathoms; 1 female; station 3,413; 215 fathoms; 1 female; station 3,417; 200 fathoms; 1 male, 1 female; station 3,419; 180 fathoms; 1 male, 1 female.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,392; 225 fathoms; 1 male; station 3,393; 220 fathoms; 1 male; station 3,394; 200 fathoms; 1 male; station 3,396; 180 fathoms; 1 female; station 3,404; 215 fathoms; 1 female.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,386; 220 fathoms; 1 male, 1 female; station 3,387; 245 fathoms; 1 female.

Off Puerto Tanamo, Oriente Province; station 3,374; 300 fathoms; 1 female; station 3,376; 285 fathoms; 1 male.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 2,963; 190-180 fathoms; 1 male; station 3,320; 185 fathoms; 1 female.

Remarks.—All of the specimens in the present collection differ from Miss Rathbun's description in that the spiniform anterolateral, or extraorbital, angles do not reach quite as far forward as the frontal spines and in no case do they extend beyond the front. In the smaller specimens, 12 mm. or less in carapace length, the distance between the anterolateral angles is considerably greater than half the greatest width of the carapace, and the latter is frequently slightly longer than broad; these last two differences are much more noticeable in male than in female specimens.

ETHUSA TENUIPES Rathbun

Ethusa tenuipes Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 87, pl. 24, fig. 3, pl. 25, fig. 3, 1937.

Occurrence.

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 3,482; 190 fathoms; 1 male.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,391; 220 fathoms; 1 male.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 3,320; 185 fathoms; 1 ovigerous female.

Cyonomus caecus, sp. nov.

(Figs. 1, 2)

Holotype.—Female, M. C. Z. No. 10,705; off Bahia de Nuevitas, Camaguey Province, Cuba; lat. 21° 34' N., long. 76° 59' W.; 460 fathoms; April 25, 1939; station 3,380.

Description.—Carapace more or less sharply quadrate. It is paved with low, miliary granules and marked by short, faint furrows separating the hepatic region from the anterior gastric region and from the branchial region and by a pair of much deeper and broader depressions bordering the cardiac and intestinal regions. Facial region advanced slightly beyond level of anterolateral margins and sharply marked off from them by the rather prominent antennal scales. Rostrum short, narrowly triangular and unarmed except for a few setae; it is about half as long as the eyestalks. Eyestalks reaching about to middle of second segment of antennules, narrowly tapering,

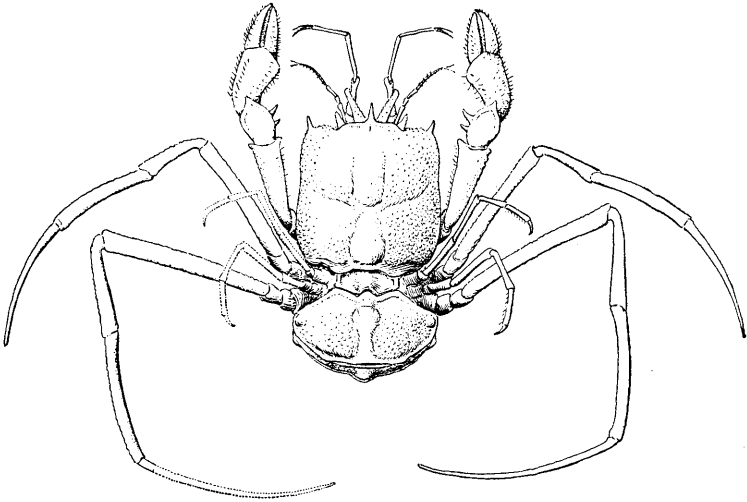


FIG. 1

Cyonomus caecus. Holotype. $\times 4$.

armed with sharp granules on the inner margin and lacking any vestige of a true cornea. Antennular peduncle longer than carapace and rostrum combined; second segment subequal to fourth, swollen at base and armed with a few sharp granules on the outer margin. Third segment longer than second or fourth. Antennal peduncle reaching scarcely to end of second segment of antennular peduncle; antennal scale prominent with a few small spines on outer margin.

Exopod of outer maxillipeds extending beyond endopod; merus subequal to ischium and extending far beyond the insertion of the palp. Chelipeds with one or two spines on inner margin of carpus; movable finger distinctly longer than palm. Chelipeds and walking legs finely granular and sparsely hairy. Dactyl of first ambulatory leg as long as propodus and three-fourths of carpus; dactyl of second ambulatory leg nearly as long as propodus and carpus combined. Last two pairs of legs end in a curved dactyl. Sternum and abdomen finely granular; female abdomen composed of six somites; telson with very faintly concave margin.

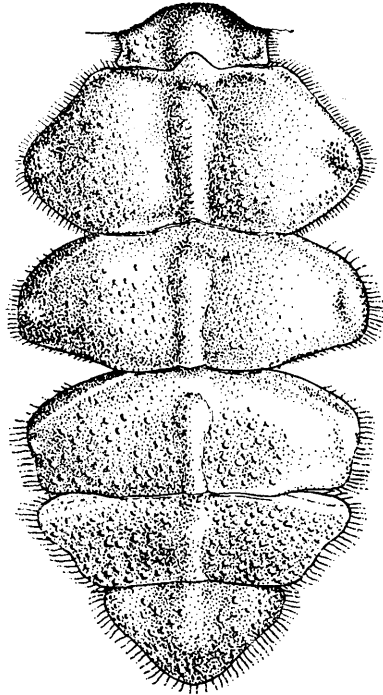


FIG. 2

*Cymonomus caecus*Abdomen of holotype female $\times 10$.

Measurements.—Length of carapace plus rostrum 5.4 mm., length of rostrum 0.7 mm., breadth of carapace 5.2 mm., length of eyestalk 1.5 mm.

Remarks.—This species belongs to the *quadratus* group of the genus and differs but little from *C. quadratus* A. Milne Edwards, 1880. Examination of the series of specimens of that species in the

Museum of Comparative Zoölogy discloses that it is a very variable one, particularly as regards the shape and armature of the carapace, but *C. caecus* apparently differs from it in two characters which are reasonably constant: the long, slender and nearly straight eyestalks and the shorter antennal peduncles which do not reach beyond the second segment of the antennular peduncle.

***Cyonomus rostratus*, sp. nov.**

(Figs. 3, 4)

Holotype.—Female, M. C. Z. No. 10,706 off Bahia Cardenas, Matanzas Province, Cuba; lat. 23° 18' 30" N., long. 80° 52' W.; 360 fathoms; May 10, 1939; station 3.476.

Allotype.—A male from the same station.

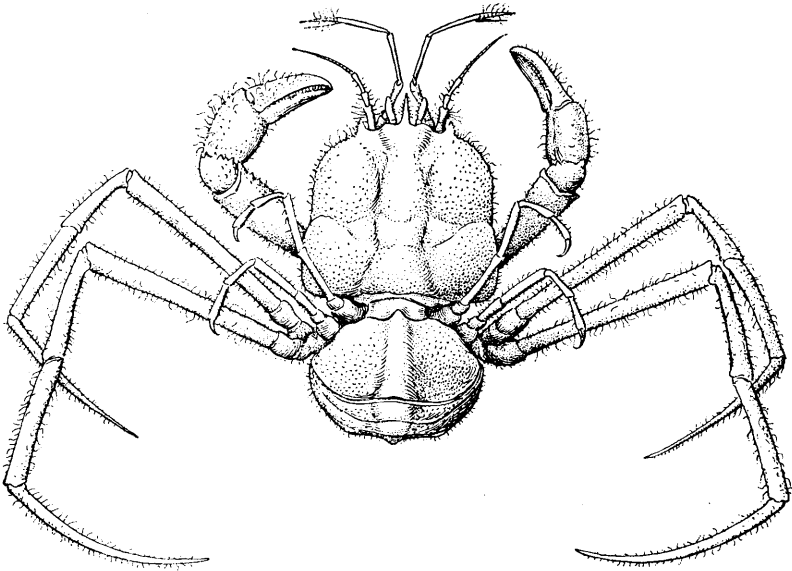


FIG. 3

Cyonomus rostratus. Holotype. $\times 4$.

Description.—Carapace distinctly broader posteriorly than anteriorly and curving in gradually in front to the orbits. The surface is covered with small, sharp granules which are slightly larger on the anterolateral portions, but there are no true spines. There is a deep groove on either side of the cardiac and intestinal regions and at the anterior ends of these a shallower, somewhat semicircular

furrow traverses each branchial region; these transverse furrows are more prominent in the female than in the male. Facial region well advanced beyond level of anterolateral margins. Rostrum narrowly triangular, unarmed except for some long setae and extending beyond the eyestalks. Eyestalks slender, slightly curved inward and armed on the inner margin with six or seven sharp spines; the eyestalks reach to the middle of the second joint of the antennular peduncle where they terminate in a minute, colorless vestige of the cornea.

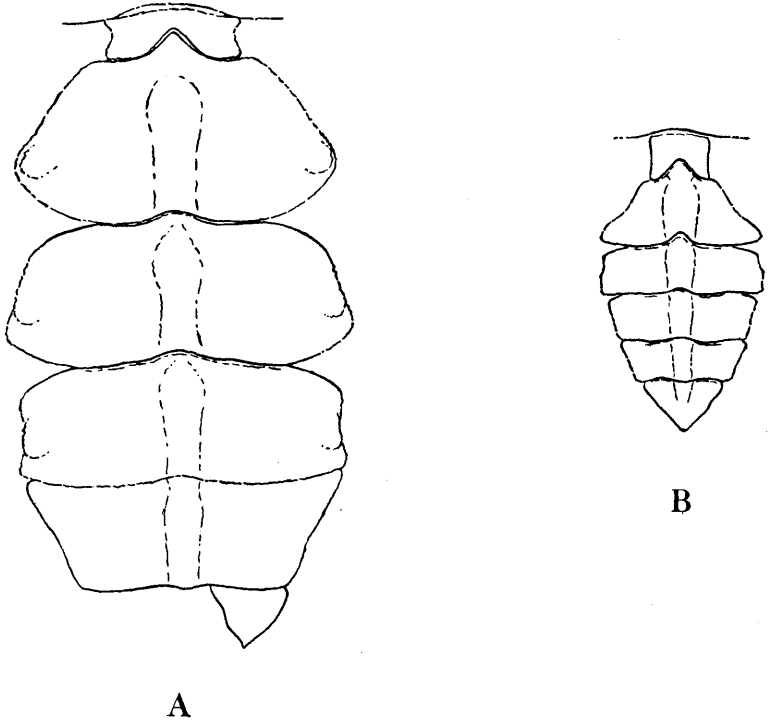


FIG. 4

Cymonomus rostratus

- A. Abdomen of holotype female. $\times 8$.
 B. Abdomen of allotype male. $\times 8$.

Antennular peduncle as long as the carapace and half of the rostrum; second segment subequal to the fourth and shorter than the third, slightly swollen at the base and armed on outer margin with some minute serrations. In the male the antennular peduncles are considerably longer than the carapace and rostrum. Antennal peduncle extending beyond second segment of antennular peduncle by about half the length of its terminal joint. Antennal scale rather

prominent and armed with a few spines on the outer margin. Exopod of outer maxillipeds reaching about as far as endopod; merus about as long as ischium and extending far beyond insertion of palp, the distal portion being noticeably narrowed. Chelipeds with from one to three spines on inner margin or carpus; movable finger distinctly longer than palm and with several dorsal spines proximally. Chelipeds and following legs finely granular and covered with short hairs. Dactyl of first ambulatory leg as long as propodus and three-fourths of carpus; dactyl of second ambulatory leg as long as propodus and four-fifths of carpus. Last two pairs of legs end in a curved dactyl. Sternum and abdomen covered with scattered fine granules. Both male and female abdomens are composed of six somites. The telson of the female is damaged, but the margins are apparently slightly concave.

Measurements.—Female holotype, total length of carapace and rostrum 7.2 mm., length of rostrum 1.3 mm., greatest breadth of carapace 6.8 mm., length of eyestalk 1.2 mm. In the male paratype the rostrum is broken, but the specimen is slightly smaller than the female, having the carapace 6.2 mm. wide.

Remarks.—*C. rostratus* is superficially very like *C. andamanensis* Alcock, 1905, due to the similarity in the form of the carapace, but the more slender eyestalks and much longer rostrum distinguish the Cuban species at a glance.

***Cymonomus cubensis*, sp. nov.**

(Figs. 5, 6)

Holotype.—Female, M. C. Z. No. 10,708; northwest of Cabo San Antonio, Pinar del Rio Province, Cuba; lat. 22° 02' 30" N., long. 85° 06' W.; 550 fathoms; March 25, 1939; station 3,313.

Paratype.—One ovigerous female; off Caibarien, Santa Clara Province, Cuba; lat. 23° 10' N., long. 79° 35' W.; 260 fathoms; May 1, 1939; station 3,434.

Additional specimens.—One ovigerous female from Nicholas Channel off Puerto Sagua la Grande, Santa Clara Province, Cuba; 415 fathoms; station 3,990A.

One male from off Bahia de Matanzas, Matanzas Province, Cuba; 425 fathoms; station 3,469.

Description.—Carapace quadrate, finely granulate, unarmed and with a short pubescence, cardiac and intestinal regions bordered by broad depressions and a somewhat semicircular furrow crosses each branchial region. Facial region little advanced beyond line of antero-

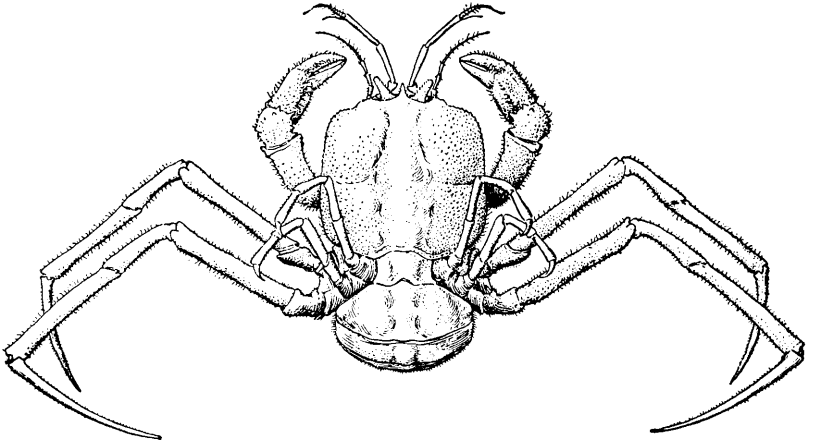
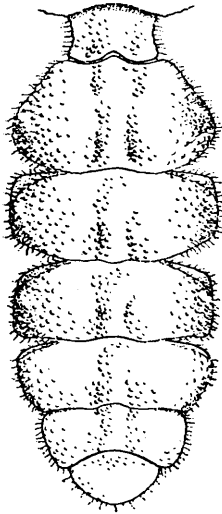
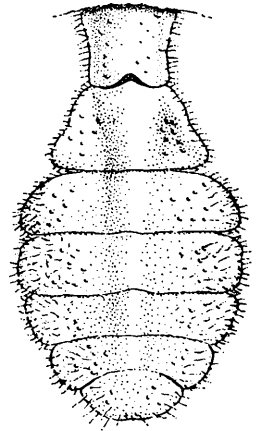


FIG. 5
Cymonomus cubensis. Holotype. $\times 2$.



A



B

FIG. 6
Cymonomus cubensis

A. Abdomen of holotype female. $\times 8$.
B. Abdomen of male from station 3,469. $\times 16$.

lateral margins. Rostrum short, triangular and bearing a few small spines on its margins; it reaches about half as far as the eyestalks. Eyestalks rather broad at base and tapering more sharply than in the two preceding species; they are nearly straight, armed with prominent spines, those on the inner margins being larger and more numerous than those on the outer surface, and extend nearly as far as the middle of the second segment of the antennular peduncle where they terminate in a convex, colorless tip which bears but little resemblance to a cornea. Antennular peduncle very variable; in the holotype it is robust, much shorter than the length of the carapace; in the paratype it is definitely longer than the carapace and much more slender, particularly as regards the last two segments; there are a few minute serrations on the outer margin of the first segment. Antennal peduncle extending beyond second antennular segment by most of the length of its terminal joint. Antennal scale small, armed with a few outer spines and largely hidden from dorsal view by the antenna. Exopod of outer maxilliped not reaching as far as merus of endopod; merus spiny, about as long as ischium and extending well beyond insertion of palp. Chelipeds with from two to four spines on inner margin of carpus; movable finger distinctly longer than palm. Chelipeds and following legs covered with sharp granules among which are scattered some larger granules or short spines. Dactyl of first ambulatory leg as long as propodus and one-half of carpus; dactyl of second ambulatory as long as propodus and three-fifths of carpus. Last two pairs of legs end in curved dactyls. Sternum and abdomen finely granulate. Abdomen composed of seven free somites; telson of female evenly convex.

Measurements.—Female holotype, length of carapace plus rostrum 12.1 mm., length of rostrum 1.1 mm., breadth of carapace 11.8 mm., length of eyestalk 2.2 mm. The eggs of the paratype are about 1.0 mm. in diameter.

Remarks.—Except for its much larger size, this form is very similar to *C. quadratus* A. Milne Edwards, 1880. The only apparent differences are the somewhat straighter and more robust eyestalks, the shorter exopod of the outer maxilliped and the extra abdominal somite. This is the first species of *Cymonomus* to be described as having seven abdominal somites, but this character is omitted from the description of several of the known species. Although this point would normally be of much more than specific importance, the species is so closely allied to *C. quadratus* in all other features that it seems best for the present not to remove it from the genus, *Cymonomus*. It apparently forms a link between *Cymonomus* and *Cymopolus* together with *Cymopolus agassizii* A. Milne Edwards and Bouvier, 1899.

The male from station 3,469 and the ovigerous female from station 2,990-A agree with the type specimens in every particular except that the rostrum is missing. This naturally gives the specimens the appearance of *C. normani* Lankester, 1903, but since this is the only difference, it is probably best to assume that the rostrum has been accidentally lost in these specimens. The male is much smaller than the three females, the carapace measuring only 4.9 mm. in length and so approaching *C. quadratus* in size, but as in the females the abdomen is made up of seven distinct segments.

CYCLODORIPPE AGASSIZII A. Milne Edwards

Cyclodorippe agassizii Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 105, text-fig. 25, pl. 32, figs. 5, 6, 1937.

Occurrence.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 2,960; 270 fathoms; 1 small male; station 3,330; 230-265 fathoms; 1 male.

Remarks.—The male from station 3,330 agrees very well with the holotype of *C. agassizii* with which it has been compared, except that the spines on the protogastric regions of the carapace are somewhat more pronounced and the frontal and lateral areas of the carapace and, particularly, the chelipeds are fringed with long hairs. In the young male from station 2960 the dorsal protuberances of the carapace are but little larger than in *C. antennaria* but the form of the front and orbits leave little doubt that it belongs to *C. agassizii*.

***Cyclodorippe ornata*, sp. nov.**

(Figs 7, 8)

Holotype.—Ovigerous female, M. C. Z. No. 10,712; off Bahia de Matanzas, Matanzas Province, Cuba; lat. 23° 09' N., long. 81° 27' 30" W.; 240 fathoms; May 11, 1939; station 3,478.

Paratypes.—One male, three females (two ovigerous); Old Bahama Channel off Punta Alegre, Camaguey Province, Cuba; lat. 22° 47' N., long. 78° 48' 30" W.; 205-230 fathoms; March 11, 1938; station 2 982B.

Description.—Carapace subcircular and covered with granules which are larger and more prominent laterally. Front broad, deeply concave dorsally, angulate at the junction with the orbital margin and with a broad, median incision at the tip in dorsal view; margin

of front denticulate with two or three small fissures in each lateral lobe dividing each portion into three or four low lobes. Upper margin of orbit smooth, short and curved obliquely forward where it ends in a strong, blunt-tipped spine. A large, blunt-tipped spine above lateral margin at about widest point of carapace. Metagastric spine

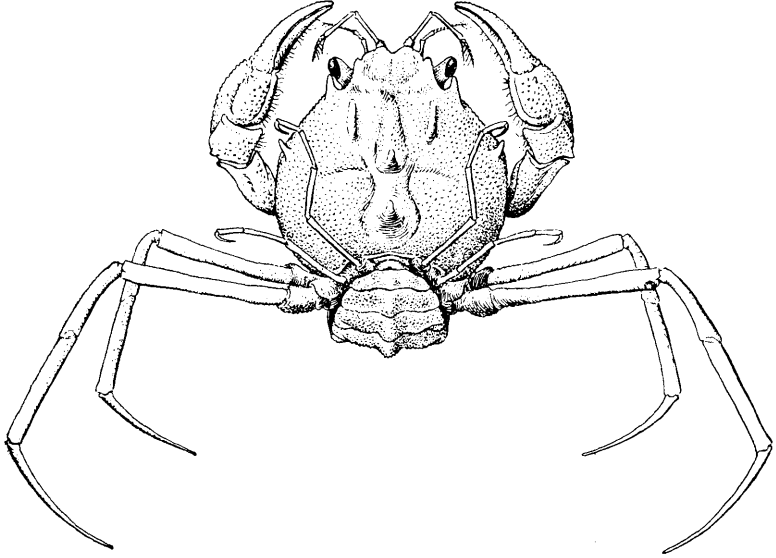


FIG. 7

Cyclodorippe ornata. Holotype. $\times 4$.

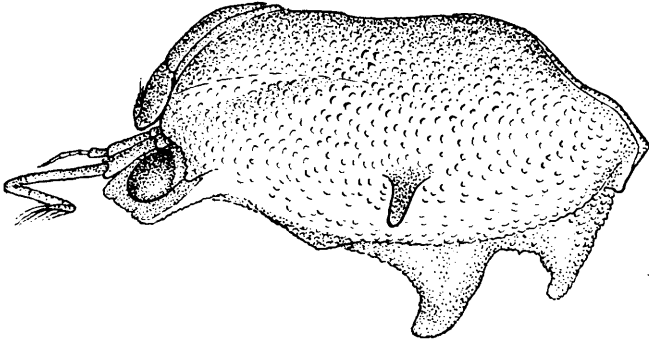


FIG. 8

Cyclodorippe ornata

Lateral view of carapace of holotype. $\times 10$.

large, broadened in an antero-posterior plane and curved forward. Cardiac spine somewhat smaller than metagastric, also curved slightly forward, but not so broad in lateral view. Protogastric prominences

elevated, convex, or occasionally, conical. Ocular peduncles robust, the cornea exceeding half the length of the stalk. Antennular peduncles little more than half as long as carapace; basal article robust with minute serrations on its outer edge. Antennae small, the peduncle exceeding the basal article of antennular peduncle by the length of its terminal segment. Exopod of outer maxilliped fully as broad as ischium and extending beyond it; merus broadly rounded. Chelipeds well developed; chela coarsely granulate, movable finger much longer than palm; carpus granulous, with an inner spinulose lobe but without an prominent outer tooth as in *C. bouvieri* Rathbun, 1934. Ambulatory legs nearly smooth; the first exceeds the cheliped by about the length of the dactyl and the second surpasses the first by a similar length. Last two pairs of legs very slender.

Measurements.—Female holotype, length of carapace 6.9, width 7.7 mm. Male paratype, length 5.8, width 5.9 mm.

Remarks.—These five specimens are remarkably uniform in form, the only differences being that the protogastric prominences are slightly more conical in some than in others. The species differs from the known American species of the genus in the shorter antennules, notched front and the form of the metagastric spine. It is most closely allied to *C. agassizii* A. Milne Edwards, 1880, and *C. bouvieri* Rathbun, 1934, but it differs from the first in the very different form of the orbit and from the second in the differently formed front and the absence of any distinct spine on the outer margin of the carpus of the cheliped.

Símodorippe,⁽⁴⁾ gen. nov.

Carapace with subparallel lateral margins which are rounded anteriorly and posteriorly. Posterior gastric, cardiac and intestinal regions well-defined. Frontal region with a sharp dorsal inclination and separated from the remainder of the carapace by a constriction. Orbits tubular in appearance and with a deep dorsal notch. Eyestalks slender and movable, with a pigmented cornea. Rostrum absent, represented by a pair of minute lobes separated by a median incision. Antennules long, protruding from the orbit when folded; the peduncle of the antenna does not form a protective valve. Buccal cavern ovoid and completely covered by the external maxillipeds which extend quite to the frontal margin and cover the confluent efferent branchial canals. The palp of the external maxillipeds is articulated near the center of the inner surface of the merus, and the latter extends far beyond this articulation. The exognath reaches as far as the ischium

(4) σιμός (snub-nosed) + *Dorippe*.

of the endognath. Anterior and intermediate maxillipeds lack a flagellum on the exopods. There are no afferent branchial openings in front of the bases of the chelipeds. The female sexual openings are situated in the coxae of the second ambulatory legs. Chelipeds equal. First two pairs of ambulatory legs little compressed; last two pairs as in *Cyclodorippe*. The abdomen is composed of six segments in both the male and female, but the last two segments in the male are fused. The male abdomen reaches to the posterior part of the third sternite, the female to the posterior part of the second.

This genus appears to be most closely related to *Clythrocerus* as evidenced by the form of the front, the form of the buccal cavern, all of the maxillipeds, those of the anterior and intermediate pairs being very similar to the corresponding organs in that genus and the form of the abdomen. It differs from that genus in its larger size, differently shaped carapace, much longer antennules and the absence of a valvular cover formed by the antennal peduncle. In these latter characters the genus approaches *Cyclodorippe*.

***Símodorippe tylota*,⁽⁵⁾ sp. nov.**

(FIGS. 9, 10)

Holotype.—Male, M. C. Z. No. 10.703; Old Bahama Channel off Cayo Coco, Camaguey Province, Cuba; lat 22° 34' N., long. 78° 14' W.; 220 fathoms; April 27, 1939; station 3,391.

Paratypes.—Two females, one of which is ovigerous, from the same general locality and depth; station 3,393.

Description.—Carapace with subparallel sides which become rounded and converge anteriorly and posteriorly. The posterior part of the gastric region and the cardiac and intestinal regions are depressed somewhat below the general level of the carapace and bounded laterally by wellmarked furrows. The entire surface of the carapace is covered with coarse granules among which are scattered prominent knob-like or capitate spines; four of these form a diamond on either side of the gastric region, there is a diagonal row of three across each posterior branchial region and several are clustered on the margins of the hepatic region. Orbits slanting sharply upward and cut off from the posterior part of the carapace by a sharp constriction. Around the orbit are four knob-like spines, a large dorsal one and three smaller ones of which two are lateral and one ventral. Eyes cylindrical, pigmented and movable; they do not extend beyond the lateral projections of the orbit but are plainly visible in dorsal view due to the gaping fissure between the dorsal and lateral projections of the orbit. Front depressed below the level

(5) τυλωτός (knobbed).

of the orbits and marked by two minute, concave teeth separated by a median fissure and bounded on either side by a large knob; from this knob, the frontal margin curves regularly outward and upward to the dorsal prominence of the orbit. Antennules long, about two-thirds the length of the carapace; the first segment is broad, the two

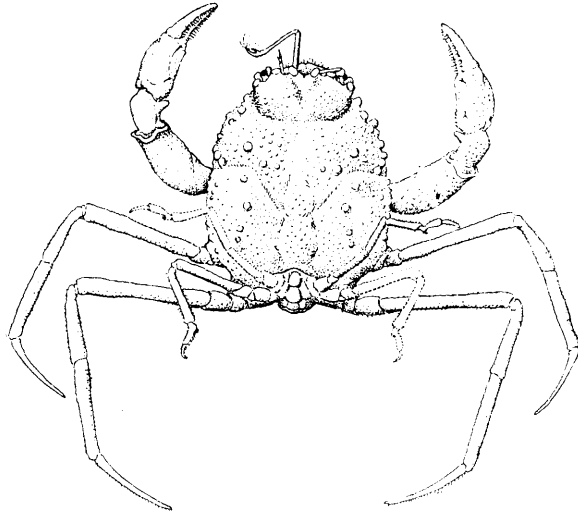


FIG. 9
Simodorippe tylota. $\times 2$.

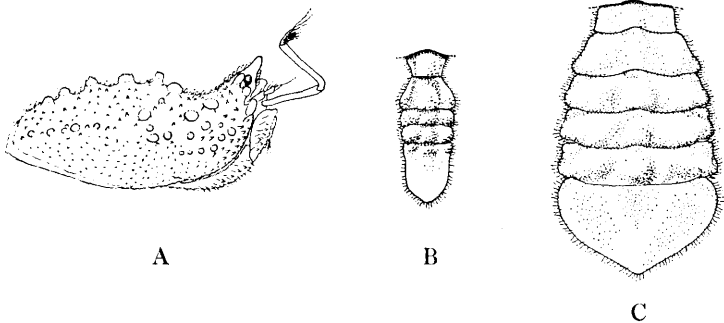


FIG. 10
Simodorippe tylota
A. Lateral view of carapace of holotype. $\times 3$.
B. Abdomen of holotype male. $\times 3$.
C. Abdomen of paratype ovigerous female. $\times 3$.

following articles slender, the third slightly longer than the second, and the flagellum reduced. Despite their length, the antennules are capable of being folded into the orbito-antennal cavity, although when so folded they protrude beyond the eye and are easily seen in dorsal

view. Antennae small, barely reaching to the extremity of the second segment of the antennules; the peduncle bears a few spines but does not form a valvular process to cover the folded antennules. Outer maxillipeds long, covering the basal joint of the antennules and visible in dorsal view due to the shallow front and upturned frontal regions; the exopod reaches quite as far as the ischium and the merus extends well beyond the point of insertion of the palp. Chelipeds robust in the male, equal; the carpus has a strong inner tooth and a faint carina on the dorsal surface; palm with a tooth directed inward from the middle of the upper margin; fingers bent inward at the tips and about one third again as long as the palm. In the female, the chelipeds are more slender and the fingers twice as long as the palm. The chelipeds and all of the legs are finely granular. The first ambulatory leg extends beyond the cheliped by the length of the dactyl and the second surpasses the first by half the length of the dactyl. The dactyls of both of these legs are furred on the anterior and dorsal surfaces. The last two legs, when extended, reach slightly beyond the merus of the second ambulatory; the propodites are arched and bear a furred protuberance near the base against which the tip of the dactyl closes. Sternum finely granulate like the legs. Male abdomen composed of five movable segments, the last two being fused; in the female there are six free segments, the terminal one being large and broad. The eggs are about 0.7 mm. in diameter and numerous.

Measurements. — Male holotype, length of carapace 11.1 mm., width, not including spines, 11.7 mm. Oviparous female, length of carapace 11.8 mm., width 12.6 mm.

FAMILY LEUCOSIIDAE

MYROPSIS QUINQUESPINOSA Stimpson

Myropsis quinquespinosa Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 164, pl. 46, figs. 1-3, 1937.

Occurrence.

Bahamas:

Eight miles NE. of Great Isaac Island, Bimini Group;
station 2,951; 155 fathoms; 1 male, 1 oviparous female.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,421; 235
fathoms; 2 immature specimens; station 3,422; 235
fathoms; 1 male, 1 female, 1 young; station 3,423; 245

fathoms; 1 ovigerous female, 3 immature specimens; station 3,427; 240 fathoms; 1 male, 1 young; station 3,428; 240 fathoms; 2 females (1 ovigerous), 2 young; station 3,432; 250 fathoms; 2 young; station 3,435; 255 fathoms; 1 male.

Western end of Old Bahama Channel; station 2,983; 235-260 fathoms; 1 young female, 1 immature specimen; station 2,984; 240-250 fathoms; 1 young.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982; 210 fathoms; 1 immature specimen; station 2,982A; 210 fathoms; 3 young; station 2,982C; 195-225 fathoms; 1 young; station 2,982D; 150-180 fathoms; 1 ovigerous female, 1 young; station 2,982E; 150-180 fathoms; 1 male; station 3,407; 200 fathoms; 1 immature female; station 3,410; 260 fathoms; 1 immature specimen; station 3,411; 260 fathoms; 2 immature specimens; station 3,412; 235 fathoms; 1 male; station 3,413; 235 fathoms; 1 chela; station 3,414; 230 fathoms; 1 immature specimen; station 3,415; 210 fathoms; 1 male; station 3,416; 200 fathoms; 2 males, 1 female, 3 immature specimens; station 3,417; 200 fathoms; 1 ovigerous female, 2 young; station 3,419; 180 fathoms; 1 immature specimen.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,391; 220 fathoms; 3 young; station 3,392; 225 fathoms; 1 young; station 3,393; 220 fathoms; 4 young; station 3,394; 200 fathoms; 2 young; station 3,397; 180 fathoms; 1 young; station 3,400; 180 fathoms; 2 young; station 3,401; 235 fathoms; 1 young; station 3,403; 210 fathoms; 1 male, 3 young; station 3,404; 215 fathoms; 1 young.

Old Bahama Channel off western end of Cayo Romano, Camaguey Province; station 3,387; 245 fathoms; 1 young; station 3,389; 220 fathoms; 2 young.

Off Puerto Tanamo, Oriente Province; station 3,376; 285 fathoms; 1 male, 1 young female.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 2,962B; 180-190 fathoms; 1 male; 1 young; station 3,328; 260-275 fathoms; 1 male, 1 female; station 3,331; 230-260 fathoms; 1 immature specimen; station 3,332; 175-225 fathoms; 2 young; station 3,334; 185-195 fathoms; 1 immature specimen; station 3,335; 200 fathoms; 1 young.

FAMILY CALAPPIDAE

CALAPPA FLAMMEA (Herbst)

Calappa flammea Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 198, pl. 59, figs. 1, 2; pl. 60, fig. 1, 1937.

Two large males of this familiar species were taken one-half mile off Cat Cay, Bimini Group, Bahamas, in eight fathoms, May 21, 1939. The larger specimen has the carapace 87.7 mm. long, 118.2 mm. broad at the sinus in front of the wings and about 138 mm. in extreme breadth.

ACANTHOCARPUS ALEXANDRI Stimpson

Acanthocarpus alexandri Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 221, pl. 69, figs. 1, 2, 1937.

Occurrence.

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982; 210 fathoms; 1 male; station 2,982E; 150-180 fathoms; 1 male; station 3,411; 260 fathoms; 2 males, 1 young; station 3,415; 210 fathoms; 1 male, 1 female.

Off Puerto Tanamo, Oriente Province; station 3,375; 230 fathoms; 2 young females.

Remarks.—All of these specimens differ from the measurements given by Miss Rathbun in having the carapace slightly, but distinctly, broader than long. The largest male has the carapace 41.0 mm. long and 42.2 mm. broad and in the largest female these measurements are 39.0 and 41.0 mm. respectively.

PARACYCLOÏS ATLANTIS Chace

(Figs. 11, 12)

Paracycloïis atlantis Chace, F. A., Mem. Soc. Cubana Hist. Nat., vol. 13, no. 1, p. 51, 1939.

Occurrence.

North coast of Cuba:

Off Caibarién, Santa Clara Province; station 3,420; 190 fathoms; 2 small females; station 3,422; 235 fathoms; 1 male, 1 female (soft shell).

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982E; 150-180 fathoms; holotype female; station 3,419; 180 fathoms; 1 male, 1 female. 1 young.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,396; 180 fathoms; 2 young; station 3,397; 180 fathoms; 2 young; station 3,399; 180 fathoms; 1 female; station 3,403; 210 fathoms; 1 male, 1 female.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,390; 180 fathoms; 1 young.

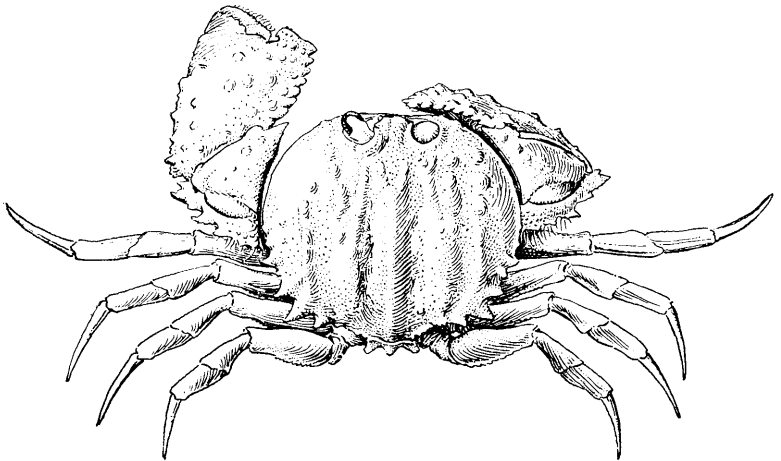


FIG. 11

Paracycloïis atlantis. Male from station 3,422. $\times 0.7$.

Description.—Carapace convex longitudinally and from side to side except across posterior part where postero-lateral wings occur. The surface is minutely granular and coarsely punctate except on extreme posterior portion where punctae disappear and the granules become larger. The surface is also uneven the elevations roughly

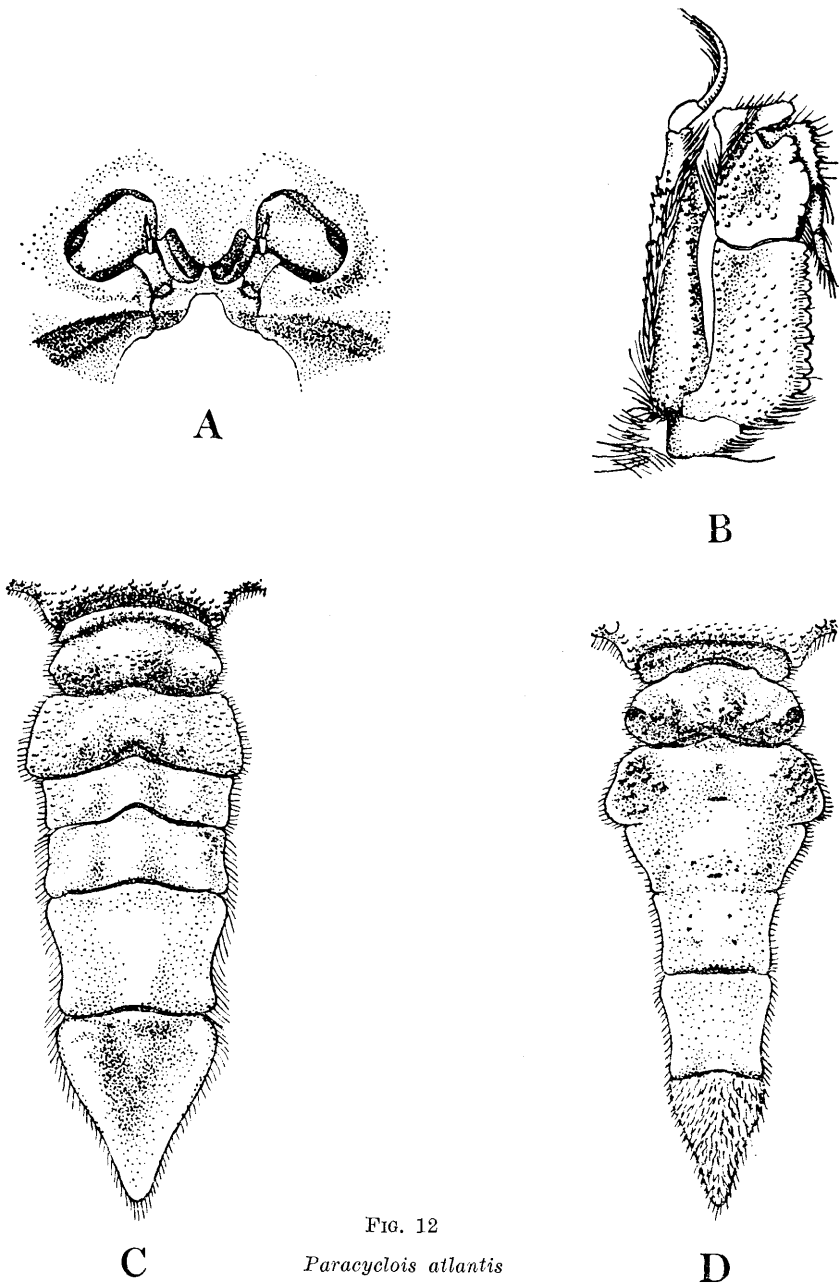


FIG. 12

Paracyclois atlantis

- A. Frontal region of holotype. $\times 2$. - B. Outer maxilliped of holotype. $\times 3$.
 C. Abdomen of holotype female. $\times 2$. - D. Abdomen of male from station 3,422. $\times 2$.

falling into five longitudinal rows as in *Acanthocarpus*. The pair of furrows bordering the median elevation are by far the deepest depressions. The postero-lateral wings are formed by four large and one or two rudimentary spines, one rudimentary tooth often being present between the two anterior larger ones; the next to the posterior tooth is always the largest of the four, and in the young this tooth is very much larger than the other three. The posterior margin is trilobate in dorsal view, the lateral lobes being prolonged ventrally on either side of the first segment of the abdomen. The anterolateral line bears two indistinct teeth back of the orbit. The orbit has a single dorsal fissure and the orbital margin is ciliated. Front deflexed so that the tip is invisible in dorsal view, very slightly wider than the greatest diameter of the orbit and trilobate, the median lobe being rounded triangular and the lateral lobes very narrow and traversed by a shallow notch which separates the front from the orbits. The pterygostomian region below the orbits is smooth and concave, but the notch opening from this depressed area at the base of the antennae is minute.

The subdistal crest of the merus of the chelipeds is armed with five denticulate teeth. Hand surmounted dorsally by seven closely set teeth and with a row of about ten tubercles extending from the base of the dactyl to the postero-inferior angle. Between the dorsal teeth and the ventral row of tubercles are about 15 scattered tubercles on the outer surface. The inner surface of the fingers and the lower two-thirds of the inner surface of the hand, as well as the anterior margin of the merus, are heavily furred in the male, sparsely so in the female. There is a stridulating ridge behind the base of the dactyl composed of about 90 closely placed oblique striae. The ambulatory legs are smooth and polished; the merus of each leg is provided with a row of nine or ten small teeth on the lower margin and the propodus is cristate on both edges.

Outer maxillipeds with the ischium much longer than the merus. The latter is deeply, but narrowly, incised at the insertion of the palp and is produced laterally at the antero-external angle. The surface of the outer maxillipeds is granular and more or less hairy; there is a line of hairs running obliquely along the exopod and extending across the antero-external angle of the merus and the proximal portion of the ischium is more or less furred.

The sternum is coarsely tuberculate and more or less hairy anteriorly, this furriness extending onto the terminal abdominal somite in the male. In both sexes the first three segments of the abdomen are granulate and the second is sharply trilobate. In the female all of the abdominal somites are distinct; in the male, the third to fifth are fused.

Measurements.—Holotype female, length of carapace 45.5 mm.; width 49.1 mm. Male, station 3,422, length of carapace 50.0 mm.; width 55.2 mm.

Remarks.—The greater proportionate breadth of the carapace, form of the front, narrower notch on the merus of the outer maxillipeds, position and denticulate form of the subdistal crest of the merus of the chelipeds and the presence of ventral teeth on the merus of all of the ambulatory legs serve to distinguish this species from *P. milne-edwardsii* Miers, 1886, from off the Admiralty Islands. The completely deflexed front and smaller posterolateral spines on the carapace separate it from the subfossil *P. grandispinis* Etheridge and McCulloch, 1916, from Melbourne, Australia.

There is little doubt that *Paracyclois* is very closely allied to *Acanthocarpus*.

HEPATUS PRINCEPS (Herbst)

Hepatus princeps Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 235, pl. 70, figs. 1, 2, 1937.

Four males and seven females of this species were taken at Cienfuegos, Santa Clara Province, Cuba, in a fish trap set at the dock in four fathoms, March 30 and April 3, 1939. One male and one female were taken at Bahia de Guantanamo, Oriente Province, also from a fish trap set at the dock, April 14, 1939.

FAMILY PORTUNIDAE

BATHYNECTES SUPERBA (Costa)

Bathynectes superba Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 28, pls. 9, 10, 1930.

Occurrence.

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,303; 260 fathoms; 1 young female.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 3,330; 230-265 fathoms; 1 young female.

Remarks.—These records extend the range of this species to the West Indies, the previous southern limit in American waters being in the Straits of Florida off Key West.

PORTUNUS (PORTUNUS) SAYI (Gibbes)

Portunus (Portunus) sayi Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 37, text-fig. 6, pl. 14, 1930.

One male specimen of this common Sargassum form was taken in Sargassum at the surface, north of Puerto Tanamo, Oriente Province, Cuba, station 2,973.

PORTUNUS (PORTUNUS) VENTRALIS (A. Milne Edwards)

Portunus (Portunus) ventralis Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 43, pl. 13, figs. 1, 2, 1930.

One young male of this species was taken in the Old Bahama Channel off Cayo Coco, Camaguey Province, Cuba; station 3,403. The depth at this station was 210 fathoms, but it is very probable that this specimen was taken at the surface when the trawl was drawn in.

PORTUNUS (ACHELOUS) SPINIMANUS Latreille

Portunus (Achelous) spinimanus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 62, pls. 26, 27, 28, 1930.

Two males were taken in a crab pot set in four fathoms at Bahía Sigüanea, Isla de Pinos, Cuba, February 15, 1938.

PORTUNUS (ACHELOUS) ORDWAYI (Stimpson)

Portunus (Achelous) ordwayi Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 71, pl. 33, 1930.

Occurrence.

South coast of Cuba:

Inside Cabo Cruz, Oriente Province; stations 3,347-3,350;
11½-13 fathoms; 1 male, 1 female.

PORTUNUS (ACHELOUS) SEBAE (H. Milne Edwards)

Portunus (Achelous) sebae Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 79, pls. 34, 35, 1930.

One female was taken in a trap set off the Naval Station dock at Bahía de Guantánamo, Oriente Province, Cuba, April 13, 1939.

PORTUNUS (ACHELOUS) SPINICARPUS (Stimpson)

Portunus (Achelous) spinicarpus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 92, pl. 45, 1930.

Occurrence.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,420; 190 fathoms; 1 male, 2 females; station 3,421; 235 fathoms; 1 male, 2 females.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982C; 195-225 fathoms; 1 female; station 2,982D; 150-180 fathoms; 2 males, 1 female; station 3,409; 200 fathoms; 3 males; station 3,412; 235 fathoms; 2 females; station 3,413; 215 fathoms; 1 female; station 3,414; 230 fathoms; 1 male; station 3,415; 210 fathoms; 1 male, 1 female; station 3,416; 200 fathoms; 1 female; station 3,419; 180 fathoms; 1 male.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,391; 220 fathoms; 1 chela; station 3,392; 225 fathoms; 1 male; station 3,393; 220 fathoms; 1 male; station 3,401; 235 fathoms; 1 female; station 3,404; 215 fathoms; 2 males; station 3,405; 235 fathoms; 2 females.

Old Bahama Channel off western end of Cayo Romano, Camaguey Province; station 3,390; 180 fathoms; 1 male.

Off Puerto Tanamo, Oriente Province; station 3,371; 295 fathoms; 1 female.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 2,962C; 210 fathoms; 1 female; station 3,320; 185 fathoms; 1 ovigerous female.

Remarks.—All of these specimens differ from Miss Rathbun's description and approach *P. (A.) iridescens* (Rathbun) from the Pacific coast of Mexico in having the posterior angles of the carapace distinctly angular and in several specimens this angle could easily be called spiniform; this is particularly true of the three males from station 3,409. A distinctive feature of this species is the flattened, iridescent surface on each segment of the palps of the outer

maxillipeds. Several of the present series are quite large; the largest male has the carapace 33.0 mm. long and 67.0 mm. broad, including the lateral spines, and the largest female yields corresponding measurements of 34.0 mm. and 63.8 mm. respectively.

CALLINECTES SAPIDUS SAPIDUS Rathbun

Callinectes sapidus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 99, text-figs. 15a, 16e, 17c, 18a, 19, pl. 47, 1930.

One immature female was taken from a creek at Cienfuegos, Santa Clara Province, Cuba. February 19, 1938.

CALLINECTES ORNATUS Ordway

Callinectes ornatus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 114, text-figs. 15b, 16a, 17a, 18b, pl. 50, 1930.

Three males, one female and five young were taken along the shore at Bahía Siguanea, Isla de Pinos, Cuba, February 14 and 15, 1938.

CALLINECTES DANAE Smith

Callinectes danae Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 118, text-figs. 15d, 16b, 17b, 18d, pl. 51, 1930.

Four males and three females were taken in a fish trap set off the dock in four fathoms at Cienfuegos, Santa Clara Province, Cuba. March 29 to April 1, 1939.

CALLINECTES EXASPERATUS (Gerstaecker)

Callinectes exasperatus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 130, text-figs. 15f, 16f, 17e, 18e, pl. 56, 1930.

One male, one female and one young were taken along the shore at Bahía Siguanea, Isla de Pinos, Cuba, February 14, 1938.

FAMILY XANTHIDAE

CARPILIUS CORALLINUS (Herbst)

Carpilius corallinus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 240, pls. 97-99, 1930.

Two males and one female were presented to the expedition by fishermen at Bahía de Matanzas, Matanzas Province, Cuba. The female was acquired March 19, 1938, and the two males May 7, 1939.

PANOPEUS HERBSTII H. Milne Edwards

Panopeus herbstii Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 335, text-figs. 52, 53, pls. 56, 57, 1930.

One male was taken in a seine along the shore at Bahia Siguanea, Isla de Pinos, Cuba, February 14, 1938; fourteen males and three females were taken in a trap set in four fathoms at Cienfuegos, Santa Clara Province, Cuba, from March 29 to April 3, 1939; one male was found in a creek at Cienfuegos, February 19, 1938; and one male was taken in a trap at the Naval Station dock at Bahia de Guantanamo, Oriente Province, Cuba, April 13, 1939.

The specimen from Bahia Siguanea undoubtedly belongs to *forma obesa* and the specimen taken from the creek at Cienfuegos probably also belongs to this *forma*, although the gastric region is less swollen than in the preceding specimen. All of the others are representative of *forma crassa*, although some of the smaller specimens, particularly the females, taken in the trap at Cienfuegos approach *forma obesa*.

EURYTIUM LIMOSUM (Say)

Eurytium limosum Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 423, pl. 176, figs. 1, 2, 1930.

Two males were presented by a fisherman at Cienfuegos, Santa Clara Province, Cuba, February 20, 1938.

MICROPANOPE URINATOR (A. Milne Edwards)

Micropanope urinator Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 451, pl. 182, figs. 3, 4, pl. 183, figs. 1-3, 1930.

Occurrence.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,422; 235 fathoms; 1 male; station 3,430; 235 fathoms; 1 female.

Remarks.—The male in the present collection is considerably larger than previously recorded specimens, the carapace measuring 12.0 mm. long and 17.2 mm. broad.

The holotype of *M. urinator* is deposited in the Museum of Comparative Zoölogy (Cat. No. 9,159) and not in the Paris Museum as noted by Miss Rathbun.

Micropanope levimanus, sp. nov.

(Figs. 13, 14)

Holotype.—Female. M. C. Z. No. 10.903; inside Cabo Cruz, Oriente Province, Cuba; lat. 20° 03' N., long. 77° 55' W.; 11-13 fathoms; April 9, 1939; stations 3,347-3,350.

Paratypes.—Two males, one ovigerous female from the same locality.

Description.—Carapace very broad and convex antero-posteriorly, minutely granulate anteriorly and laterally, smooth on the central portion of the posterior half; areolations well marked. Front made up of two convex lobes separated by a median incision and not produced as lobes at the lateral angles; there is a transverse row of setae behind the frontal margin. Five antero-lateral teeth; post-ocular tooth small, second tooth a low lobe separated from the first by a shallow sinus, third tooth broad and somewhat rounded, fourth salient and acute, fifth very small and acute; all of the teeth are minutely granulate. Orbital margin minutely granulate with two closed fissures in the dorsal margin; outer sinus broad and shallow; an obtuse tooth at inner angle of lower margin. Subhepatic region finely granular with a low elevation but no distinct tubercle.

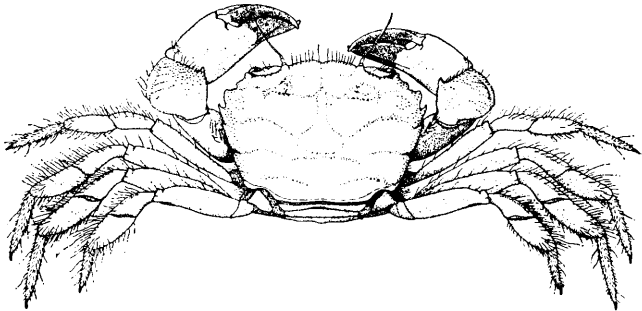


FIG. 13

Micropanope levimanus. Holotype $\times 3$.

Chelipeds unequal. Carpus with sharp granules on the distal portion, a deep distal groove and a blunt spine at inner angle. Hands inflated and smooth except for a few minute granules at carpal articulation. Fingers channeled, irregularly armed with teeth and crossing at the tips when closed; there is a blunt basal tooth on the movable finger of the larger chela; movable finger about one-third again as long as upper margin of palm; dark color of fixed finger not extending as far as palm. Walking legs smooth, sparsely setose on upper margin of merus, densely hairy on margins of three distal segments.

Measurements.—Female holotype, length of carapace 6.2 mm., breadth of carapace 9.3 mm., fronto-orbital width 6.8 mm., width of front 3.1 mm. The three paratypes are all somewhat smaller, the larger male having the carapace 5.2 mm. long and the ovigerous female 5.8 mm. long.

Remarks.—This species is extremely near *M. lata* (Faxon, 1893) from the Bay of Panama, with the type of which it has been compared. The only important differences between the two species are the proportionately shorter fingers of the chelae and the presence of a basal tooth on the movable finger of the larger chela in *M.*

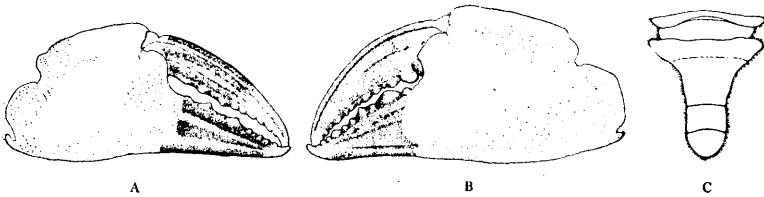


FIG. 14

Micropanope levimanus

- A. Outer face of right chela. $\times 6.3$.
- B. Outer face of left chela. $\times 6.3$.
- C. Abdomen of male paratype. $\times 6.3$.

levimanus. *M. xanthiformis*, the most closely related Atlantic form, differs in having the carapace and hands coarsely granular and in having the outer angles of the front distinctly produced.

There is a female specimen in poor condition in the Museum of Comparative Zoölogy collected by Dr. H. L. Clark at Port Antonio, Jamaica, in March, 1909, which apparently belongs to *M. levimanus*.

TETRAXANTHUS BIDENTATUS (A. Milne Edwards)

Xanthodes bidentatus A. Milne Edwards, Crust. Rég. Mexico, p. 353, pl. 53, figs. 5-5b, 1880.

Tetraxanthus rugosus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 459, pl. 185, 1930.

Tetraxanthus bidentatus Chace, F. A., Mem. Soc. Cubana Hist. Nat., vol. 13, no. 1, p. 52, 1939. Not *T. bidentatus* Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 458, pl. 184, 1930

Occurrence.

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,302; 230 fathoms; 1 female; station 3,303; 260 fathoms; 1 male, 1 female.

Off Bahia de Matanzas, Matanzas Province; station 3,482; 190 fathoms; 1 female.

Remarks.—Although all four specimens are less than half as large as the male holotype from off Grenada, they agree with that specimen in all other important particulars. There is little doubt that *T. rugosus* Rathbun, 1930, must be synonymized with this species.

TETRAXANTHUS RATHBUNAE Chace

Tetraxanthus bidentatus Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 458, pl. 184, 1930. Not *Xanthodes bidentatus* A. Milne Edwards, Crust. Rég. Mexico, p. 353, pl. 53, figs. 5-5b, 1880.

Tetraxanthus rathbunae Chace, F. A., Mem. Soc. Cubana Hist. Nat., vol. 13, no. 1, p. 52, 1939.

Occurrence.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,420, 190 fathoms; 3 males, 1 female; station 3,421; 235 fathoms; 1 male.

Western end of Old Bahama Channel; station 2,983; 235-260 fathoms; 1 male (paratype).

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982D; 150-180 fathoms; 1 male (holotype); station 2,982E; 150-180 fathoms; 1 male, 1 ovigerous female (paratypes); station 3,409; 200 fathoms; 2 males; station 3,411; 260 fathoms; 1 male; station 3,413; 215 fathoms; 1 female; station 3,414; 230 fathoms; 1 male; station 3,415; 210 fathoms; 2 males; station 3,416; 200 fathoms; 1 ovigerous female; station 3,419; 180 fathoms; 1 male.

Old Bahama Channel off Cayo Coco; Camaguey Province; station 3,391; 220 fathoms; 1 male.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 3,331;
230-260 fathoms; 1 male; station 3,333; 190-200 fathoms;
1 young female.

Remarks.—As previously stated, examination of the holotype of *Xanthodes bidentatus* A. Milne Edwards has disclosed that Miss Rathbun referred the wrong one of the two known species of *Tetraxanthus* to this species. The type of *T. bidentatus* agrees with Miss Rathbun's description and figure of *T. rugosus* and the latter must, therefore, be synonymized. Since no name was available for the form generally known as *T. bidentatus* it has been called *T. rathbunae*.

MENIPPE MERCENARIA (Say)

Menippe mercenaria Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 472, text-fig. 78, pls. 191-193, 1930.

One female was taken in a fish trap set in four fathoms off the dock at Cienfuegos, Santa Clara Province, Cuba, March 30, 1939.

FAMILY CANCRIDAE

CANCER BOREALIS Stimpson

Cancer borealis Rathbun, M. J., U. S. Nat. Mus. Bull. 152, p. 182, text-fig. 30, 1930.

One female was taken by "Atlantis" east of St. Augustine, Florida; 30° 21' N., 79° 55' W.; 230-250 fathoms; station 3,779; February 24, 1940.

FAMILY GONEPLACIDAE

GERYON QUINQUEDENS Smith

Geryon quinquedens Smith, S. I., Trans. Connecticut Acad. Arts and Sci., vol. 5, p. 35, pl. 9, figs. 1, 1a, 1b, 2, 1879; Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 271 (part - not figured specimen), 1937.

Occurrence.

North coast of Cuba:

Northwest of Cabo San Antonio, Pinar del Rio Province;
station 3,313; 550 fathoms; 1 male.

Off Bahia de Cardenas. Matanzas Province; station 2,996; 470-665 fathoms; 1 male.

Off Bahia de Santa Clara, Santa Clara Province; station 2,992A; 555 fathoms; 1 female; station 2,993; 580 fathoms; 1 male; station 3,459; 500 fathoms; 1 male.

Remarks.—These specimens agree very well with specimens of similar size taken off the east coast of the United States, except that the median pair of frontal teeth are slightly more advanced than in most of the more northern specimens. The largest Cuban specimen, a male, has the carapace 123 mm. long to the tips of the frontal teeth, and 144.5 mm. in greatest width. For a comparison of this species with *G. affinis* see remarks under the latter species.

GERYON AFFINIS A. Milne Edwards and Bouvier

Geryon affinis A. Milne Edwards and Bouvier, Res. Camp. Sci. Monaco, vol. 7, p. 41, text-figs. A-D, pl. 1, 1894 (type locality, off the Azores); Doflein, F., Wiss. Ergebn. "Valdivia" Exped., vol. 6, p. 106, pls. 3, 4, 33, 34, pl. 38, figs. 1-6, pl. 41, figs. 3-7, pl. 43, figs. 2, 8, 1904.

Geryon quinquedens Rathbun, M. J., U. S. Nat. Mus. Bull. 166, p. 271 (part), pls. 85, 86, 1937.

Occurrence.—Two fine male specimens of this species were taken by "Atlantis" in 1940 east of St. Augustine, Florida. One was taken at station 3,781; 30° 58' N., 79° 34' W.; 265-290 fathoms; February 24, 1940. The other was found at station 3,783; 30° 03' N., 78° 37' W.; 425-430 fathoms; February 25, 1940.

Remarks.—There is little doubt that the specimen figured by Miss Rathbun as *G. quinquedens* is really *G. affinis*. The specimens collected by "Atlantis" agree with the descriptions and figures of Milne Edwards and Bouvier and of Doflein and differ markedly from *G. quinquedens* as shown in the table below; it is noteworthy that Miss Rathbun's figured specimen came from the same general locality as the "Atlantis" specimens. Although all six described species of *Geryon* (not including *G. incertus* Miers which obviously does not belong in the genus) are remarkably similar to one another, there is little difficulty in separating large specimens of *G. affinis* from equally large examples of *G. quinquedens*. In the following table are shown the distinguishing characters of the two species.

G. QUINQUEDENS

Median pair of frontal teeth short, separated by a narrow sinus and produced beyond lateral teeth for their entire length.

Front distinctly wider than orbits.

A sharp subdistal spine on upper margin of merus of cheliped.

A spine on outer margin of carpus of cheliped.

Meri of ambulatory legs with a prominent distal spine on upper margin.

Length of merus of last leg nearly or quite two-thirds width of carapace.

Propodus of last leg five to more than seven times as long as wide.

Propodus of last leg about one and one-half times as long as dactyl.

Dactyls of ambulatory legs very broad and flattened.

G. AFFINIS

Median pair of frontal teeth longer, separated by a broader sinus and extending but little beyond lateral teeth.

Front but little wider than orbits.

At most a blunt tooth on upper margin of merus of cheliped.

Outer margin of carpus of cheliped unarmed.

Meri of ambulatory legs unarmed.

Length of merus of last leg scarcely more than half width of carapace.

Propodus of last leg less than four times as long as wide.

Propodus and dactyl of last leg subequal in length.

Dactyls of ambulatory legs narrow and compressed.

Although there is a good deal of variation, as in all species of the genus, large individuals of these two species can be readily separated by the form of the front, the presence or absence of an outer spine on the carpus of the chelipeds, the presence or absence of a terminal spine on the meri of the ambulatory legs, the much longer ambulatory legs in *G. quinquedens* and, as Milne Edwards and Bouvier have pointed out so well, by the very different form of the dactyls of the ambulatory legs. Smaller specimens of *G. quinquedens* differ from the large ones in so many points that the form of the ambulatory dactyls is the only reliable diagnostic character.

The larger of the two specimens of *G. affinis* at hand has the carapace 125 mm. long to the level of the tips of the frontal teeth and 152 mm. in maximum breadth.

Besides the type locality in the region of the Azores, *G. affinis* is known from the South Atlantic from off the coast of South Africa and from the Indian Ocean off the African and Indian coasts.

Trizocarcinus tacitus, sp. nov.

(Figs. 15, 16)

Goneplax tridentata Boone, L., Bull. Bingham Oceanogr. Coll., vol. 1, art. 2, p. 10, fig. 2, 1927; Bull. Vanderbilt Mar. Mus., vol. 2, p. 194, pl. 66, fig. A, 1930. Not *G. tridentata* (A. Milne Edwards, 1880)

Holotype.—Male, M. C. Z. No. 5,646, collected by the "Blake" at station 274 off Barbados in 209 fathoms, 1878-79.

Description.—Carapace about three-fourths as long as broad; cardiac and posterior branchial regions crossed by a blunt transverse ridge, behind which the surface is nearly flat and in front of which it is convex in both directions. Carapace more or less uneven but only the mesogastric and cardiac regions are demarcated. Surface minutely granulate and bare except for some short hairs on lower part of lateral surfaces. Front bimarginate, the true frontal margin faintly sinuous, the submarginal ridge straight. Front separated by a notch from the subacute inner angle of the orbit. Upper margin

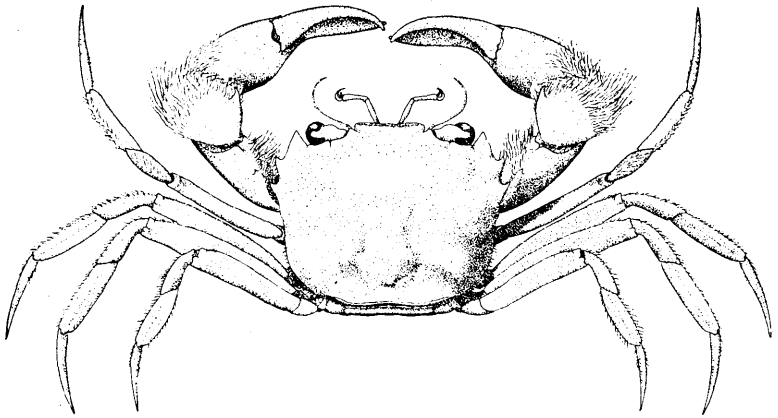


FIG. 15

Trizocarcinus tacitus. Holotype. $\times 1$.

of orbit with two notches and there is a closed fissure below the outer tooth. Antero-lateral margin armed with three somewhat flattened teeth, the second and third smaller and more upturned than the first or extra-orbital tooth. Margins of orbit and antero-lateral teeth not denticulate. Postero-lateral margins slightly convergent. There is a ridge on the pterygostomial region passing obliquely backwards from the antero-lateral angle of the buccal cavity, but it is not striate and so cannot act as a stridulating organ.

Chelipeds subequal, the right chela very slightly larger than the left; merus with a sharp spine on upper margin and a thick mat

of hairs on anterior surface; carpus with a curved tooth on inner margin and a mat of hairs anteriorly; chela with a similar hairy covering on proximal portion only. Ambulatory legs fringed with short hairs, particularly on the carpal and propodal joints.

Male abdomen with all of the joints distinct and the third completely covering the sternum between the last pair of legs.

Measurements.—Male holotype, length of carapace 23.8 mm., maximum width of same 32.2 mm., inter-orbital width 24.9 mm., width of front 9.3 mm.

Remarks.—This specimen was apparently overlooked when the "Blake" material was sent to A. Milne Edwards, and Dr. Faxon had labeled it, "Subf. Carcinoplacinae".

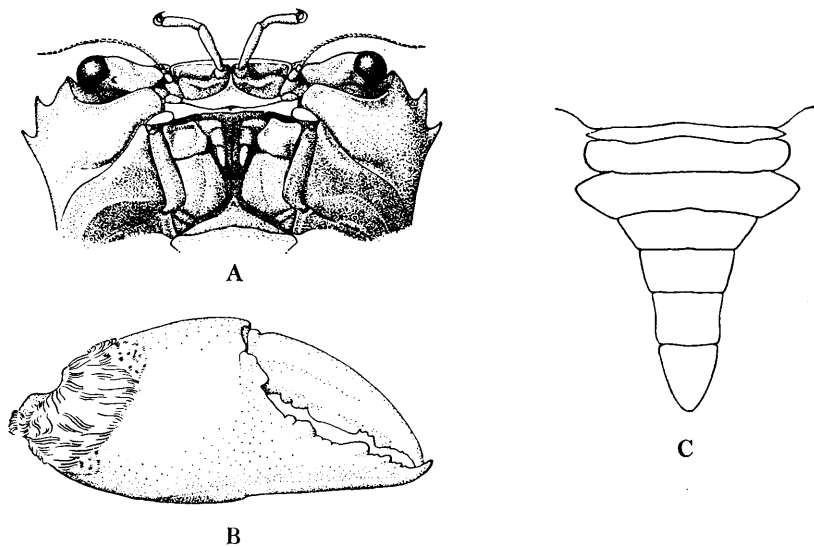


FIG. 16

Trizocarcinus tacitus

- A. Buccal area of holotype. $\times 1.8$.
 B. Outer face of right chela of holotype. $\times 1.8$.
 C. Abdomen of holotype. $\times 2.4$.

There is little doubt that Miss Boone's figure 2 (1927) represents this species, and her description also applies fairly well to the "Blake" specimen. There is some doubt as to the sex of the "Pawnee" specimen as Miss Boone refers to it twice as a female and twice as a male; her figures 3 and 4 certainly appear male-like despite the accompanying legend, but the abdomen does not wholly

agree with that of the "Blake" specimen as may be seen by comparison of the figures. Inquiry of the Bingham Foundation unfortunately discloses that no specimen corresponding to figure 2 can now be found in their collections. The photograph of the specimen in the Vanderbilt Museum also leaves little doubt that it is this species.

T. tacitus differs from *T. dentatus* (Rathbun) from the Gulf of California in the absence of striae on the pterygostomian ridge, the bare and nearly smooth dorsal surface of the carapace, the non-denticulate margins of the orbit and antero-lateral teeth and the absence of a hairy covering on the greater part of the outer surface of the chelae.

BATHYPLAX TYPHLA A. Milne Edwards

Bathyplox typhla Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 19, pl. 2, 1918.

Bathyplox typhlus A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl. Harv., vol. 47, no. 4, p. 333, text-fig. 1, pl. 2, fig. 9, pl. 5, fig. 7, 1923.

Occurrence:

North coast of Cuba:

Off Bahia de Cardenas, Matanzas Province; station 2995;
370-605 fathoms; 1 male.

Remarks.—Contrary to Bouvier's statement implying that but two specimens of this species were taken by the "Blake", there are three cotypes in the Museum of Comparative Zoölogy, two females taken at station 130 off St. Croix and one male from station 221 off St. Lucia.

PILUMNOPLAX AMERICANA Rathbun

Pilumniplax americana Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 21, text-fig. 5, 1918.

Occurrence.—One female was taken by "Atlantis" east of St. Augustine, Florida; 30° 27' N., 79° 52' W.; 250-265 fathoms; February 24, 1940; station 3,780.

Remarks.—In addition to a paratype from off Georgia, there are in the Museum of Comparative Zoölogy two other specimens of this species. One, a male, was taken by the "Blake" off Guadeloupe in 150 fathoms at station 164 in 1878-79; the other, a mutilated female

of large size, was found in the stomach of a specimen of the smooth dogfish, *Mustelus canis* (Mitchell), collected off Havana, Cuba, by Dr. L. Howell Rivero in 1937.

***Pilumnoplax nitida*, sp. nov.**

(Figs. 17, 18)

Holotype.—Male, M. C. Z. No. 10,939; off Caibarien, Santa Clara Province, Cuba; lat. 22° 52' 30" N., long. 79° 20' W.; 240 fathoms; May 1, 1939; station 3,427.

Paratypes.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,427; 240 fathoms; 6 males, 3 females (1 ovigerous); station 3,422; 235 fathoms; 1 male, 1 female; station 3,423; 245 fathoms; 2 males, 4 females (1 ovigerous); station 3,428; 240 fathoms; 2 males, 1 female; station 3,434; 260 fathoms; 1 male.

Western end of Old Bahama Channel; station 2,983; 235-260 fathoms; 3 males; station 2,983A; 235 fathoms; 1 young.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,981C; 195 fathoms; 2 males, 1 female; station 2,981D; 190-230 fathoms; 1 female; station 2,982; 210 fathoms; 4 males; station 2,982A; 210 fathoms; 1 male, 1 female; station 3,411; 260 fathoms; 1 male; station 3,412; 235 fathoms; 1 male; station 3,414; 230 fathoms; 1 male; station 3,416; 200 fathoms; 1 male; station 3,404; 215 fathoms; 1 male.

Description.—Carapace subquadrate, markedly convex in both directions, smooth, polished and punctate except for some microscopic granulation near the antero-lateral margin and totally devoid of hair; except for a very faint H-form furrow at the juncture of the gastric and cardiac regions, there is no indication of regions. Front deflexed, about two-fifths the width of the carapace not including the lateral spines; margin thin and divided into two convex lobes separated by a median notch. Orbital margin finely granulate with two short, closed fissures above and a broad, shallow notch below outer angle; upper margin nearly transverse; outer angle little prominent. Lateral margin armed with three teeth behind the orbital angle; the first broad, obtuse and joined to orbital angle; the second

a sharp spine separated from the first by a U-shaped interval and directed forward with the outer margin subparallel to longitudinal axis of carapace; the third a sharp, curved spine placed some distance behind the second and directed obliquely outward. Ventral portions of carapace finely granular.

Chelipeds unequal and minutely granulate except for the chelae which are granulate only on extreme proximal portions; ischium with a stout, curved spine on anterior margin; merus rounded trigonal with a tubercle at middle of upper margin; carpus with a very faint subdistal depression but no true groove and with a stout spine on proximal half of inner border; larger chela with the fixed finger broad and compressed but with no convexity on lower margin and with an enlarged tooth at base of movable finger; smaller chela

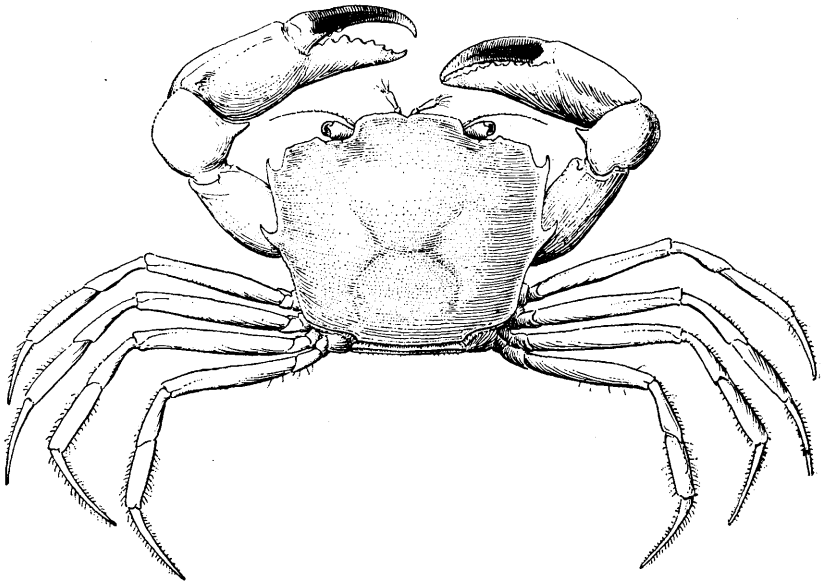


FIG. 17

Pilumnoplax nitida. Holotype. $\times 3$.

with the fixed finger curiously compressed and broadened to form a pronounced swelling in outline of lower margin; on both chelae, the color extends nearly to the base of the movable finger but covers only the tip of the fixed finger.

Ambulatory legs slender, unarmed, with a few scattered fine hairs on meral joints more on carpus and propodus and numerous on the margins of the dactyl.

First three segments of male abdomen of subequal width, the third covering the sternum between the coxae of the last pair of

legs; third, fourth and fifth segments coalesced. Surface of abdomen smooth, of sternum finely granulate.

The merus of the outer maxillipeds is slightly produced at the outer angle.

Measurements. — Holotype, length of carapace 9.8 mm., width, not including lateral spines, 11.9 mm., maximum width 13.0 mm., fronto-orbital width 8.1 mm., width of front 5.0 mm. Male paratype, length of carapace 13.2 mm., maximum width 17.2 mm.

Remarks. — There is some variation as regards the granulation of the carapace and the dilation of the lower margin of the propodus of the smaller chela. In females and small males there is a tendency

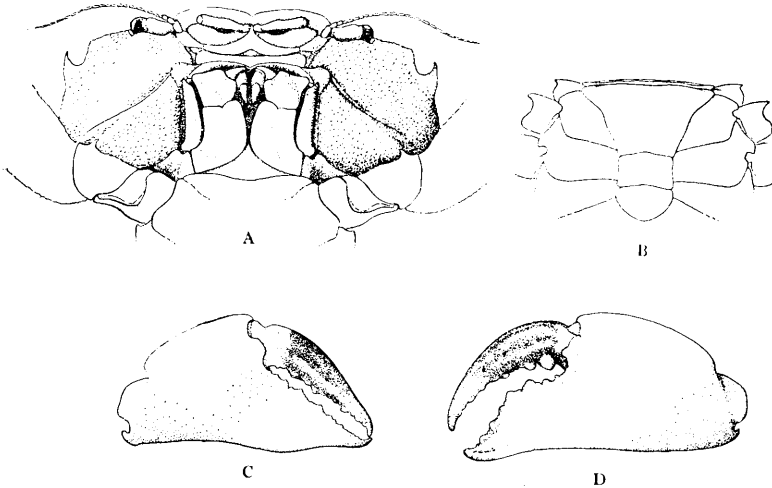


FIG. 18
Pilumnoplax nitida

- A. Buccal area of holotype. $\times 4$.
 B. Abdomen of holotype. $\times 4$.
 C. Outer face of right chela of holotype. $\times 3.2$.
 D. Outer face of left chela of holotype. $\times 3.2$.

for the microscopic granulation of the carapace to be more extensive than in the type so that in some specimens it covers nearly all of the dorsal surface; even in these specimens, however, the granules are so low and minute that the surface appears smooth and polished to the naked eye. Likewise, in females and some small males the convexity of the lower border of the propodus of the smaller chela, which is so prominent in larger males, tends to disappear and the

lower margin is perfectly straight or concave; on the other hand, in certain of the larger males this dilation is much more marked than in the type. and in at least one specimen it occurs on the larger as well as the smaller chela.

The generic status of this species is not easily determined. It obviously belongs to the group of the Carcinoplacinae made up of *Carcinoplax*, *Pilumnoplax* and *Litocheira*. Although it is similar to some of the described species of the first genus, it is far from typical. Due to the very convex carapace and convex frontal lobes it also closely resembles species of the genus *Litocheira* but it lacks the hairy covering usually associated with that genus. Although several workers have attempted to restrict *Pilumnoplax* to species with a flat carapace and straight frontal margin, it seems advisable to include this species here until a revision of these genera is made. Miss Rathbun (1918) has included here the form which she calls *P. elata*, a species which also has the carapace convex and the frontal lobes slightly so. A. Milne Edwards and Bouvier (1923) have pointed out that this species is quite different from the form described as *Eucratoplax elata* by A. Milne Edwards. and examination of the type specimens of *E. elata* in the Museum of Comparative Zoölogy confirms their contention.

GONEPLAX ROSAEA (A. Milne Edwards)

Goneplax rosaea Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 27, 1918.

Erevillea rosacea A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl. Harv., vol. 47, no. 4, p. 337, pl. 6, fig. 1, 1923.

Occurrence.

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,981C; 195 fathoms; 1 male; station 2,981D; 190-230 fathoms; 1 female; station 2,982; 210 fathoms; 2 males. 2 females; station 3,407; 200 fathoms; 1 male; station 3.411; 260 fathoms; 1 female.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,401; 235 fathoms; 1 young.

Remarks.—This is apparently the first record for this species since that of the types from off St. Vincent. The Cuban specimens, although most of them are larger, compare very closely with the

holotype female which is deposited in the Museum of Comparative Zoölogy. The largest male, from station 3,407, has the carapace 23.1 mm., long and 31.0 mm. broad; the largest female, from station 3,411, yields comparative measurements of 22.3 and 31.5 mm.

PSEUDORHOMBILA OCTODENTATA Rathbun

Pseudorhombila octodentata Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 43, text-figs. 17, 18, pl. 14, fig. 3, 1918.

Occurrence.

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 3,419; 180 fathoms; 1 female.

Remarks.—Unlike the females examined by Miss Rathbun, this specimen is similar to the description of the male; there are four antero-lateral teeth exclusive of the orbital angle, although the first is very small, and the meri of the ambulatory legs bear some small spines in addition to sharp granules on the upper margin.

CHASMOCARCINUS OBLIQUUS Rathbun

Chasmocarcinus obliquus Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 58, text-fig. 27, pl. 14, figs. 1, 2, 1918.

Hepthopelta superba Boone, L., Bull. Bingham Oceanogr. Coll., vol. 1, art. 2, p. 16, fig. 5, 1927.

Occurrence.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,437; 260 fathoms; 1 female.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,388; 255 fathoms; 1 male.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 3,328; 260-275 fathoms; 3 males, 5 females.

Remarks.—In large specimens of this species, the right chela is slightly larger and more inflated than the left; this is true of females as well as males. The largest male collected by "Atlantis" was taken at station 3,328; the carapace of this specimen is 13.0 mm. long and 15.1 mm. broad posteriorly.

CHASMOCARCINUS CYLINDRICUS Rathbun

Chasmocarcinus cylindricus Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 60, text-figs. 28, 29, 1918.

Occurrence.

North coast of Cuba:

Off Bahia Cardenas, Matanzas Province; station 2,995; 370-605 fathoms; 1 female.

Off Caibarien, Santa Clara Province; station 3,423; 245 fathoms; 1 female.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 3,409; 1 male; station 3,417; 200 fathoms; 1 female.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,394; 1 male, 2 females; station 3,396; 180 fathoms; 2 females; station 3,401; 235 fathoms; 2 females.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,390; 180 fathoms; 1 female.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 3,330; 230-265 fathoms; 1 male; station 3,333; 190-200 fathoms; 1 male; station 3,335; 200 fathoms; 1 male.

Off Bahia de Cienfuegos, Santa Clara Province; station 3,338; 1,075 fathoms; 1 female.

FAMILY CYMOPOLIIDAE

CYMOPOLIA SICA A. Milne Edwards

Cymopolia sica Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 208, text-fig. 127, pl. 40, figs. 3, 4, 1918.

Occurrence.

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 3,482; 190 fathoms; 1 male.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,400; 180 fathoms; 1 female.

Remarks.—The holotype of this species, designated by A. Milne Edwards and Bouvier (1902), is deposited in the Museum of Comparative Zoölogy (Cat. No. 6,503).

CYMOPOLIA DEPRESSA (Rathbun)

Cymopolia depressa Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 212, text-fig. 128, 1918.

Occurrence.

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982D; 150-180 fathoms; 1 ovigerous female.

Remarks.—The present specimen is larger than those previously known, the carapace measuring 10.0 mm. in length and 13.0 mm. in width.

CYMOPOLIA CURSOR A. Milne Edwards

Cymopolia cursor Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 215, text-figs. 130, 131, pl. 52, figs. 1, 2, 1918.

Occurrence.

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982; 210 fathoms; 1 ovigerous female; station 2,982C; 195-225 fathoms; 1 ovigerous female.

Off Puerto Tanamo, Oriente Province; station 3.375; 230 fathoms; 1 ovigerous female.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 2,960; 270 fathoms; 2 ovigerous females; station 2,961D; 195-235 fathoms; 1 ovigerous female; station 2,962C; 210 fathoms; 2 females (1 ovigerous).

CYMOPOLIA GRACILIS Smith

Cymopolia gracilis Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 218, text-fig. 132, pl. 50, pl. 51, fig. 1, 1918.

Occurrence.

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 3,468; 375 fathoms; 1 female.

Off Bahia Cardenas, Matanzas Province; station 3,476; 360 fathoms; 1 male.

CYMOPOLIA FLORIDANA Rathbun?

Cymopolia floridana Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 220, pl. 41, figs. 3, 4, 1918.

Occurrence.

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 3,410; 260 fathoms; 1 male.

Remarks.—This specimen is imperfect, lacking most of the legs including the second pair of ambulatories. It is obviously closely related to *C. cursor* but is at once separated from that species by the larger eyes which completely hide the outer suborbital tooth from dorsal view and the more prominent and isolated tubercles of the carapace. Since apparently but a single female specimen of *C. floridana* is known, the range of variation of the species is unknown. The "Atlantis" specimen agrees with Miss Rathbun's description in all but a few particulars which may be sexual characters or which may fall within the normal limits of variation of the species. In the present specimen the outer superior orbital tooth is narrower rather than broader than the inner one, the inner suborbital tooth is a long, slender spine reaching nearly to the end of the pterygostomian lobe but hidden by it in ventral view, however, and the first segment of the antennal peduncle is armed distally with an acute ventral tooth, but this tooth could hardly be called a slender spine and it does not reach nearly as far forward as the frontal teeth. In all other particulars Miss Rathbun's description could apply reasonably well to this specimen. It is slightly larger than the type female, the carapace measuring 6.0 mm. in length and 7.8 mm. in width.

CYMOPOLIA GRACILIPES A. Milne Edwards

Cymopolia gracilipes Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 221, text-fig. 133, pl. 52, figs. 3, 4, 1918.

Occurrence:

North coast of Cuba:

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,396; 180 fathoms; 2 females (1 ovigerous).

Remarks.—The larger of the two specimens has the carapace 6.3 mm. long and 9.8 mm. broad.

FAMILY GRAPSIDAE

GONIOPSIS CRUENTATA (Latreille)

- Goniopsis cruentata* Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 237, text-fig. 136, pl. 57, 1918; Bull. Amer. Mus. Nat. Hist., vol. 43, art. 8, p. 443, pl. 39, 1921.
Goniopsis cruentata Boone, L., Bull. Bingham Oceanogr. Coll., vol. 1, art. 2, p. 20, 1927.

Two specimens, a male and a female, of this familiar mangrove crab were presented to the Expedition by a fisherman at Cienfuegos, Santa Clara Province, Cuba, February 20, 1938.

EUCHIROGRAPSUS AMERICANUS A. Milne Edwards

- Euchirograpsus americanus* Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 282, text-fig. 144, pl. 74, 1918.
Euchirograpsus americanus A. Milne Edwards and Bouvier, Mem. Mus. Comp. Zoöl. Harv., vol. 47, no. 4, p. 351, pl. 9, figs. 5-7, 1923.

Occurrence:

North coast of Cuba:

- Off Playa Baracoa, Havana Province; station 3,302; 230 fathoms; 1 male.
 Off Caibarien, Santa Clara Province; station 3,422; 235 fathoms; 1 female.

South coast of Cuba:

- Bahia de Cochinos, Santa Clara Province; station 2,963C; 205 fathoms; 1 female.

FAMILY GECARCINIDAE

CARDISOMA GUANHUMI Latreille

- Cardisoma guanhumi* Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 341, pls. 106, 107, 1918.

A large male of this species was taken on the shore at the head of Bahia de Cochinos, Santa Clara Province, Cuba, in 1939. The measurements given by Miss Rathbun are obviously not maximum for this species; the present specimen has the carapace 97 mm. long and 120 mm. broad.

GECARCINUS RURICOLA (Linnaeus)

Gecarcinus ruricola Rathbun, M. J., U. S. Nat. Mus. Bull. 97, p. 352, text-fig. 160, pls. 117, 118, 1918.

Four specimens of this species, two males and two females, were taken on the eastern shore of Bahia de Cochinos. Santa Clara Province, Cuba, April 4, 1939, and two males were found on a rocky cliff at the Naval Station at Bahia de Guantanamo, Oriente Province, Cuba, March 3, 1938. The specimens from Bahia de Cochinos are of medium size and all are dark-colored, agreeing very closely with the color notes given by Miss Rathbun even after being in preservative and dried. The specimens from Bahia de Guantanamo, however, are much larger and of a uniform light tan color which may or may not have faded in preservative. The larger of these specimens has the carapace 65.5 mm. long and 94. mm. broad.

FAMILY PARTHENOPIDAE

PARTHENOPE (PLATYLAMBRUS) POURTALESII (Stimpson)

Parthenope (Platylambrus) pourtalesii Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 521, pls. 182, 183, 276, 1925.

Occurrence:

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 3,482; 190 fathoms; 1 female.

SOLENLAMBRUS TYPICUS Stimpson

Solenolambrus typicus Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 537, pls. 192, 193, 279, figs. 1-4, 1925.

Occurrence:

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,420; 190 fathoms; 4 males; station 3,421; 235 fathoms; 1 male, 1 ovigerous female; station 3,422; 235 fathoms; 2 males; station 3,423; 245 fathoms; 1 male, 1 ovigerous female; station 3,428; 240 fathoms; 1 young female.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982A; 210 fathoms; 1 male; station 2,982D; 150-180 fathoms; 4 males, 3 ovigerous females;

station 2,982E; 150-180 fathoms; 2 males; station 3,407; 200 fathoms; 1 female; station 3,409; 200 fathoms; 3 males; station 3,411; 260 fathoms; 2 males; station 3,413; 215 fathoms; 1 female; station 3,414; 230 fathoms; 3 females (2 ovigerous); station 3,415; 210 fathoms; 3 males, 3 females (2 ovigerous); station 3,416; 200 fathoms; 1 ovigerous female; station 3,417; 200 fathoms; 2 males.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,391; 220 fathoms; 1 male, 2 females (1 ovigerous); station 3,392; 225 fathoms; 4 males, 1 ovigerous female, 1 young; station 3,393; 220 fathoms; 1 male, 1 ovigerous female; station 3,394; 200 fathoms; 2 males, 3 ovigerous females; station 3,397; 180 fathoms; 1 ovigerous female; station 3,401; 235 fathoms; 5 males, 4 females (2 ovigerous); station 3,402; 230 fathoms; 1 male; station 3,404; 210 fathoms; 1 female.

SOLENOLAMBRUS TENELLUS Stimpson

Solenolambus tenellus Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 541, pl. 194, figs. 3, 4, pl. 279, figs. 5-9, 1925.

Occurrence:

North coast of Cuba:

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,394; 200 fathoms; 2 ovigerous females; station 3,396; 180 fathoms; 7 males; station 3,397; 180 fathoms; 7 males, 5 females (3 ovigerous); station 3,398; 180 fathoms; 1 male, 3 females (2 ovigerous); station 3,399; 180 fathoms; 2 females (1 ovigerous); station 3,400; 180 fathoms; 1 male.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,390; 180 fathoms; 1 male, 2 females (1 ovigerous).

Remarks.—Six of these specimens, two males and four females, have rhizocephalan parasites attached beneath the abdomen; all but one of the females without eggs is thus parasitized. Curiously, none of the many specimens of *S. typicus* from approximately the same locality were attacked by this parasite. However, there is a male

specimen of the latter species in the Museum of Comparative Zoölogy taken by the "Blake" off St. Vincent which is parasitized, so the species is not entirely immune from such attacks.

FAMILY MAJIDAE

STENORYNCHUS SETICORNIS (Herbst)

Stenorynchus seticornis Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 13, text-fig. 3, pls. 2, 3, 1925.

One large female was collected by Mr. William C. Schroeder at Plaza de Puerto Rico, Banes, Oriente Province, Cuba, in 1939, and two males were taken in a trap set off the Naval Station dock at Bahia de Guantanamo, Oriente Province, Cuba, April 13, 1939.

ANOMALOTHIR FURCILLATUS (Stimpson)

Anomalothir furcillatus Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 24, text-fig. 6, pl. 8, fig. 2, pl. 9, fig. 2, pl. 206, 1925.

Occurrence:

North coast of Cuba:

Off Playa Baracoa. Havana Province; station 3,303; 260 fathoms; 2 ovigerous females.

Off Bahia de Matanzas, Matanzas Province; station 3,465; 175 fathoms; 1 male, 2 ovigerous females; station 3,468; 375 fathoms; 1 male.

Off Caibarien, Santa Clara Province; station 3,428; 240 fathoms; 1 male.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982; 210 fathoms; 1 ovigerous female; station 3,412; 235 fathoms; 1 ovigerous female.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,397; 180 fathoms; 1 male; station 3,405; 235 fathoms; 1 soft-shelled female.

Remarks.—There is considerable variation in this species as regards the armature of the lower margin of the merus of the third ambulatory leg. With but one exception, there are but two spines on this segment in the "Atlantis" specimens and in one case these are reduced to sharp granules; the exception is the softshelled female from station 3,405 which has three spines. Two spines is also the

prevalent number among the "Blake" specimens in the Museum of Comparative Zoölogy. although the number varies from one to four. The proximal spine on the carpus of the chelipeds is also frequently missing so that this segment is often armed with but two spines.

ANOMALOTHIR FRONTALIS (A. Milne Edwards)

Anomalothir frontalis Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 25, pl. 8, fig. 1, pl. 9, fig. 1, pl. 207, 1925.

Occurrence:

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 3,482; 190 fathoms; 1 male, 2 females (1 ovigerous).

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,396; 180 fathoms; 1 male; station 3,397; 180 fathoms; 1 male; station 3,400; 180 fathoms; 1 male; station 3 402; 230 fathoms; 1 male.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,390; 180 fathoms; 1 ovigerous female.

PODOCHELA RIISEI Stimpson

Podochela riisei Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 33, pl. 11, figs. 1, 2, pl. 208, fig. 2, 1925.

Occurrence:

South coast of Cuba:

Bahia de Sigüanea, Isla de Pinos; 1 male taken in a seine along the shore, February 14, 1938.

Inside Cabo Cruz, Oriente Province; station 3,347-3,350; 11½ - 13 fathoms; 1 female.

PODOCHELA CURVIROSTRIS (A. Milne Edwards)

Podochela curvirostris Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 50, pls. 19 and 210, 1925.

Occurrence:

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; 3,465; 175 fathoms; 1 male, 1 female; station 3,479; 210 fathoms; 1 male; station 3,482; 190 fathoms; 1 male, 1 female.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,397; 180 fathoms; 1 large male.

EUPROGNATHA RASTELLIFERA ACUTA A. Milne Edwards

Euprognatha rastellifera acuta Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 96, pl. 34, figs. 1, 2, 1925.

Occurrence:

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 2 999; 145-230 fathoms; 1 female.

Old Bahama Channel of Cayo Coco, Camaguey Province; station 3,405; 235 fathoms; 1 ovigerous female.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,386; 220 fathoms; 1 ovigerous female.

Remarks.—In the specimen from station 2,999 the dorsal spines of the carapace, although fully as long as in the average specimen of *E. rastellifera acuta*, are slightly capitate as in *E. rastellifera rastellifera*.

PYROMAIA CUSPIDATA Stimpson

Pyromaisia cuspidata Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 129, text-fig. 49, pl. 41, 1925.

Occurrence:

North coast of Cuba:

Off Bahia de Matanzas, Matanzas Province; station 3,466; 200 fathoms; 1 female.

Off Caibarien, Santa Clara Province; station 3,420; 190 fathoms; 1 ovigerous female; station 3,422; 235 fathoms; 2 females; station 3,423; 245 fathoms; 1 female; station 3,425; 250 fathoms; 1 male; station 3,428; 240 fathoms; 1 male, 3 females.

Western end of Old Bahama Channel; station 2,984; 240-250 fathoms; 1 female.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2 981C; 195 fathoms; 2 females; station 2,982A; 210 fathoms; 1 female; station 2,982C; 195-225 fathoms; 3 females; station 2 982D; 150-180 fathoms;

2 males, 4 females; station 2,982E; 150-180 fathoms; 3 males, 4 females; station 3,406; 200 fathoms; 2 males; station 3,407; 200 fathoms; 2 males, 2 females; station 3,408; 200 fathoms; 1 male, 1 female; station 3,409; 200 fathoms; 6 males, 3 females; station 3,413; 215 fathoms; 2 males, 1 female; station 3,414; 230 fathoms; 2 females; station 3,415; 210 fathoms; 1 female; station 3,416; 200 fathoms; 2 males, 2 females; station 3,417; 200 fathoms; 2 males, 2 females.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,391; 220 fathoms; 2 males, 3 females; station 3,392; 225 fathoms; 5 females; station 3,393; 220 fathoms; 3 males, 5 females; station 3,394; 200 fathoms; 1 male, 3 females; station 3,400; 180 fathoms; 1 male; station 3,403; 210 fathoms; 2 males; station 3,405; 235 fathoms; 1 female.

Old Bahama Channel off western end of Cayo Romano, Camaguey Province; station 3,386; 220 fathoms; 1 male; station 3,387; 245 fathoms; 1 female; station 3,389; 220 fathoms; 1 female.

South coast of Cuba:

Bahia de Cochinos, Santa Clara Province; station 2,960; 270 fathoms; 1 female; station 2,963; 150-170 fathoms; 1 female.

Remarks.—This species seems to drop its legs readily; there are but two or three specimens in the collection which have retained all of the legs and several have lost all of them.

***Pyromaia propinqua*, sp. nov.**

(Figs. 19, 20)

Holotype.—Male, M. C. Z. No. 11,061; Old Bahama Channel off Cayo Coco, Camaguey Province, Cuba; lat. 22° 35' N., long 78° 20' W.; 180 fathoms; April 28, 1939; station 3,399.

Paratypes.

North coast of Cuba:

Off Caibarien, Santa Clara Province; station 3,420; 190 fathoms; 1 ovigerous female.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 3,419; 180 fathoms; 1 male.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,391; 220 fathoms; 1 male; station 3,392; 225 fathoms; 1 ovigerous female; station 3,396; 180 fathoms; 1 female; station 3,397; 180 fathoms; 1 ovigerous female.

Old Bahama Channel off west end of Cayo Romano, Camaguey Province; station 3,390; 180 fathoms; 2 males, 1 ovigerous female.

Description.—Regions of carapace well delimited, tumid and adorned with scattered tubercles of varying sizes, but no true spines. Seven of the tubercles are more elevated and prominent than the rest; three median on the mesogastric, cardiac and intestinal regions and one each on the protogastric and branchial regions. In addition, there are four or five spine-like tubercles on the margin of each

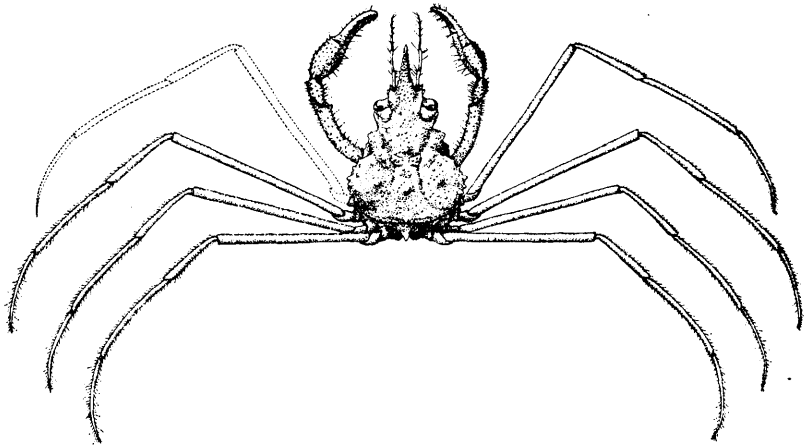


FIG. 19

Pyromaia propinqua. Holotype. $\times 1.5$.

branchial region and one on each hepatic region. Rostrum simple, dorsally convex and armed with three rows of sharp tubercles, one median and two marginal. A well developed interantennular spine is present. Supraorbital margin merely angled, not surmounted by a spine. Postorbital tooth but slightly curved around end of cornea and provided with two rows of hairs on the anterior margin.

Basal segment of antenna with a small terminal spine and a blunt tooth directed downward and outward from the outer margin a short distance behind the terminal spine; this is followed by a few marginal

tubercles. Four or five enlarged tubercles on pterygostomial region. Outer maxillipeds as in *P. cuspidata*. Merus of chelipeds armed with numerous short spines, the terminal spine on the upper surface being slightly larger than the others; upper and outer margins of carpus spinulose; chelae subequal with the palm inflated and more or less covered with short spines; fingers curved, evenly dentate on their opposable edges and with a larger tooth near the base of the fixed finger, in back of which there is a slight gap when the fingers are closed. Ambulatory legs covered with a very short pubescence and without spines on any of the segments except for a microscopic spinule occasionally to be found at the end of the merus; the first ambulatory leg is more than two and one-half times as long as the carapace. First abdominal somite armed with a median, backwardly directed spine. Sternum covered with scattered tubercles and abruptly retreating anteriorly.

In females and small males the chelae are subequal and not inflated, and in several specimens the median tubercle on the intestinal region is not enlarged.

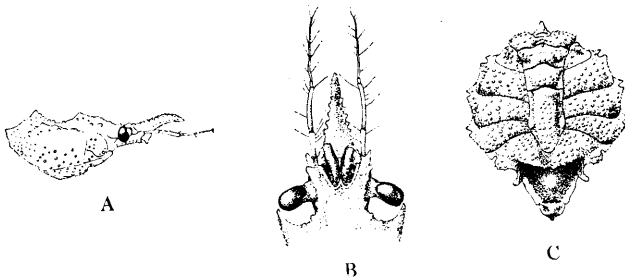


FIG. 20

Pyromaia propinqua

- A. Lateral view of carapace of holotype. $\times 1.5$.
 B. Ventral view of rostrum and orbital regions of holotype. $\times 3$.
 C. Strenum and abdomen of holotype. $\times 3$.

Measurements.—Male holotype, length of carapace 16.2, width 11.9 mm.; ovigerous female, length of carapace 17.5, width 11.5 mm.

Remarks.—This is a smaller species than *P. cuspidata*; in the latter, the abdomen of the female does not become inflated for the reception of the eggs until the carapace attains a length of about 28 mm. *P. propinqua* is otherwise distinguished by its somewhat broader carapace due to the more tumid branchial regions, the absence of sharp spines on the carapace, the shorter and more outwardly directed postorbital tooth, the position of the proximal tooth of the

basal antennal segment on the outer margin rather than toward the median edge and the absence of a strong terminal spine on the merus of any of the ambulatory legs.

This species so nearly bridges the gap between *Pyromaia* and *Anasimus* as far as the form of the postorbital tooth is concerned that the validity of the latter genus is open to question; additional material may well prove it to be synonymous with the former.

ESOPUS CRASSUS A. Milne Edwards

(FIG. 21)

Esopus crassus Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 192, pl. 222, figs. 10-12, 1925.

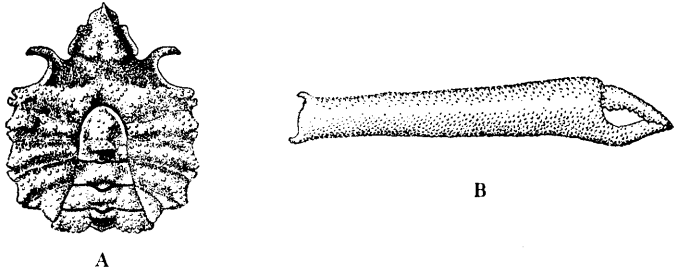


FIG. 21

Esopus crassus

- A. Sternum and abdomen of male from station 3,394. $\times 5$.
 B. Chela of same specimen. $\times 5$.

Occurrence:

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 3,409; 200 fathoms; 1 male.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,394; 200 fathoms; 1 male; station 3,396; 180 fathoms; 1 male, 1 ovigerous female; station 3,397; 180 fathoms; 3 males. 2 ovigerous females; station 3,398; 180 fathoms; 1 ovigerous female; station 3,399; 180 fathoms; 1 male (with an abdominal parasite); station 3,400; 180 fathoms; 1 male; station 3,401; 235 fathoms; 1 male.

Old Bahama Channel off western end of Cayo Romano, Camaguey Province; station 3,386; 220 fathoms; 1 ovigerous female; station 3,390; 180 fathoms; 2 males, 1 female.

Remarks.—This is apparently the first record of the capture of this species since the unique type was taken by the "Hassler" off the Barbados and it is the first time that the male has been seen. The male differs from the female in having the chelipeds very much longer—usually more than twice as long as the carapace, whereas they are less than the length of the carapace in the female—and in having a large gap between the fingers near the base when they are closed. The male abdomen is composed of six segments, the last two being fused. In both sexes, the ambulatory legs diminish progressively in length from the first to the fourth, and there is a pair of minute, horn-like spines on the margin of the front.

ROCHINIA CRASSA (A. Milne Edwards)

Rochinia crassa Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 210, text-figs. 83, 84, pls. 68, 69 and 226, 1925.

Occurrence:

North coast of Cuba:

Off Bahia de Cardenas, Matanzas Province; station 2,996;
470-665 fathoms; 1 young male.

Nicholas Channel, south of Cay Sal Bank; station 2,987E;
315 fathoms; 1 female.

Off Caibarien, Santa Clara Province; station 3,442; 335
fathoms; 1 young female.

In addition to the above specimens, a lot of 4 males, 4 females and 1 young was taken by "Atlantis" east of St. Augustine, Florida, at station 3,779; 30° 21' N., 79° 55' W.; 230-250 fathoms; February 24, 1940.

ROCHINIA HYSTRIX (Stimpson)

Rochinia hystrix Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 214, pls. 70, 71, 1925.

Occurrence:

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,303; 260
fathoms; 1 male.

Off Bahia de Matanzas, Matanzas Province; station 2,999;
145-230 fathoms; 1 young.

Nicholas Channel, south of Cay Sal Bank; station 2,987; 280-300 fathoms; 1 male.

Off Caibarien. Santa Clara Province; station 3,431; 245 fathoms; 1 ovigerous female; station 3,432; 250 fathoms; 1 male, 1 female; station 3,435; 255 fathoms; 1 male; station 3,436; 255 fathoms; 1 female; station 3,437; 260 fathoms; 1 young; station 3,438; 265 fathoms; 1 female.

Western end of Old Bahama Channel; station 2983; 235-260 fathoms; 2 males; station 2 983A; 235 fathoms; 1 ovigerous female.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2 980A; 220-260 fathoms; 1 ovigerous female; station 2,980B; 220-225 fathoms; 4 males, 7 females (3 ovigerous); station 2 981; 225 fathoms; 1 male; station 2,982A; 210 fathoms; 2 males, 5 females (2 ovigerous); station 2 982B; 205-230 fathoms; 1 male, 2 females (1 ovigerous); station 2,982C; 195-225 fathoms; 1 female; station 2,982D; 150-180 fathoms; 1 male.

Remarks.—It is perhaps noteworthy that in 1938 25 specimens of this species were taken from seven out of the 15 stations made off Punta Alegre, whereas in 1939 no specimens were found in this general area although 14 stations were made there. To be sure, the species was found in some abundance in the latter year off Caibarien which is but a short distance to the west of Punta Alegre. Whether there is a seasonal migration of this species (stations in 1938 were made on March 10 and 11, those in 1939 on April 29 and 30) or whether its population is so strictly localized that the trawl did not happen to strike a colony in 1939 can hardly be guessed at from this evidence.

ROCHINIA UMBONATA (Stimpson)

Rochinia umbonata Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 222, text-fig. 85, pl. 72, pl. 73, fig. 1, 1925.

Occurrence:

North coast of Cuba:

Nicholas Channel off Bahia de Santa Clara, Santa Clara Province; station 3,459; 500 fathoms; 1 female.

In addition, three specimens were taken by "Atlantis" in 1940 east of St. Augustine, Florida. A male was found at station 3,780; 30° 27' N., 79° 52' W.; 250-265 fathoms; February 24, 1940. A male and a female were taken at station 3,781; 30° 58' N., 79° 34' W.; 265-290 fathoms; February 24, 1940.

TRACHYMAIA CORNUTA A. Milne Edwards

Trachymaia cornuta Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 229, text-fig. 87, pl. 80, pl. 232, figs. 3-5, 1925.

Occurrence:

North coast of Cuba:

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,982B; 205-230 fathoms; 1 female; station 2,982D; 150-180 fathoms; 1 female.

Old Bahama Channel off Cayo Coco, Camaguey Province; station 3,391; 220 fathoms; 3 males 2 females (1 ovigerous; station 3,392; 225 fathoms; 1 female; station 3,393; 220 fathoms; 1 male, 1 ovigerous female; station 3,394; 200 fathoms; 1 male, 1 young female; station 3,396; 180 fathoms; 1 ovigerous female; station 3,401; 235 fathoms; 2 males, 2 ovigerous females; station 3,402; 230 fathoms; 1 young male, 1 young female.

Old Bahama Channel off western end of Cayo Romano, Camaguey Province; station 3,386; 220 fathoms; 1 male; station 3,389; 220 fathoms; 1 ovigerous female.

HOLOPLITES ARMATA (A. Milne Edwards)

Holoplites armata Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 307, text-fig. 102, pl. 108, pl. 245, figs. 6-8, 1925.

Occurrence:

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,303; 260 fathoms; 2 males, 1 ovigerous female.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 2,980B; 220-225 fathoms; 1 male.

Remarks.—The specimen from station 2.980B is a large and striking specimen measuring 32 mm. in total length and 20 mm. in total width, including the spines; exclusive of the spines, the carapace of this specimen is 20.4 mm. long and 14.2 mm. broad.

TEMNONOTUS GRANULOSUS A. Milne Edwards

(FIG. 22)

Temnonotus granulatus Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 341, pl. 249, fig. 709, 1925.

Temnonotus simplex A. Milne Edwards, Crust. Rég. Mex., p. 84, pl. 17, figs. 3-3c, 1875; Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 342, pl. 249, figs. 10-12, 1925.

Occurrence.

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3,303; 260 fathoms; 1 male.

Remarks.—Examination of the four specimens of *Temnonotus* in the Museum of Comparative Zoölogy leaves little doubt that *T. simplex* is a synonym of *T. granulatus*. In the smallest specimen examined, the young male holotype of *T. simplex* which has the carapace 11.3 mm. long exclusive of the rostral spines, the cardiac region is simply convex, surmounted by a single tubercle and surrounded, except anteriorly, by a relatively shallow and unmarginated trench. The next largest specimen, in which the carapace is 16.1 mm. long, is the male taken off Barbados at "Blake" station 273 and identified by A. Milne Edwards as *T. granulatus* and by Miss Rathbun as *T. simplex*; in this specimen the cardiac region is convex as in the previous one but it is decorated with eight or nine minute tubercles in addition to the median one and the cardiac trench is deeper with a marginal line just forming. Next in point of size, having a carapace length of 21.2 mm., is the female holotype of *T. granulatus*; here the cardiac region is more flattened and it is surmounted by numerous tubercles; the cardiac trench is deeper and bordered by a distinctly raised margin. Finally, in the large male taken by "Atlantis", in which the carapace measured 23.4 mm., the cardiac region is slightly more flattened than in the latter specimen and the cardiac trench is remarkably deep and broad with a sharply produced margin; unlike the first three examples, the trench here nearly encircles the cardiac region being prevented from so doing

only by a very thin anterior septum. In the holotype of *T. simplex* the basal antennal article is too badly damaged to permit the determination of its armature but, contrary to Miss Rathbun's statement concerning the male collected by the "Blake" the three other specimens have three spines on this segment.

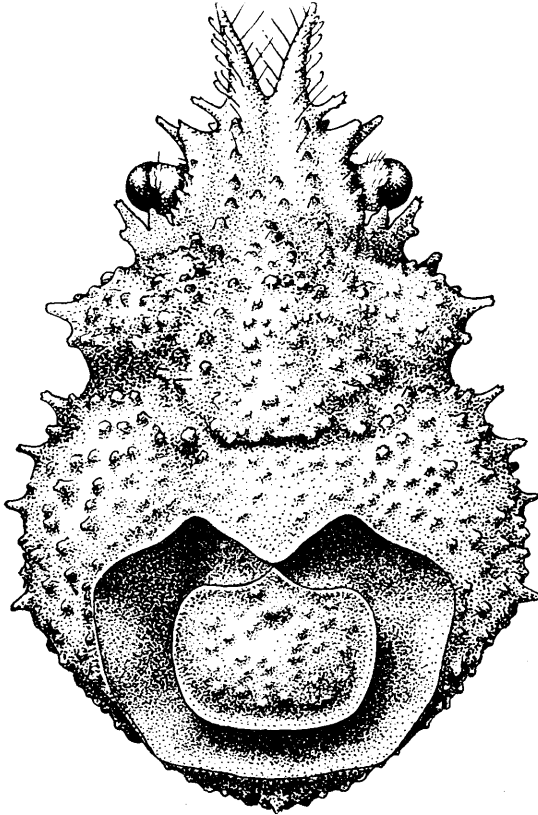


FIG. 22

Temnonotus granulosus A. Milne Edwards

Dorsal view of carapace of male from station 3,303. $\times 4$.

Thus, although all four of these specimens differ somewhat in the form of the cardiac region and its accompanying trench, there is every likelihood, as Miss Rathbun has suggested, that the two described species of the genus are identical; the available material, however, seems to indicate that the individual differences are distinctive less of the sex of the individual than of its age.

LEPTOPIISA SETIROSTRIS (Stimpson)

Leptopisa setirostris Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 375, text-fig. 120, pl. 134, figs. 1-3, pl. 253, fig. 2, 1925.

Occurrence:

South coast of Cuba:

Inside Cabo Cruz, Oriente Province; station 3,347; 11½-13 fathoms; 1 ovigerous female.

MITHRAX (MITHRAX) SPINOSISSIMUS (Lamareck)

Mithrax (Mithrax) spinosissimus Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 383, pl. 135, 1925.

One ovigerous female was bought from a fisherman at Bahía de Matanzas, Matanzas Province, Cuba, March 19, 1938.

MITHRAX (MITHRACULUS) FORCEPS (A. Milne Edwards)

Mithrax (Mithraculus) forceps Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 431, pl. 156, 1925.

Occurrence.

South coast of Cuba:

Inside Cabo Cruz, Oriente Province; station 3,347-3,350; 11½-13 fathoms; 2 males, 3 females (2 ovigerous); station 3,351; 28 fathoms; 1 ovigerous female.

STENOCIONOPS SPINOSISSIMA (Saussure)

Stenocionops spinosissima Rathbun, M. J., U. S. Nat. Mus. Bull. 129, p. 455, pl. 165, fig. 2, pl. 264, figs. 3 and 4, pl. 265, 1925.

Occurrence:

North coast of Cuba:

Off Playa Baracoa, Havana Province; station 3 303; 260 fathoms; 1 male.

Old Bahama Channel off Punta Alegre, Camaguey Province; station 3 417; 200 fathoms; 1 female.

Remarks.—The male from station 3,303 is a fine large specimen, the measurements of which are as follows: total length of carapace including rostral horns (intestinal spines broken off) 102 mm., width of carapace including spines 85 mm., width of carapace excluding spines 72.5 mm., length of rostral horns 15.7 mm. The female is somewhat smaller, the carapace measuring 86 mm. in total length; this specimen is parasitized by two small rhizocephalans beneath the abdomen.